# Economic Effects of Player Transfers on the Financial Performance of Publicly Traded Soccer Clubs

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**Abstract:** This research examines how player transfers impact the financial performance and market value of publicly traded soccer clubs. By analyzing changes in market value and excess returns around transfer dates, we provide insights into the economic consequences of these events. Our findings indicate that, on average, player transfers generally result in a negative impact on a club's market value, each varies from -20% to 8%.

In contrast, the percentage change in Excess Returns shows more variability due to the influences of transfer fees and wages, and it can also be affected by the fact that publicly traded clubs are based in different countries and listed on various stock exchanges. We conducted a simple regression analysis to understand the impact of player transfers on ΔExcess Return%, using club-specific dummy variables. The results suggest that Juventus gains more from these transfer trades in the 23/24 season compared to Dortmund and Manchester United. However, the coefficients were not statistically significant, suggesting that the observed differences might be due to random variation. Therefore, a more comprehensive regression model along with more observations are needed. Future work may explore predictive models using transfer rumors to estimate their potential impact on the market value.

## I. Introduction:

Player transfers are a significant way for teams to boost their current lineup, enrich the substitution bench, and diversify tactics to win games and trophies. When a famous player transfers, the new club usually receives substantial exposure and attention, which attracts many fans to the games. On the other hand, when an overpriced player is transferred, the market may reflect the fans and investors' opinions through fluctuations in stock prices and other market reactions. We can observe market reactions towards the team, such as changes in game attendance, merchandise sales, and, financially, the investors' decisions and stock market fluctuations.

This research investigates the economic effects of player transfers on the financial performance of soccer clubs, with a primary focus on publicly traded clubs. The key question this study aims to answer is: **"How do player transfers affect the stock prices, market value, and thus financial performance of publicly traded soccer clubs, and how do these impacts influence investment decisions by the clubs' stakeholders?"** Additionally, sub-questions include: **"How does this change the club's signing strategy, the players' incentives, and the public's attitude towards the club?"** This topic is particularly interesting, as it provides insights into how financial markets react to significant player investments, which are crucial for strategic planning and financial stability in professional sports. Analyzing stock market reactions offers a very intuitive understanding of these events in soccer and provides a comprehensive view of soccer clubs' player signing strategies. Beyond stock price reaction, analyzing a club's market value reaction would provide a macro view of the impacts of player transfers. In addition, evaluating metrics for a player transfer, including age, nationality, game stats, market value, and transfer fee provides us with a machine learning dataset for predicting the future impact of such transfers on the stock price and market values of publicly traded clubs.

The data for this research will come from various professional platforms. For publicly traded clubs, stock price data and implied shares outstanding will be derived from sources such as Yahoo Finance, Finbox, and Bloomberg to calculate the clubs' market value and analyze market reactions. Player transfer data, such as transfer fees, wages, and player statistics, will be sourced from professional soccer platforms like Transfermarkt. Financial performance metrics such as revenue and profits will be extracted from Deloitte Football Money League Reports and annual financial reports available on club websites.

For future data collection and analysis, commercial data, including match attendance figures and ticket prices, will be sourced from Statista, ESPN, and club-specific reports where available. Beyond that, we might develop a regression model to estimate the public and the investors' perception of the true market value of the player. By comparing this estimated market value to the actual transfer fee and analyzing the market's reaction, we can gain deeper insights into the financial implications of player transfers. This approach will allow us to gauge the potential impact of future transfer rumors on the stock price. Using our dataset, along with transfer rumors, we might label these rumors and employ machine learning to predict their impact on the stock price if they materialize. According to Karasaridis, transfer rumors notably affect the returns of publicly traded sports teams, with a statistically significant CAR (-3, -1) of -0.90%. This supports behavioral finance theories regarding the influence of rumors on trading prices and aligns with the Efficient Market Hypothesis, which suggests that stock prices reflect all available information as soon as it becomes public (Karasaridis).

Lastly, though this paper is centered around publicly listed clubs, we might also use those metrics to facilitate a supplementary analysis for membership-based and privately owned clubs as data permits.

## II. Model:

We will mainly focus on the market value of publicly listed clubs, while utilizing Cumulative Abnormal Returns (CAR) as a reference variable to analyze the change in the club's stock price in reaction to player transfers within a specific time window. We choose Cumulative Abnormal Returns over Cumulative Average Returns because it isolates the impact of the player transfer event by accounting for the expected returns based on market movements and other systemic factors. In the future, we might employ a machine learning model to provide a comprehensive result for predicting future transfer rumors' levels and their impact on the stock market and the club's market value.

Specifically: We are using the following models to measure the stock market's reaction to the player transfers.

### 1. Publicly Listed Club Market Value Calculation and Assessment of the Trade (Main Model):

This is the main model used for this research.

**a) Define the (-5&+5) Time Window around the Transfer Date:**

Assess the Market Value change before and after the transfer date.

**b) Calculate Club's Market Value:**

$$\text{Market Values} = \text{Stock Prices} \times \text{Implied Shares Outstanding}$$

**c) Find the Change in Market Value Within the Time Window:**

$$\Delta \text{ Market Value} = \text{Market Value [Last Day]}^{1} - \text{Market Value [First Day]}$$

[1] Here we store the market values of the (-5&+5) time window into a vector, omitting the weekends and holidays, which means that the maximum size of the vector $\leq 9$.

**d) Measure the Excess Return:**

$$\text{Excess Return} = \begin{cases} \Delta \text{ Market Value} - \text{Transfer Fee} - \text{Wages paid, Buying Players} \\ \Delta \text{ Market Value} + \text{Transfer Fee} + \text{Wages saved, Selling Players} \end{cases}$$

## 2. Use Regression to Analyze Each Club's Transfer Return

$$\Delta\text{Excess Return\%} = \beta_0 + \beta_1 * \text{Man\_Utd} + \beta_2 * \text{Juventus} + \mu$$

Here, Man_Utd and Juventus are both dummy variables. The base category is Dortmund.

## 3. Event Study Method (Only as Reference):

We will use this method only as a reference since it primarily measures the stock price's reaction to an event, and focuses on a single stock rather than the entire market. However, this method will serve as an essential initial indicator of the stock market's reaction to player transfers.

**a) Calculate Actual Return and Expected Return:**

$$AR_t = \text{Actual Return} - \text{Expected Return}$$

**b) Aggregate Abnormal Returns to Derive CAR:**

$$\text{CAR} = [\prod_{t=-5}^{+5}(1 + AR_t)] - 1$$

Abnormal returns within defined event windows will be calculated and aggregated to derive Cumulative Abnormal Returns (CAR), quantifying the market's reaction to the transfers.

