TALLINN UNIVERSITY OF TECHNOLOGY
School of Business and Governance

Noel Arku

THE FINANCIAL DYNAMICS OF MANCHESTER UNITED PLC: EVALUATING THE IMPACT OF SPORTING SUCCESS ON STOCK PRICES AND INVESTOR SENTIMENT

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Supervisor: Pavlo Illiashenko, PhD

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The document length is 9464 words from the introduction to the end of the conclusion.

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ABSTRACT

Manchester United is one of the largest football clubs in the world in terms of size, brand recognition, and historical performance. Consequently, expectations for its on-pitch performance are high, which the club has not been able to meet during recent years. This research aims to discover whether the stock price of Manchester United PLC is affected by negative match outcomes, such as draws, losses, and relegation from qualification places. The research dataset included a total of 154 events, including eleven seasons from 2012/2013 to 2022/2023. Multiple regression was applied to examine the relationship between the gathered stock price and match day data. No evidence indicating the impact of draws and losses on stock returns was observed. The outcome of relegation from qualification places was found to be significant with 3-day stock returns, which is considered as a key finding in this research. Given the limitations this thesis encountered, further research should be incorporated which include external factors to provide a more comprehensive understanding of the relationship between match outcome and stock returns.

Keywords: Football, Manchester United, Stock price, Abnormal returns, Regression

INTRODUCTION

Manchester United stands out as one of the most iconic and globally recognized football clubs, making an impact not only in the sports arena but also in the economic landscape. This research holds considerable importance in the fields of finance, sports economics, and investor behavior, as it examines the unique connection between the on-field success of a premier football club and its subsequent effects on stock prices and investor sentiment. Understanding how on-field success influences stock prices and investor sentiment is crucial for investors navigating the unique dynamics of the sports industry.

Football, which is the most popular sport in the world, brings people around and has the power to unite them as a collective group. This specific sport has had a significant cultural and social effect in society through the passion that people have towards it. For many, it helps to forget the stress of the mundane life from work and school. For others, it might be a career that earns them income. Whether being a club supporter, hobbyist, a professional player or working around football, there is one thing in common, which is passion.

Nowadays everything is business, so is football. A sport that was once just a casual activity played in local communities, has become a global economic powerhouse and cultural phenomenon. It is evident that football is not only just a sport anymore, rather a giant industry that has a lot of money involved. In fact, by the end of the season 2021/2022, it was estimated that the European football market was worth 29.5 billion dollars, which had grown 7% from the previous season. (Deloitte, 2023) This indicates that the industry continues to expand, meaning, the impact of football only keeps getting stronger.

Research has previously been conducted on the impact of Manchester United's sporting performance on its stock price and investor sentiment. Most indicate that there is some correlation between these two variables. What makes this specific club an interesting choice is the fact that during recent years, it has been performing inconsistently and not living up to its high expectations that have been determined by its size, brand recognition, and historical success. A study by Narayan & Thangjam (2019) highlights the effect of the club's

inconsistency on the pitch and how its share price has not been stable due to that in recent years.

The main goal of a football club is to achieve success through winning matches and earning trophies. Conversely, relegation, draws, and losses run counter to this objective. Such outcomes not only weaken the club's competitive position but also carry substantial consequences for its financial health and public image. In the highly competitive environment of professional football, the result of each match has the potential to influence stakeholders' confidence, thus impacting the club's stock price.

Negative outcomes, such as draws, losses, and relegation have been found to have a negative impact on stock prices by various studies. One of the most significant, referenced by many other studies, is by Renneboog & Vanbrabant (2000), which was one of the first studies around this topic. Particularly, it found that negative match results, such as draws and losses, have a greater impact on stock prices than wins. As most studies indicate the same, further investigation on the effect of negative outcome is warranted.

For a football club, accumulating multiple draws and losses throughout the season can lead to relegation by the end of the season. The relegation can also manifest as relegation from a qualification place in the league table, qualification place serving as a gateway for the European tournaments, such as UEFA Champions League and UEFA Europa League. This event can be also classified as a form of relegation, which was also found to be having a negative impact on stock prices by the Renneboog & Vanbrabant (2000) study, and many other studies. Therefore, relegation is considered as a negative event, thus, similarly to draws and losses, warranting investigation.

The research aim of this thesis is to discover whether the stock price of Manchester United PLC is affected by negative match outcomes, relegation from qualification places, and other related variables. Therefore, the main research question is whether the rather negative events, draws, losses and relegation from a qualification place, affect the club’s stock returns.

The hypotheses are formulated to align with our research objective, which is to:

> H1: Draws and losses have a negative impact on the stock price of Manchester United.
>
> H2: The stock price of Manchester United PLC is influenced by relegation from qualification places in the Premier League table.

By engaging with the data and analyzing it carefully alongside existing studies, we aim to provide practical insights for investors, policymakers, and stakeholders in the sports industry. Ultimately, we want to better understand how sports performance affects stock markets, benefiting both academic research and real-world decision-making. Therefore, understanding the relationship between performance outcomes and stock market reactions is crucial for football clubs and their investors.

1. LITERATURE REVIEW

In this chapter, we delve into the literature framework surrounding the relationship between on-pitch performance and stock market reactions in the context of football clubs. By examining various studies and literature perspectives, we seek to understand how match outcomes and relatable variables, such as match dynamics, influence investor behavior. On top of that, we analyze the impact of factors beyond match results and dynamics, such as player transfers and rumors, managerial turnover, Covid-19, goal difference, and injuries. This exploration provides essential insights into the interconnectedness of sporting events, financial markets, and investor sentiment within the sports sector.

1.1. On-pitch performance and abnormal stock returns

Numerous studies have assessed the relationship between stock price fluctuations and on-pitch performance. It becomes evident that analyzing a football club's performance on the pitch is essential when seeking to comprehend the dynamics and reasoning of its abnormal returns. Regarding the effect of wins, draws and losses on publicly traded football clubs, one of the first studies conducted around this topic was by Renneboog & Vanbrabant (2000), who found that match results do in fact trigger the stock market. In their study, they studied the difference between the influence of wins, draws and losses. They found that draws cause the strongest abnormal returns, wins the second, and losses the least. They used CAPM as their method for the study.

Many studies after the Renneboog & Vanbrabant study have been conducted, indicating similar findings. A study by Edvardsen & Furulund (2020) indicates that draws and losses have twice the impact on stock prices compared to wins. They also found that exceeding the expectations with performance causes positive abnormal returns, whereas underperforming has the reverse effect, thus, causing negative abnormal returns. Similar results came from

Slepaczuk & Wabik (2020) study, which indicated no clear effect of a win on stock prices, while draws and losses did have an impact. Like with Edvardsen & Furulund study, this study also found that unexpected results have a connection with positive abnormal returns. The venue matters also, as they found that matches won at the opponent's pitch has a positive effect, and matches loss at the home pitch has a negative effect. A study by Benkraiem et al. (2011), which used ARCH models to measure the impact of sporting performance, similarly found that the stock market reacts differently to wins, draws and losses, and that whether the match is played on the home or away pitch also plays a significant role. A study by Ahola (2016), which was a case study about Manchester United's match results' impact on stock movements found that the relationship between the stock returns and match results were not significant after one trading day after match. However, when it came to three day stock returns, significance was found. A study by Meurer & Kehler (2019) did not find any significant and persistent impact of a win on stock prices. The same conclusion applied to unexpected wins.

Since matches can also be played in a different country, its impact has been studied as well. A study by Apredianto et al. (2020) found that when it comes to international matches for a specific club, the reaction of a win on its stock price is stronger compared to a situation where the match would have been played at the club's home country. Whether the reaction is positive or negative depends on the club. In contrast, losing a domestic match caused a stronger reaction on its stock price compared to loss in an international match. Going more in depth on the effect of match location, a study by Hands et al. (2023) found that players perform physically better at home pitch compared to away pitch. The study used average running intensity as an indicator, variables being low-speed activity (LSE), high-speed activity (HSA), very high-speed activity (VHSA) and high-intensity efforts (HIE) as well as sprint efforts. It revealed that low-speed activity variable is more associated with away matches and high-speed activity variable more associated with home matches. On top of that, road travel was found to be causing stronger reaction on low-speed activity variables and less reaction on high-speed activity variables. This further explains why away wins tend to be more appreciated than home wins, with the distance to the opponent's stadium being one contributing factor.

A study by Neudl (2013) found that losses cause the strongest reaction on stock prices, while draws and wins, respectively, cause weaker reactions. He also discovered that after a loss, trading volume has a tendency to be higher compared to win. Similarly with the previous studies mentioned about the impact of a home match, draws and losses occurred at home stadiums were found to be causing stronger stock price reactions compared to wins. In this study, home wins had nearly any impact on the stock price. While most studies indicate that draws and losses have a negative effect on stock price, a study by Vieira (2012) found that wins also cause negative market reactions. However, in her study, the events were captured from 2008 which was a year of financial crisis, thus, a bearish market. This suggests that the global market situation could potentially influence the outcome of a research study.