**c) Measure Expected Change in Market Value (Hypothetical):**

$$\text{Expected } \Delta \text{ Market Value} = \text{CAR} * \text{Market Value [Last Day]}$$

$$\text{Expected Return} = \begin{cases} \text{Expected } \Delta \text{ Market Value} - \text{Transfer Fee} - \text{Wages paid}, \text{Buying Players} \\ \text{Expected } \Delta \text{ Market Value} + \text{Transfer Fee} + \text{Wages saved}, \text{Selling Players} \end{cases}$$

Associate the costs/revenues with the corresponding club value change to measure if it's objectively a good deal.

**4. Machine Learning Model (Future Analysis):**

**Input:** The gap between Investors' Estimated Market Value and Actual Transfer Fee

**Output:** Stock Price/Club Market Value reaction.

**Training Dataset:** Past transfer history and Stock Price fluctuation.

**Testing Dataset:** Scrape transfer rumors from relatively reliable soccer transfer journalists, and use algorithm to classify the dates and the players. And run the machine learning model to estimate those transfer rumor's impact on the club value.

## III. Data:

The datasets for this research will come from multiple professional sources, focusing primarily on publicly traded clubs. Stock Price data and Implied Shares Outstanding from publicly listed clubs will be extracted from Yahoo Finance, Finbox, and Bloomberg to analyze market reactions to player transfer announcements within a specific timeframe and potentially for long-term effect analysis. Transfermarkt will provide data on player transfers, including transfer fees, market value before transfer, transfer dates, and player statistics. This comprehensive approach allows us to capture a wide range of impacts, though we may focus

on high-value transfers to analyze more significant financial effects. Financial metrics, such as revenue and profits, will be obtained from Deloitte Football Money League Reports and annual financial reports available on club websites. Additional commercial data, including match attendance figures and ticket prices, will be sourced from Statista and specific club disclosures. A comprehensive timeline will be established to align transfer dates with financial performance data and stock market data, ensuring temporal consistency and the accuracy of the analysis.

Specifically, we scraped player transfer data such as Transfer Fee[2], Wage[3], and Transfer Dates for these publicly listed clubs over the past eight seasons from Transfermarkt using Python. **(See Appendix Figure 1.) It is worth noting that, due to coding constraints, some of the transfer dates are incorrect.** For example, if a player joined the soccer team in 2020 and left in 2022, their profile on the scraped website indicates the date they joined the current club, which might mean that the date a player left is always correct, but not the date they joined. **Therefore, manual data cleaning is necessary.** Additionally, for players who are promoted from the youth team, we exclude those effects because those transfers are essentially internal.

We then collected the implied shares outstanding of these publicly listed clubs from Finbox and CompaniesMarketCap.com. Combined with the stock price data we have collected; we can perform calculations on the market value of a club at the time of the trade. The implied outstanding shares of a publicly listed firm typically change quarterly, as reported in their quarterly (10-Q) and annual (10-K) financial reports. Since the website only shows the dates when the implied outstanding shares change, we had to interpolate the missing dates in between those reported dates.

[2] Unit: Euros. We also collected the exchange rate of every day from 2016-2024.
[3] Unit: Pounds. Same

Lastly, we defined a time window (usually -5 and +5 days) around the transfer dates, ensuring we capture the correct dates for observations. For instance, if a trade happened on the weekend, we should extract the stock data from Friday and Monday (subject to change based on the time window for instant stock market reaction). Or if a trade happened at 9 p.m., we would measure the stock price on the day before the trade happened and the day after the trade happened. Creating a (-5 and +5 days) time window effectively ensures we find the correct dates by skipping weekends and holidays. And since we already have the data for Implied Shares Outstanding, we can measure the club's Market Value instead of Stock Prices.

To evaluate how much the market value has changed because of the player transfer, we take the market value on the last day of our time window (usually at +5 days) and subtract the market value on the first day of our time window (usually at -5 days). In this way, we can directly determine the change in market value for the trade date[4].

For future analysis, we also scraped attendance and game results for these clubs over the past eight seasons as metrics to evaluate game revenue and other financial performance.

- Due to the effect of Covid, there were incomplete or very few attendances record for games from March 2020 to May 2021. **Therefore, we choose not to examine the match results and attendance for 19/20 & 20/21 season, since Covid has a bigger and more complicated impact on the stock price and the club value than the player transfer itself. (See Appendix Figure 2.)**

## IV. Methodology

[4] Here we mention each trade dates instead of player transfers because on some certain dates (say, the last day of the transfer window), there usually would be multiple players transfer announcements on that day, which means that it would be hard for us to access individual player transfer's impact. In our result section, we discussed some improvements to this situation.

1. **Data and Modeling Part:**

   A. **Main Focus: Market Value Calculation (Publicly Listed Clubs):**

$$\text{Club's Market Value} = \text{Stock Price} \times \text{Implied Shares Outstanding}$$

- After data collection, we aim to calculate the variation in the club's market value at the time of the player transfer. **(See Appendix Figure 4.)** We will examine both the new club and the old club's market value.
- If **only one side of the club is publicly listed**, we may briefly mention other methods (e.g., DCF or Revenue Multiples) as potential alternative approaches for estimating the market value of a private or membership-based club, but for now, we will not implement these methods due to the lack of sufficient information and complexity. In this situation, we would only measure the public side's market value.
- We will compare the variations in market value on both sides of the transfer clubs with potential wage saved and the benefit from transfer fee, to assess whether the deal might be beneficial.

**Formula:**

$$\text{Excess Return} = \begin{cases} \Delta\ \text{Club Market Value} - \text{Transfer Fee}^{5} - \text{Wage Paid, player Joined} \\ \Delta\text{Club Market Value} + \text{Transfer fee} + \text{Wage saved, player Left} \end{cases}$$

$$\Delta\ \text{Excess Return\%} = \text{Excess Return} / \text{Market Value [First Day]}.$$

- Then, utilize Python to employ the Cumulative Abnormal Returns (CAR) method, as a reference variable, to create a time window, measuring the market's reaction to the player transfer. **(See Appendix Figure 5.)**
- Lastly, run the regression model on the Excess Return for different clubs.

[5] Both Transfer Fee and Wage Paid are justified in USD.

## B. An intuitive way to visualize the effects of individual transfers and games (Only as Reference):

We will start by plotting graphs for the stock prices of publicly traded firms using Python, noting major player transfer announcements. The date and data for the transferred players will be meticulously documented, possibly detailed to the minute level. The effect of individual player transfers will be evaluated within a specific short-term timeframe, while the aggregate effect of multiple player transfers over a season will also be analyzed to understand the long-term impacts on the club.

We aim to match the stock price graph with player transfer times when the trades happened, along with matching some rumors or news that might impact the stock price. In addition, we will correlate the games on the graph and conduct an aggregate analysis of the season's matches. This includes noting the ranks of the team before and after the season, their win-loss record, and any trophies won. In this way, it provides an intuitive method to understand how different events might impact the stock price and, consequently, the market operations.