While many studies suggest that win draws and losses cause a stronger reaction to stock returns, there are also studies indicating that wins can have a significant impact as well. A study by Lindhout (2017) found that while draws and losses cause negative abnormal returns, wins generate positive abnormal returns. A study by Perez & Moberg (2020) found that for a team that is on a win streak, wins have a greater impact on their stock returns. A study by Frijn (2020) found that although, like in most studies, draws and losses have a stronger impact on abnormal stock returns, it found that after a match, the positive effect of a win affects the stock price faster than the negative effect of a draw or loss. The impact of losses compared to wins can be seen further than just in the field of football. A study by Brown & Hartzell (2001), which focused on basketball, found that investors do not react to wins the same way as they do to losses, and that the stock prices were significantly more affected by losses than wins.

As can be noted from the latter studies, the evidence when it comes to the variables, wins, draws, and losses impact on stock returns, varies in some degree. A study by Floros (2014) explains why this is the case, as he found that the impact of wins, draws and losses depends on the club. The study used different European clubs, Ajax, Juventus, Benfica and Porto, and found that while Juventus' stock reacted negatively to draws, Ajax and Benfica experienced positive reactions. Porto's stock had no significant reaction. What can be concluded from this is that the match outcome is seen differently depending on the investors subjective view, as e.g. Juventus investors see draws as a selling opportunity, hence, a negative result, while the investors of Ajax and Benfica see it as a buying opportunity, hence, a positive result.

1.2. Qualification places and abnormal stock returns

While there is a research gap on the effect of entering qualification regions and relegation from them, it can be argued that it is valuable for a club to secure a place within. The Premier League consists of twenty teams, and the top five teams secure qualification for the prestigious UEFA Champions League and UEFA Europa League by the end of the season. What encourages clubs to qualify for these tournaments are the prizes that come with them. Merely securing a place in the tournament's group stages brings substantial financial benefits to the club, not to mention the additional prizes that come with advancing further in the competition. While finishing fifth in the Premier League and earning a place in the UEFA Europa League will yield the club 2.94 million euros, the reward for securing a place in the top four and clinching a spot in the UEFA Champions League surpasses this amount significantly, amounting to 15.64 million euros – more than five times the sum earned from finishing in fifth place. (Cons, 2023) This goes to show how valuable it is for clubs to secure a place in the top five, not to mention top four.

To some extent, relegation from a qualification place can be compared to relegation from a domestic league, as both of these outcomes entail losing the opportunity to participate in European tournaments. In the English Premier League, on the contrary to the clubs that finish in top five places at the end of the season, the last three clubs get relegated to the second English football division: English Football League (EFL) Championship. Renneboog & Vanbrabant (2000) study found that losses in critical matches determining whether a team remains or relegates from the league, caused a negative abnormal return of -3,1% on the following trading day. However, the rate decreased to -2,1% in the following week.

Evidence of football club's stock price reactions to not qualifying to the UEFA Champions League has been documented in various studies. For a prominent club with a history of frequent participation in the top European tournaments, the expectation of annual qualification is inherent. A book edited by Andersson et al. (2008) had an example of how it can affect a club's stock price. In 2003, Borussia Dortmund, which is a big German club with a history of participating and winning titles in the top European tournaments, lost a pivotal match against Club Brugge, which caused the club not to qualify for the UEFA Champions League. The effect of this event reflected on the club's stock price, causing a -8,3% drop on its stock price on the following trading day. Additionally, the market capitalization decreased

by 5,85 million euros. This goes to show how valuable the investors view a big club's participation in top European tournaments like the UEFA Champions League. Similarly, like failing to qualify for the UEFA Champions League, relegation from the competition has also been found to have a significant financial impact for clubs. A study by Supino et al. (2024) found that for a club that is relegated from a top European tournament, the club loses value significantly within the two following trading days. This further underscores the close correlation between the financial performance of a club and its success in top European tournaments.

1.3. External factors

It is beneficial to address factors beyond on-field performance when studying its influence on stock returns. This can help to explain why the outcome of this research might align with expectations. Across various factors, such as player transfers, which are traditionally seen as significant contributors to a club's financial performance, there might be unexpected fluctuations or complexities that impact stock returns, which is why it is important to analyze them to get better answers for the stock market behavior. A study by Hof (2020) found that when it comes to stock returns, out of the transfer market, on-field results, sport titles, and Manchester United as a brand, what affected the returns the most were player transfers, on-field results being second. This further justifies taking into account the effect of player transfers in this research.

Manchester United has a recognition for buying and selling players with an exceptionally expensive price tag. Paul Pogba, which the club bought on 9th of August, 2015, with a transfer fee of 105 million euros from Juventus, has been by far the most expensive player transfer in the club's history. On the contrary, the most profitable player transfer for the club happened on 6th of July, 2009, when they sold their key player, Cristiano Ronaldo, to Real Madrid. At that time, it was the most expensive player transfer of all time, the transfer fee being 94 million euros. (Transfermarkt, n.d.) Like mentioned earlier, studies confirm that there is correlation between player transfers and stock returns. An event study by Bakker (2016) found that for the club that is selling a player, the stock returns tend to be higher on the trading day the more funds the club receives from the transaction. The study also found

that age matters as well. Selling a younger player caused a significantly positive return, whereas selling a middle aged or older player caused an opposite reaction. The reason behind that is that investors tend to think that younger players are overpriced and older players underpriced.

Since transfers happen not only inside the specific club's county, but also globally, the impact of these transactions extends beyond local markets. Both Cristiano Ronaldo's and Paul Pogba's transfers were international. A Turkish study by Turgut & Yasar (2020) found that foreign player purchases had a positive impact on a club's stock returns. This is due to the assumption that player transfers make the team that is purchasing the player stronger, bringing more success to the club which will lead to more financial benefits. Hof (2020) similarly stated in his study about Manchester United's player purchases as they will give hope for the investors due to strengthening the team, therefore, increasing the share price. Another similar evidence of the positive effect of a player purchase is provided in Contreras (2015) study. It revealed, from the purchasing club's perspective, whether the club's stock price reacts positively or negatively to a specific transfer depends on whether the market is satisfied with the club's decision. This is because the investors may assign a different value to the player compared to the club.

A study by March (2014) emphasized that the magnitude of the transfer matters when it comes to stock price movements, meaning, only transfers with a high fee affect the returns. His study revealed that high value player purchases have a positive effect on the returns. A study by Castelijns (2015) also states that players of top class have the capability to enhance the expectations of the investors' when it comes to on-pitch performance of these new transfers, meaning, their strong on-pitch performance could bring positive stock returns as well. Speaking of top class players, a PhD study by Fűrész (2021) also found that star player purchases increase investment attractiveness and investor satisfaction, as well as market capitalization.

On the contrary, several other studies, including one by Athanasios (2013), found that buying a player causes a negative reaction to the club's stock prices and selling a player causes a positive effect. Similar results came from a study by Peters (2013), which studied the effect of high end player transfers to stock price movements. It also revealed that player purchases

caused negative abnormal returns, and positive abnormal returns when selling a player. Regarding announcements, a study by Manzelov (2018) found that whether it's the buyer or seller club, the reaction of the shareholders is significantly negative.

Before the actual player transfer, it is fairly common that some sort of rumors start to spread around websites, social media, newspapers, and television reports, especially when it comes to expensive transfers. Why this factor is important to address is due to the fact that rumors occur all year around, not only during transfer windows. Whether the rumors are true or not, they have been found to have an effect on the publicly traded football clubs stock returns. (Karasaridis, 2015) As discussed in the present work, apart from a few exceptions, since the research is based on spring matches, the evidence about player transfer rumors' effect on stock returns also becomes relevant when justifying the results.

When it comes to football matches, players on the pitch are responsible for scoring the goals and keeping their own goal as clean as possible, meaning, avoiding conceding any goals. However, when going deeper into the dynamics of a club's performance, the head coach is responsible for picking the right players for the team, formation, as well as tactics to optimize the team's performance. While individual players play a crucial role in executing tactics and contributing to the team's success, the head coach's decisions regarding the starting eleven and substitutions significantly influence the team's overall strategy and effectiveness on the pitch. In that nature, it is apparent that the manager has an effect on the club's success, therefore, worth analyzing.