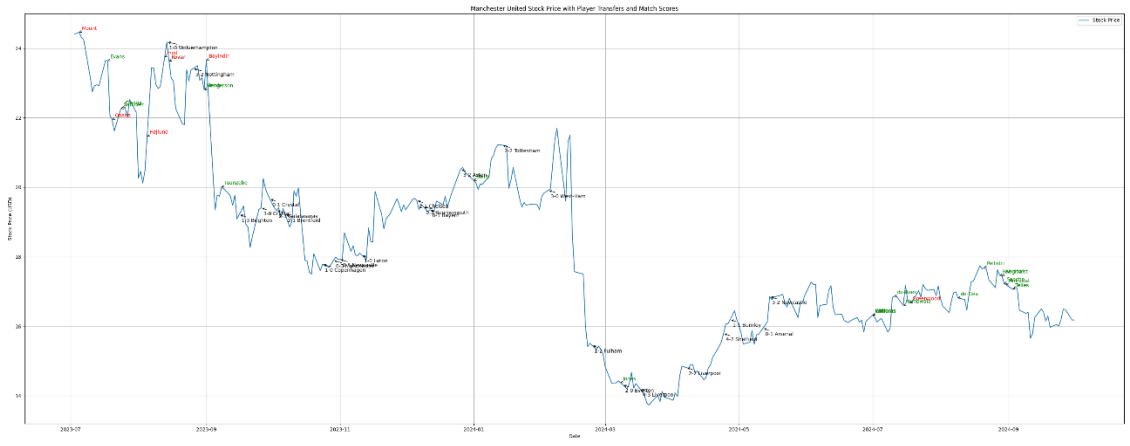



Figure 3. Match individual game and transfers with the stock price for Man Utd 23/24 season, for a more

intuitive view.

### C. Machine Learning Model (Optional Future Work):

Use the calculated gaps along with player attributes, and transfer details as the training dataset. Then, constantly collect future transfer rumors from relatively reliable soccer transfer journalists (such as **Fabrizio Romano**), and predict how they will impact the stock price if they come true. Additionally, rank other relevant news (e.g., player private life, speeches, investment decisions) to predict their impact on the stock price.

## 2. Cost Benefit Analysis (Future Work):

### A. Outcomes:

After every season, we will collect data from financial reports regarding investments in player transfers and the associated outcomes. Instead of evaluating individual games, we will analyze aggregate effects such as:

- **Trophies Won:** Assess the impact of winning trophies on the club's prestige and its ability to attract players and investors.
- **Ranking Improvements:** Evaluate improvements in league rankings and their effect on the club's attractiveness to potential new players and investors.

### B. Appreciation of the Team Players:

We will also evaluate whether the transfer fees paid were justified by comparing the market values of players before and after the season. Specifically, we will:

- **Market Value Changes:** Examine how the total market value of the team’s players

has changed during the past season.

- **Cost Justification:** Determine whether the wages and transfer fees paid for players are justified by:
    - Player value appreciation
    - Club value appreciation
    - Revenue from games and jersey sales
- **Market Value Trends:** Assess whether the market values of players generally increase or decrease after joining the team.
- **Investment Attractiveness:** Determine how changes in player market values affect the club's attractiveness to new players and investors.

**Note:** We also need to Adjusting for Free Float. For example, if the free float is 50% and the stock price increases by 10% due to a player transfer, the impact on the market needs to be justified considering the limited number of shares available for trading. We will evaluate how player transfers affect both the previous and the current club by analyzing changes in their stock prices. Specifically, for public listed clubs with lower free floats, like Ajax, with 25% of shares freely tradable respectively, a stock price change indicates a potentially more significant market reaction, necessitating careful adjustment in our analysis.

**C. Supplement Analysis Method:**

Multi-linear Regression Analysis will be performed to identify the long-term impacts of transfer spending on financial performance, using metrics like revenue (including jersey sales, game tickets, and endorsements) and profit as dependent variables. Time Series Analysis will be employed to examine trends and causality between transfer activities and

financial metrics, utilizing techniques such as Vector Autoregression (VAR) and Granger causality tests. Lastly, in-depth case studies of high-profile transfers will be conducted to illustrate the broader economic impacts of player transfers, with supplementary analysis incorporating membership-based and privately owned clubs to provide comparative insights as data permits. This comprehensive approach will facilitate a thorough evaluation of the financial and strategic implications of player transfers.

## V. Results

Here is the change in Market Value we calculated for each player transfer dates. And we decided to aggregate the impact of same day player transfers on the club's value **(See Appendix Table 1-6).**

From the results we have obtained so far, we notice the need to add one more column: the sum of players' market value compared to the sum of transfer fees.

We found that, each transfer date affects the club's market value by nearly **-20% to 8%**, indicating that regardless of whether players join or leave, there is generally a negative effect on the club's market value. If we take an average of those results for different clubs, we found that their average ΔMarket Value% lies within **[-2.5%, 1%].** When comparing the CAR results with the percentage change in market value, it becomes evident that the number of shares outstanding significantly influences the overall market reaction. The CAR measures only stock price changes, while the percentage change in market value accounts for both stock price and the number of shares outstanding, thus providing a more comprehensive view of the financial impact.

In contrast, the percentage change in excess return is more diversified. This diversification accounts for the effects of transfer fees and wages and can also be influenced

by the fact that publicly traded clubs are based in different countries and listed on various stock exchanges. These factors contribute to varying financial structures and investor perceptions, leading to a broader range of impact on excess returns.

Here is the result of the regression on ΔExcess Return%:

| Source | SS | df | MS | Number of obs | = | 50 |
|---|---|---|---|---|---|---|
| | | | | F(2, 47) | = | 0.31 |
| Model | 33.7243075 | 2 | 16.8621538 | Prob > F | = | 0.7365 |
| Residual | 2574.35858 | 47 | 54.7735867 | R-squared | = | 0.0129 |
| | | | | Adj R-squared | = | -0.0291 |
| Total | 2608.08288 | 49 | 53.2261813 | Root MSE | = | 7.4009 |

| ΔExcessRet~n | Coefficient | Std. err. | t | P>\|t\| | [95% conf. | interval] |
|---|---|---|---|---|---|---|
| man_utd | -1.625498 | 2.663864 | -0.61 | 0.545 | -6.984502 | 3.733506 |
| juventus | .1105342 | 2.693758 | 0.04 | 0.967 | -5.308607 | 5.529675 |
| _cons | .6660769 | 2.052645 | 0.32 | 0.747 | -3.463313 | 4.795467 |

We observe that for Dortmund (the base category), the estimated average ΔExcess Return% is 0.6661. The coefficients for Manchester United and Juventus are -1.6255 and 0.1105, respectively, indicating the differential impact on excess returns compared to Dortmund. This results in an estimated average ΔExcess Return% of -0.9594 for Manchester United and 0.7766 for Juventus.

The result of the coefficients aligns with the average ΔMarket Value% and ΔExcess Return% we observed: Juventus gains more from these transfer trades in the 23/24 season (+1.043%, +1.047%) than Dortmund (-1.073%, -0.016%) and Manchester United (-2.552%, -2.693%). Furthermore, these results are consistent with our comparison of (total transfer fee + wage) to player value, with Manchester United spent way more Transfer Fee than the Player Values they gained from the trades, indicating that they had a bad transfer strategy and outcome for the 23/24 season. In conclusion, if a player's value is generally higher than the combined transfer fee and wage, we would expect the club’s market value and excess return

to increase.

Further analysis and a larger dataset may be necessary to determine if these observed differences are robust. The lack of significance highlights the complexity and variability in how player transfers impact club market values across different contexts.

Notice that there are rooms for improvement in this method.

1. **Measure a More Accurate Date of Player Transfers:**

For each player, there are often many rumors and reliable journalists who release the transfer announcement earlier than the official date. To improve accuracy, we can select a relatively reliable soccer transfer journalist (such as Fabrizio Romano) and determine the earliest date he released the transfer news for these players. This approach allows us to segregate individual player's impact on the stock market more precisely.

2. **Reduce the Interaction Effects of Each Player Transfer's Time Window:**

There may be overlaps in the transfer windows for different players. For example, the time window for examining Player One might be between Monday and Friday, while for another player, it might be between Tuesday and the following Monday. This overlap can make it challenging to segregate each player's impact accurately. To address this issue, we can narrow the time window to (-4 and +4 days). This adjustment should provide a more accurate measure of the club's market value reaction to the transfer by potentially reducing the overlapping in our examining time windows.

Following the shrinking of the time window to (-4 and +4 days), we noticed that both ΔMarket Value% and ΔExcess Return% become smaller relative to 0. Specifically, they are now within the range of **[-1%, +1%],** compared to the previous 5-day time window of **[-2%, +2%].** This indicates a tighter range of impact, suggesting that shorter windows may capture

less interaction effects from other transfer dates.

3. **Justify the Wage for Loan Players:**

Another area for improvement involves the wage of loan players, where the new club may not be responsible for the full wage of the player. Typically, the new club might cover 50% or more of the loan player's wage.

4. **Add More Features to the Regression Model:**

To enhance the analysis and capture more detailed effects, additional features such as interaction effects, trade values, and time variables were included in the regression model:

$$\Delta\text{Excess Return\%} = \beta_0 + \beta_1 * \text{Man\_Utd} + \beta_2 * \text{Juventus} + \beta_3 * (\text{Man\_Utd} * \text{Trade Value}) + \beta_4 * (\text{Juventus} * \text{Trade Value}) + \alpha * \text{Dates} + \mu$$

## VI. Conclusion

This study investigates the economic effects of player transfers on the financial performance and market value of publicly traded soccer clubs. By focusing on changes in market value and excess returns, we provide insights into how significant player transfers impact stock prices and overall financial health. Our analysis indicates that player transfers generally result in a negative effect on a club's market value, each trade date from -20% to 8%. And on average, each trade date affects the club's market value and excess return from -2% to 2%. Comparing the CAR results with the percentage change in market value highlights the substantial influence of the number of shares outstanding on the overall market reaction.

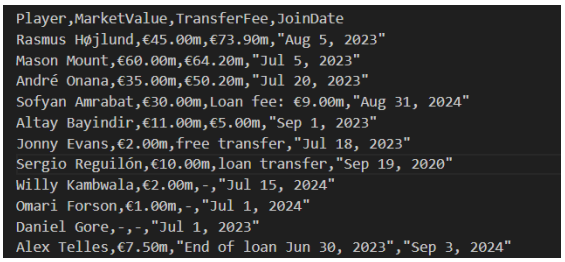
In contrast, the percentage change in excess returns shows more variability, reflecting the additional influences of transfer fees and wages. These variations can also be attributed to the different financial structures and investor perceptions across clubs listed on various stock

exchanges and based in different countries.

Future work can improve the accuracy and depth of this research by refining transfer dates using reliable journalist reports, reducing overlap in transfer time windows, and better accounting for the wages of loan players. Adding more features to the current regression model can also give us more accurate results reflecting factors such as time and the actual trade values. Additionally, developing and employing a machine learning model can enhance predictions of future market reactions to transfer rumors, providing a more comprehensive understanding of these financial dynamics.

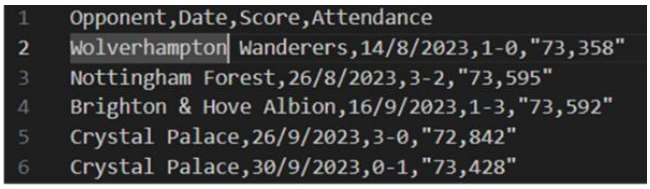
## VII. Appendix

Figure 1. player transfer data scraped from TransferMarkt using Python



```
Player,MarketValue,TransferFee,JoinDate
Rasmus Højlund,€45.00m,€73.90m,"Aug 5, 2023"
Mason Mount,€60.00m,€64.20m,"Jul 5, 2023"
André Onana,€35.00m,€50.20m,"Jul 20, 2023"
Sofyan Amrabat,€30.00m,Loan fee: €9.00m,"Aug 31, 2024"
Altay Bayindir,€11.00m,€5.00m,"Sep 1, 2023"
Jonny Evans,€2.00m,free transfer,"Jul 18, 2023"
Sergio Reguilón,€10.00m,loan transfer,"Sep 19, 2020"
Willy Kambwala,€2.00m,-,"Jul 15, 2024"
Omari Forson,€1.00m,-,"Jul 1, 2024"
Daniel Gore,-,-,"Jul 1, 2023"
Alex Telles,€7.50m,"End of loan Jun 30, 2023","Sep 3, 2024"
```

Figure 2. Part of the game info of Man Utd 23/24 season



```
1  Opponent,Date,Score,Attendance
2  Wolverhampton Wanderers,14/8/2023,1-0,"73,358"
3  Nottingham Forest,26/8/2023,3-2,"73,595"
4  Brighton & Hove Albion,16/9/2023,1-3,"73,592"
5  Crystal Palace,26/9/2023,3-0,"72,842"
6  Crystal Palace,30/9/2023,0-1,"73,428"
```

Figure 4. The market value calculated at the time of each transfer

```
Event Dates Stock Data for Jadon Sancho:
Ticker           MANU
2024-08-26  17.110001
2024-08-27  17.629999
2024-08-28  17.459999
2024-08-29  17.459999
2024-08-30  17.230000
2024-09-03  17.059999
2024-09-04  17.139999
Quantities for Jadon Sancho: [1.675e+08 1.675e+08 1.675e+08 1.675e+08 1.675e+08 1.675e+08 1.675e+08]
Market values at the time of Jadon Sancho's transfer: [2.86592510e+09 2.95302486e+09 2.92454985e+09 2.92454985e+09
 2.88602492e+09 2.85754991e+09 2.87094990e+09]
```