A study by Bell et al. (2012) found that there is a connection between managerial turnover and changes in a club's share price. They found that managerial resigns cause stronger reactions to the stock price compared to sacking. Clubs do not sack their managers for no reason, thus, usually caused by underperformance over a prolonged period of time. Another study by Zureck et al. (2014) found that change in a club's manager influences the behavior of the investors, as better on-pitch performance is expected when a new manager takes control of the team, essentially, enhancing the financial performance. A study by Fotaki et al. (2007), which studied how human resource turnover affects shareholder wealth, found that a manager's departure as well as selling of a player, both influenced the stock returns positively, hence, the influence on shareholders wealth is positive. When acquiring either a

new manager or a player, however, the influence tends to be the opposite. This is because according to Research-Based View (RBV), when initially hired, the marginal cost of employing a new coach or player is expected to surpass the potential profit.

Over the past decade, Manchester United has struggled to find a strong replacement for their legendary manager, Sir Alex Ferguson, who has had by far the best win rate in the clubs history, winning 65,2% of their matches. (Statmuse, n.d.) Sir Alex Ferguson managed the team from 1986 up until 2013, which makes him the longest serving manager in the club. Over the time period of his manager career in Manchester United, he managed to win 13 Premier League titles, 10 English Super Cup titles, 5 English FACup titles, 4 English League Cup titles, 2 Champions League titles, and once UEFA Super Cup title, Europapokal der pokalsieger sieger title, Intercontinental cup title, Fifa Club World Cup title, as well as winning the award of being the World's Best Club Coach twice. (Transfermarkt, n.d.) These achievements are far from what the managers since Ferguson have accomplished. In the last 20 seasons of his managerial career, each year the club finished in between 1st and 3rd place in the Premier League table. Since the departure of Sir Alex Ferguson in 2013, the club's final standing in the Premier League table has fluctuated between 1st and 7th place. (Premier League, n.d.) Manchester United's current manager, Erik Ten Hag, who has been managing the club since 2022, has the second best win percentage in the club's history, it being around 55%. Rest of the managers, between the years of 2013 and 2022, have had a win rate below that, between 50% to 53,8%, exception being their most recent manager before Erik Ten Hag, Ralf Rangnick, whose win rate was 41,7% in between December, 2021, and May, 2022. (Statmuse, n.d.)

Given that the research centers on the past ten years, 2020 emerges as a particularly noteworthy year, especially in light of its significant impact on the global economy. Naturally, this encompasses the sporting and football industry, which also experienced a downturn during this year of crisis due to e.g. matches being postponed and played without crowds, and many other factors. A study by Alabi & Urquhart (2023) found that Covid-19 pandemic decreased the profitability of the top English football clubs, hence, more prone to fall into financial distress. A study by Grabowski (2021) also came to a similar conclusion that the pandemic had a significant impact on the functioning of the football clubs as businesses'. On

top of that, the study found that the pandemic also reduces the competitiveness of the sport during international and domestic competitions.

Goals are the essence of win for a team in a match. The amount of goals the winning team scores can determine whether the win is just a win, or a huge humiliation towards the opponent. This component of a match result is also witnessed in several studies. A study by Dimic et al. (2018) found that high abnormal price reactions were observed with larger goal differences. A study by Neudl (2013) investigated the impact of goal difference in a football match and found that a large goal difference causes twice as much abnormal returns as wins with narrow goal difference for the winning team. Similarly, for the losing team, losses with more goals conceded causes more negative abnormal returns compared to losing with a narrow goal difference.

Football being a contact sport, it is inevitable that injuries will occur. These unfortunate events can cause a team to lose their important key players, even for months. This then can affect the teams on-pitch performance, thus, affecting the stock market. A study by Hägglund et al. (2013) proved this general assumption to be true as they found that injuries have a significant impact on performance. They found that teams in the top European leagues that had lower injury rates during the season performed better domestically. Low injury rate was also found to be causing better performance in the international European tournaments. A study by Mrhari & Hassouni (2023) found that the impact of an injury on stock prices depends on the date of the injury. This particular study also analyzed Manchester United, which is relevant to observe in terms of our research.

What we can conclude from these studies about player transfers is that both buying and selling have the capability to affect a club's stock returns either positively or negatively. The direction of the stock price movement depends on the situation, the player, club, and shareholders. On top of that, since the team is managed by a coach, it is important to also note that managerial turnover causes stock price movements. Like with player transfers, the direction of the stock price movements after a departure or hiring a new manager are situational. These movements can be determined whether during the time of a specific manager was successful for the team or not.

In 2020, the far-reaching effects of the Covid-19 pandemic were particularly notable, deeply impacting both the global economy and the football industry. Studies indicate that clubs faced significant financial challenges as a result. Furthermore, studies highlight the impact of goal differences in match outcomes on stock returns, as well as the impact of player injuries.