Figure 5. Time window for a player who transferred on 2023-6-30 (omitting weekends and holidays)

```
Abnormal returns indices: Index(['2023-06-26', '2023-06-27', '2023-06-28', '2023-06-29', '2023-06-30', '2023-07-03',
       '2023-07-05'],
      dtype='object')
Actual returns: [-0.01106195  0.07382549  0.0466667  -0.02189495 -0.00773303  0.00123055
  0.00204831]
Predicted returns: [-0.00021588  0.00689838  0.00162832  0.00378259  0.00726123  0.00230872
  0.00090798]
```

Figure 6. Records of Man Utd

```
Year, Rank, W/D/L, Trophy
16/17, 6, 18/15/5,
17/18, 2, 25/6/7,
18/19, 6, 19/9/10,
19/20, 3, 18/12/8,
20/21, 2, 21/11/6,
21/22, 6, 16/10/12,
22/23, 3, 23/6/9,
23/24, 8, 18/6/14,
```

Figure 7. The CAR results for each transfer dates of Man Utd 23/24 season (Only as a Reference)

```
Date,Player,CAR
2023-06-30,Jack Butland,0.06050978108922277
2023-06-30,Wout Weghorst,0.06050978108922277
2023-06-30,Marcel Sabitzer,0.06050978108922277
2023-06-30,Alex Telles,0.06050978108922277
2023-06-30,Matej Kovar,0.06050978108922277
2023-07-01,Phil Jones,0.06065465484319561
2023-07-01,Axel Tuanzebe,0.06065465484319561
2023-07-01,David de Gea,0.06065465484319561
2023-07-01,Daniel Gore,0.06065465484319561
2023-07-01,Zidane Iqbal,0.06065465484319561
2023-07-05,Mason Mount,-0.06383706796279023
2023-07-18,Jonny Evans,-0.055363349808891515
```

Figure 8. The change in Borussia-Dortmund ’s Market Value and costs for each transfer date in 23/24 season

```
Date,Player,Value Change,old mv,TransferFeeUSD,WageUSD,Action
2023-06-30,Felix Passlack,1104025.2685546875,474720021.0571289,0.0,1255352.8,Left
2023-06-30,Raphaël Guerreiro,1104025.2685546875,474720021.0571289,0.0,5351767.2,Left
2023-06-30,Ramy Bensebaini,1104025.2685546875,474720021.0571289,0.0,6408906.399999999,Join
2023-06-30,Ansgar Knauff,1104025.2685546875,474720021.0571289,5457999.999999999,627676.4,Left
2023-06-30,Jude Bellingham,1104025.2685546875,474720021.0571289,123350799.99999999,3237488.8,Left
2023-07-02,Felix Nmecha,4415995.788574219,475823993.6828613,32747999.999999996,5021411.2,Join
2023-07-13,Ian Maatsen,-15455985.260009766,462576006.3171387,2581980.0,751321.9999999999,Join
2023-07-19,Nico Schulz,5519968.414306641,475823993.6828613,0.0,6592185.600000001,Left
2023-07-23,Marcel Sabitzer,14352012.634277344,476928018.951416,21152700.0,8222697.600000001,Join
2023-08-10,Soumaïla Coulibaly,13800000.0,488520021.0571289,0.0,922812.8,Left
2023-08-30,Niclas Füllkrug,-26495974.731445312,476376006.3171387,18845625.0,6482112.0,Join
2023-09-05,Thorgan Hazard,-48576006.31713867,462576006.3171387,4291200.0,5228288.0,Left
2023-09-10,Anthony Modeste,-25392002.10571289,449328018.951416,0.0,5574348.0,Left
2024-01-10,Jadon Sancho,6072007.369995117,406272007.3699951,0.0,12144079.0,Join
2024-01-30,Giovanni Reyna,3864009.475708008,417864009.475708,1084400.0,3300960.0,Left
2024-02-06,Thomas Meunier,-16560010.528564451,400200000.0,0.0,7538388.0,Left
2024-06-30,Mahmoud Dahoud,18768008.42285156,401856011.5814209,0.0,4275362.0,Left
```

Table 1. Evaluate the Excess Return[6] of each trade of Man Utd 23/24 (-5 and +5 window).

| Date | Player | Value Change | WageUSD | TransferFeeUSD | PlayerValue | Excess Return | old mv | ΔMarket Value% | ΔExcess Return% |
|---|---|---|---|---|---|---|---|---|---|
| 2023-06-30 | Jack Butland, Wout Weghorst, Marcel Sabitzer, Alex Telles | 344,140,788 | 2,439,552 | 0 | -33,035,600 | 346,580,340 | 3,989,425,851 | 8.626 | 8.687 |
| 2023-07-01 | Phil Jones, Axel Tuanzebe, David de Gea, Zidane Iqbal | 319,675,851 | 33,167,742 | 1,091,600 | -25,412,000 | 353,935,193 | 3,964,960,913 | 8.063 | 8.927 |
| 2023-07-05 | Mason Mount | -195,719,813 | -16,517,800 | -69,701,940 | 76,236,000 | -281,939,553 | 3,780,658,050 | -5.177 | -7.457 |
| 2023-07-18 | Jonny Evans | -216,922,988 | -4,068,168 | 0 | 2,607,800 | -220,991,156 | 3,526,222,137 | -6.152 | -6.267 |
| 2023-07-20 | André Onana | -218,554,025 | -8,032,128 | -55,897,700 | 45,052,000 | -282,483,853 | 3,638,760,913 | -6.006 | -7.763 |
| 2023-07-23 | Alex Telles | -182,671,826 | 6,222,304 | 5,121,180 | -9,642,000 | -171,328,342 | 3,673,012,075 | -4.973 | -4.665 |
| 2023-07-25 | Anthony Elanga | 92,966,950 | 335,244 | 19,342,750 | -23,209,200 | 112,644,944 | 3,673,012,075 | 2.531 | 3.067 |
| 2023-08-05 | Rasmus Højlund | 110,908,050 | -5,634,616 | -81,482,140 | 57,366,000 | 23,791,294 | 3,725,204,025 | 2.977 | 0.639 |
| 2023-08-11 | Fred | -50,561,224 | 7,921,056 | 10,672,118 | -25,388,000 | -31,968,050 | 3,772,502,863 | -1.34 | -0.847 |
| 2023-08-31 | Dean Henderson, Teden Mengi | -676,864,938 | 6,894,186 | 18,977,000 | -25,350,000 | -650,993,752 | 3,155,985,062 | -21.447 | -20.627 |
| 2023-09-01 | Sofyan Amrabat, Altay Bayindir, Sergio Reguilón | -608,362,925 | -11,650,527 | -15,103,200 | 64,193,700 | -635,116,653 | 3,224,487,075 | -18.867 | -19.697 |
| 2023-09-04 | Eric Bailly | -512,133,900 | 5,254,080 | 0 | -6,315,000 | -506,879,820 | 3,263,631,037 | -15.692 | -15.531 |
| 2024-01-01 | Willy Kambwala, Omari Forson, Eric Bailly, Donny van de Beek | -77,999,926 | 2,502,209 | 3,311,400 | -1,273,000 | -72,186,317 | 3,264,625,025 | -2.389 | -2.211 |
| 2024-01-04 | Sergio Reguilón | 112,125,087 | 5,143,819 | 0 | -12,682,000 | 117,268,906 | 3,383,249,950 | 3.314 | 3.466 |
| 2024-05-31 | Brandon Williams, Brandon Williams | 198,125,128 | 8,610,212 | 0 | -17,831,800 | 206,735,340 | 2,881,000,128 | 6.877 | 7.176 |
| 2024-06-30 | Hannibal | 18,424,783 | 328,874 | 0 | -15,178,800 | 18,753,657 | 2,718,524,923 | 0.678 | 0.69 |
| 2024-07-18 | Mason Greenwood | 40,199,962 | 3,365,700 | 0 | 0 | 43,565,662 | 2,820,700,026 | 1.425 | 1.544 |
| 2024-08-21 | Facundo Pellistri | -31,824,770 | 1,361,464 | 0 | -13,091,000 | -30,463,306 | 2,865,925,102 | -1.11 | -1.063 |
| 2024-08-30 | Jadon Sancho | 5,024,796 | 17,067,700 | 0 | -32,822,500 | 22,092,496 | 2,870,949,898 | 0.175 | 0.77 |
| **Average:** | | -80,527,628 | 2,879,521 | -8,614,154 | 222,347 | -86,262,262 | | **-2.552** | **-2.693** |
| **Total:** | | | 54,710,903 | -163,668,932 | 4,224,600 | | | | |

Table 2. Evaluate the Excess Return of each trade of Man Utd 23/24 (-4 and +4 window).

| Date | Player | Value Change | WageUSD | TransferFeeUSD | PlayerValue | Excess Return | old mv | ΔMarket Value% | ΔExcess Return% |
|---|---|---|---|---|---|---|---|---|---|
| 2023-06-30 | Butland, Weghorst, Sabitzer, Telles | 335,985,913 | 2,439,552 | 0 | -33,035,600 | 338,425,465 | 3,981,270,975 | 8.439 | 8.5 |
| 2023-07-01 | Jones, Tuanzebe, Gea, Iqbal | 75,025,851 | 33,167,742 | 1,091,600 | -25,412,000 | 109,285,193 | 3,989,425,851 | 1.881 | 2.739 |
| 2023-07-05 | Mount | -24,464,938 | -16,517,800 | -69,701,940 | 76,236,000 | -110,684,678 | 3,956,806,037 | -0.618 | -2.797 |
| 2023-07-18 | Evans | -212,029,876 | -4,068,168 | 0 | 2,607,800 | -216,098,044 | 3,526,222,137 | -6.013 | -6.128 |
| 2023-07-20 | Onana | -226,708,900 | -8,032,128 | -55,897,700 | 45,052,000 | -290,638,728 | 3,630,606,037 | -6.244 | -8.005 |
| 2023-07-23 | Telles | -9,785,913 | 6,222,304 | 5,121,180 | -9,642,000 | 1,557,571 | 3,589,831,037 | -0.273 | 0.043 |
| 2023-07-25 | Elanga | 146,789,938 | 335,244 | 19,342,750 | -23,209,200 | 166,467,932 | 3,673,012,075 | 3.996 | 4.532 |
| 2023-08-05 | Højlund | 438,739,087 | -5,634,616 | -81,482,140 | 57,366,000 | 351,622,331 | 3,743,145,124 | 11.721 | 9.394 |
| 2023-08-11 | Fred | 30,988,776 | 7,921,056 | 10,672,118 | -25,388,000 | 49,581,950 | 3,854,052,863 | 0.804 | 1.286 |
| 2023-08-31 | Henderson, Mengi | 26,095,975 | 6,894,186 | 18,977,000 | -25,350,000 | 51,967,161 | 3,858,945,975 | 0.676 | 1.347 |
| 2023-09-01 | Amrabat, Bayindir, Reguilón | -676,864,938 | -11,650,527 | -15,103,200 | 64,193,700 | -703,618,665 | 3,155,985,062 | -21.447 | -22.295 |
| 2023-09-04 | Bailly | -456,679,876 | 5,254,080 | 0 | -6,315,000 | -451,425,796 | 3,263,631,037 | -13.993 | -13.832 |
| 2024-01-01 | Kambwala, Forson, Bailly, Beek | -55,250,025 | 2,502,209 | 3,311,400 | -1,273,000 | -49,436,416 | 3,264,625,025 | -1.692 | -1.514 |
| 2024-01-04 | Reguilón | 27,625,012 | 5,143,819 | 0 | -12,682,000 | 32,768,832 | 3,298,749,876 | 0.837 | 0.993 |
| 2024-05-31 | Williams, Williams | 198,125,128 | 8,610,212 | 0 | -17,831,800 | 206,735,340 | 2,881,000,128 | 6.877 | 7.176 |
| 2024-06-30 | Hannibal | -8,374,872 | 328,874 | 0 | -15,178,800 | -8,045,998 | 2,700,100,141 | -0.31 | -0.298 |
| 2024-07-18 | Greenwood | 70,350,013 | 3,365,700 | 0 | 0 | 73,715,713 | 2,850,850,077 | 2.468 | 2.586 |
| 2024-08-21 | Pellistri | -66,999,936 | 1,361,464 | 0 | -13,091,000 | -65,638,472 | 2,904,450,026 | -2.307 | -2.26 |
| 2024-08-30 | Sancho | -8,375,192 | 17,067,700 | 0 | -32,822,500 | 8,692,508 | 2,857,549,911 | -0.293 | 0.304 |
| **Average:** | | -20,832,041 | 2,879,521 | -8,614,154 | 222,347 | -26,566,674 | | **-0.815** | **-0.959** |
| **Total:** | | | 54,710,903 | -163,668,932 | 4,224,600 | | | | |

Table 3. The Excess Return for each player transfer dates of Dortmund 23/24 season (-5 and +5 window).

| Date | Player | Value Change | WageUSD | TransferFeeUSD | PlayerValue | Excess Return | old mv | ΔMarket Value% | ΔExcess Return% |
|---|---|---|---|---|---|---|---|---|---|
| 2023-06-30 | Passlack, Guerreiro,Bensebaini, Knauff, Bellingham | 1,104,025 | 4,063,379 | 128,808,800 | -164,542,700 | 133,976,204 | 474,720,021 | 0.233 | 28.222 |
| 2023-07-02 | Felix Nmecha | 4,415,996 | -5,021,411 | -32,748,000 | 19,059,000 | -33,353,415 | 475,823,994 | 0.928 | -7.01 |
| 2023-07-13 | Ian Maatsen | -15,455,985 | -751,322 | -2,581,980 | 26,270,000 | -18,789,287 | 462,576,006 | -3.341 | -4.062 |
| 2023-07-19 | Nico Schulz | 5,519,968 | 6,592,186 | 0 | -1,293,600 | 12,112,154 | 475,823,994 | 1.16 | 2.546 |
| 2023-07-23 | Marcel Sabitzer | 14,352,013 | -8,222,698 | -21,152,700 | 25,712,000 | -15,023,385 | 476,928,019 | 3.009 | -3.15 |
| 2023-08-10 | Soumaïla Coulibaly | 13,800,000 | 922,813 | 0 | -1,267,600 | 14,722,813 | 488,520,021 | 2.825 | 3.014 |
| 2023-08-30 | Niclas Füllkrug | -26,495,975 | -6,482,112 | -18,845,625 | 16,536,000 | -51,823,712 | 476,376,006 | -5.562 | -10.879 |
| 2023-09-05 | Thorgan Hazard | -48,576,006 | 5,228,288 | 4,291,200 | -8,797,600 | -39,056,518 | 462,576,006 | -10.501 | -8.443 |
| 2023-09-10 | Anthony Modeste | -25,392,002 | 5,574,348 | 0 | 0 | -19,817,654 | 449,328,019 | -5.651 | -4.411 |
| 2024-01-10 | Jadon Sancho | 6,072,007 | -12,144,079 | 0 | 31,857,500 | -6,072,072 | 406,272,007 | 1.495 | -1.495 |
| 2024-01-30 | Giovanni Reyna | 3,864,009 | 3,300,960 | 1,084,400 | -25,392,000 | 8,249,369 | 417,864,009 | 0.925 | 1.974 |
| 2024-02-06 | Thomas Meunier | -16,560,011 | 7,538,388 | 0 | -3,151,500 | -9,021,623 | 400,200,000 | -4.138 | -2.254 |
| 2024-06-30 | Mahmoud Dahoud | 18,768,008 | 4,275,362 | 0 | -15,178,800 | 23,043,370 | 401,856,012 | 4.67 | 5.734 |
| **Average:** | | -4,967,996 | 374,931 | 4,527,392 | -7,706,869 | -65,674 | | **-1.073** | **-0.016** |
| **Total:** | | | 4,874,102 | 58,856,095 | -100,189,300 | | | | |

[6] Here in our results, we justify the signs of the wage and transfer fee. For example, if I player joined, we adjust the signs to negative, indicating there's cost for the player transfer. The opposite way for Player Value, if a player left, we adjust the sign to negative.

Table 4. The Excess Return for each player transfer dates of Dortmund 23/24 season (-4 and +4 window).

| Date | Player | Value Change | WageUSD | TransferFeeUSD | PlayerValue | Excess Return | old mv | ΔMarket Value% | ΔExcess Return% |
|---|---|---|---|---|---|---|---|---|---|
| 2023-06-30 | Passlack, Guerreiro, Bensebaini, Knauff, Bellingham | 5,520,021 | 4,063,379 | 128,808,800 | -164,542,700 | 138,392,200 | 479,136,017 | 1.152 | 28.884 |
| 2023-07-02 | Nmecha | -11,592,002 | -5,021,411 | -32,748,000 | 19,059,000 | -49,361,413 | 469,752,013 | -2.468 | -10.508 |
| 2023-07-13 | Maatsen | -16,560,011 | -751,322 | -2,581,980 | 26,270,000 | -19,893,313 | 461,471,981 | -3.589 | -4.311 |
| 2023-07-19 | Schulz | 8,280,032 | 6,592,186 | 0 | -1,293,600 | 14,872,217 | 469,752,013 | 1.763 | 3.166 |
| 2023-07-23 | Sabitzer | 9,936,017 | -8,222,698 | -21,152,700 | 25,712,000 | -19,439,381 | 472,512,023 | 2.103 | -4.114 |
| 2023-08-10 | Coulibaly | 14,903,973 | 922,813 | 0 | -1,267,600 | 15,826,785 | 489,623,994 | 3.044 | 3.232 |
| 2023-08-30 | Füllkrug | 13,248,040 | -6,482,112 | -18,845,625 | 16,536,000 | -12,079,697 | 506,736,017 | 2.614 | -2.384 |
| 2023-09-05 | Hazard | -44,160,011 | 5,228,288 | 4,291,200 | -8,797,600 | -34,640,523 | 462,576,006 | -9.547 | -7.489 |
| 2023-09-10 | Modeste | -2,207,998 | 5,574,348 | 0 | 0 | 3,366,350 | 461,471,981 | -0.478 | 0.729 |
| 2024-01-10 | Sancho | -1,655,985 | -12,144,079 | 0 | 31,857,500 | -13,800,064 | 401,856,012 | -0.412 | -3.434 |
| 2024-01-30 | Reyna | 2,207,998 | 3,300,960 | 1,084,400 | -25,392,000 | 6,593,358 | 417,864,009 | 0.528 | 1.578 |
| 2024-02-06 | Meunier | -17,664,009 | 7,538,388 | 0 | -3,151,500 | -10,125,621 | 400,200,000 | -4.414 | -2.53 |
| 2024-06-30 | Dahoud | 19,320,021 | 4,275,362 | 0 | -15,178,800 | 23,595,383 | 404,064,009 | 4.781 | 5.84 |
| **Average:** | | -1,571,070 | 374,931 | 4,527,392 | -7,706,869 | 3,331,252 | | **-0.379** | **0.666** |
| **Total:** | | | 4,874,102 | 58,856,095 | -100,189,300 | | | | |

Table 5. The Excess Return for each player transfer dates of Juventus 23/24 season (-5 and +5 window).

| Date | Player | Value Change | WageUSD | TransferFeeUSD | PlayerValue | Excess Return | old mv | ΔMarket Value% | ΔExcess Return% |
|---|---|---|---|---|---|---|---|---|---|
| 2023-06-30 | Milik, Frabotta, Pjaca, Winter, Pellegrini, Drăguşin, Cambiaso, Melo, Rovella, McKennie, Zakar | 53,066,949 | -10,347,766 | -12,007,600 | 115,751,660 | 30,711,583 | 912,246,973 | 5.817 | 3.367 |
| 2023-07-01 | Locatelli, Drăguşin, Kean, Milik, Kulusevski | 25,775,400 | -2,968,122 | -37,114,400 | -2,541,200 | -14,307,122 | 884,955,424 | 2.913 | -1.617 |
| 2023-07-04 | María | 42,958,959 | 9,153,360 | 0 | -10,170,400 | 52,112,319 | 902,138,983 | 4.762 | 5.777 |
| 2023-07-21 | Melo | -18,699,830 | 5,816,054 | 2,226,600 | -19,284,000 | -10,657,176 | 845,534,189 | -2.212 | -1.26 |
| 2023-07-23 | Ihattaren | -2,526,998 | 1,028,480 | 0 | 0 | -1,498,518 | 861,201,598 | -0.293 | -0.174 |
| 2023-07-30 | Gori | -16,172,833 | 680,838 | 0 | 0 | -15,491,995 | 834,920,775 | -1.937 | -1.856 |
| 2023-08-10 | Winter | 36,388,814 | 938,024 | 0 | -5,070,400 | 37,326,838 | 862,717,809 | 4.218 | 4.327 |
| 2023-08-13 | Zakaria | 35,883,390 | 2,508,334 | 21,914,000 | -22,849,200 | 60,305,724 | 843,512,615 | 4.254 | 7.149 |
| 2023-08-14 | a | 17,183,620 | 380,520 | 0 | 0 | 17,564,140 | 843,512,615 | 2.037 | 2.082 |
| 2023-08-15 | Rovella | 9,602,627 | 3,962,712 | 0 | -22,861,800 | 13,565,339 | 843,512,615 | 1.138 | 1.608 |
| 2023-08-16 | Pellegrini | 24,764,613 | 1,324,024 | 0 | -8,911,700 | 26,088,637 | 866,761,017 | 2.857 | 3.01 |
| 2023-08-26 | Frabotta | 52,056,162 | 251,620 | 0 | -1,761,340 | 52,307,782 | 918,817,179 | 5.666 | 5.693 |
| 2023-08-27 | Soulé | 49,529,165 | 754,860 | 0 | -5,032,400 | 50,284,025 | 917,806,392 | 5.396 | 5.479 |
| 2023-08-28 | Jorge | 45,991,380 | 1,638,780 | 0 | -3,781,800 | 47,630,160 | 917,806,392 | 5.011 | 5.19 |
| 2023-08-31 | Bonucci, Pjaca | -49,023,801 | 14,360,775 | 0 | -4,056,000 | -34,663,026 | 855,642,179 | -5.729 | -4.051 |
| 2024-01-05 | Huijsen | -13,140,351 | 2,036,000 | 0 | -3,181,250 | -11,104,351 | 638,825,629 | -2.057 | -1.738 |
| 2024-01-10 | Frabotta, Frabotta, Frabotta, Frabotta | -9,602,627 | 0 | 0 | 0 | -9,602,627 | 631,750,000 | -1.52 | -1.52 |
| 2024-01-21 | Djaló | -65,196,634 | -502,062 | -5,561,550 | 19,056,000 | -71,260,246 | 564,531,792 | -11.549 | -12.623 |
| **Average:** | | 12,157,667 | 1,723,135 | -1,696,831 | 1,405,898 | 12,183,971 | | 1.043 | 1.047 |
| **Total:** | | | 31,016,431 | -30,542,950 | 25,306,170 | | | | |

Table 6. The Excess Return for each player transfer dates of Juventus 23/24 season (-4 and +4 window).

| Date | Player | Value Change | WageUSD | TransferFeeUSD | PlayerValue | Excess Return | old mv | ΔMarket Value% | ΔExcess Return% |
|---|---|---|---|---|---|---|---|---|---|
| 2023-06-30 | Milik, Frabotta, Pjaca, Winter, Pellegrini, Drăguşin, Cambiaso, Melo, Rovella, McKe | 56,604,794 | -10,347,766 | -12,007,600 | 115,751,660 | 34,249,428 | 915,784,818 | 6.181 | 3.74 |
| 2023-07-01 | Locatelli, Drăguşin, Kean, Milik, Kulusevski | 80,358,560 | -2,968,122 | -37,114,400 | -2,541,200 | 40,276,038 | 912,246,973 | 8.809 | 4.415 |
| 2023-07-04 | María | 35,377,966 | 9,153,360 | 0 | -10,170,400 | 44,531,326 | 902,138,983 | 3.922 | 4.936 |
| 2023-07-21 | Melo | -13,140,412 | 5,816,054 | 2,226,600 | -19,284,000 | -5,097,757 | 851,093,608 | -1.544 | -0.599 |
| 2023-07-23 | Ihattaren | -5,053,995 | 1,028,480 | 0 | 0 | -4,025,515 | 854,631,392 | -0.591 | -0.471 |
| 2023-07-30 | Gori | -14,656,562 | 680,838 | 0 | 0 | -13,975,724 | 830,877,627 | -1.764 | -1.682 |
| 2023-08-10 | Winter | 36,388,814 | 938,024 | 0 | -5,070,400 | 37,326,838 | 862,717,809 | 4.218 | 4.327 |
| 2023-08-13 | Zakaria | 21,732,191 | 2,508,334 | 21,914,000 | -22,849,200 | 46,154,526 | 848,061,187 | 2.563 | 5.442 |
| 2023-08-14 | Barrenechea | 9,602,627 | 380,520 | 0 | 0 | 9,983,147 | 843,512,615 | 1.138 | 1.184 |
| 2023-08-15 | Rovella | 1,516,211 | 3,962,712 | 0 | -22,861,800 | 5,478,923 | 843,512,615 | 0.18 | 0.65 |
| 2023-08-16 | Pellegrini | -19,205,194 | 1,324,024 | 0 | -8,911,700 | -17,881,170 | 843,512,615 | -2.277 | -2.12 |
| 2023-08-26 | Frabotta | 51,045,375 | 251,620 | 0 | -1,761,340 | 51,296,995 | 919,322,603 | 5.552 | 5.58 |
| 2023-08-27 | Soulé | 47,002,167 | 754,860 | 0 | -5,032,400 | 47,757,027 | 918,817,179 | 5.116 | 5.198 |
| 2023-08-28 | Jorge | 36,894,177 | 1,638,780 | 0 | -3,781,800 | 38,532,957 | 917,806,392 | 4.02 | 4.198 |
| 2023-08-31 | Bonucci, Pjaca | -33,356,392 | 14,360,775 | 0 | -4,056,000 | -18,995,617 | 871,309,588 | -3.828 | -2.18 |
| 2024-01-05 | Huijsen | -13,645,775 | 2,036,000 | 0 | -3,181,250 | -11,609,775 | 638,320,206 | -2.138 | -1.819 |
| 2024-01-10 | Frabotta, Frabotta, Frabotta, Frabotta | -10,108,051 | 0 | 0 | 0 | -10,108,051 | 633,771,574 | -1.595 | -1.595 |
| 2024-01-21 | Djaló | -78,210,645 | -502,062 | -5,561,550 | 19,056,000 | -84,274,257 | 553,539,355 | -14.129 | -15.225 |
| **average:** | | 10,508,103 | 1,723,135 | -1,696,831 | 1,405,898 | 10,534,408 | | **0.769** | **0.777** |
| **total:** | | | 31,016,431 | -30,542,950 | 25,306,170 | | | | |

## VIII. Reference

Karasaridis, Paul. "What Effect Do Rumors Have on Publicly Traded Sports Teams?." (2014). https://scholarsarchive.library.albany.edu/cgi/viewcontent.cgi?article=1021&context=honorscollege_business