Recognizing the impact of these external variables is crucial for accurately interpreting the causes of Manchester United's stock returns further into the research. This helps to understand any irregular trends that may arise when examining the relationship between stock returns and match outcome, as the general hypothesis is that these two variables have at least some sort of correlation, based on previous studies.

2. DATA AND METHODOLOGY

This chapter describes how the research was conducted, where and how the data was collected, as well as the methodology employed to extract the main results. It details the steps from the inception of the study in order to derive for the final analysis, providing transparency into the research process. Rationality behind the selection of specific data sources and methodologies is provided, demonstrating their relevance to the research objectives.

2.1 Data collection

The data was gathered from two main sources: Stock returns from Yahoo Finance, and match results and settings from Barclays Premier League official website. The data was gathered from the last 11 seasons, from season 2012/2013 to 2022/2023. Ahola (2016) conducted a study also using match results from Barclays Premier League official website, but instead of Yahoo Finance, he gathered stock price movements from the New York Stock Exchange official website. I chose Yahoo Finance due to personal familiarity with the platform. Manchester United was listed on New York Stock Exchange (NYSE) on 10th of August, 2012, which is one reason why I have chosen this specific time frame for the research. (New York Stock Exchange, n.d.) Secondly, Sir Alex Ferguson, the most successful manager in Manchester United's history in terms of the club's success, retired on the eighth of May, 2013. (Transfermarkt, n.d.) Thirdly, the last time Manchester United won the Premier League title was in 2013. (Premier League, n.d.) This combination illuminates why the data collection should start from the 2012/2013 season, as major changes and events occurred during that season.

Matches are selected from the last four months of the season, exception being season 2019/2020, when due to Covid-19, the Premier League season was extended until the end of

July 2020. More specifically, the total number of events recorded in the whole dataset equals to 154, which means the last 14 league matches of each season. Renneboog and Vanbrabant (2000) study, which studied multiple clubs, focused on the last three months as they are the most relevant in terms of the final standing. In this research, the attempt is to expand this window to the last four months of the season, approximately. One reason for expansion also was to get slightly more samples, which could be an advantage compared to other similar studies. It is also possible that it could have the opposite effect and skew the results.

When it comes to stock returns, the events are split into two different timeframes. According to Ahola (2016), Frijns (2020), and several other studies, the reaction on the stock price from a football match may manifest with a delay of up to three days. A study by Neudl (2013) found that the impact of a win on stock price diminished after one day from a match, while after a draw and loss, the impact kept continuing further. Similarly, the maximum negative impact of a larger goal difference on stock price after a loss was observed three trading days after the match, consistent with the patterns observed for draws and losses. A study by Dimic et al. (2018) found that the stock market reacts to positive news almost instantly, while with negative news, most of the reactions can be witnessed one day after the information has become public. Therefore, for this research, one-day, and three-day windows for returns are selected.

For the dependent variable, abnormal stock returns, few important factors should be addressed. Since most matches are played during the weekend when the stock market is closed, selecting the match day itself as an adjusted close price for the calculation of the return is not possible. Therefore, for weekend matches, the previous and following trading day has been selected. E.g. for one day returns, if the match is played on Sunday, the return is formed from Friday and Monday adjusted close prices. Ahola (2016) also mentioned about the weekends being a potential contamination of the results because of the delaying effect in the event. Another limitation he brought out in his research was the fact that occasionally, clubs might play two, even three matches during the same week, thus, he did not include those specific matches in his research. In my research however, those matches are included. For three day returns, the adjusted close price would be formed from the following Wednesday. For the matches played during the week, the event window for adjusted close prices is formed from the match day price and the following trading day price. When it comes

to weekday matches where the first adjusted close price is recorded from the same day, the possible limitation could be that the reaction to the stock price could already happen during the match before the end of the day. Frijns (2020) stated the same thought.

2.2 Methodology

Multiple regression was used for finding how different independent variables affect abnormal stock returns. The dependent variable, abnormal returns, was calculated by subtracting stock returns with market returns, which is the New York Stock Exchange (NYSE) index. Many studies, including Frijns (2020) study also used the same approach. However, e.g. Vieira's (2012) study is a great example why index returns could possibly skew the results, as her study found that wins had a negative impact on returns. The outcome was an outlier compared to most studies related to wins, draws and losses. Most studies in this area have traditionally shown wins to either positively influence returns or have no impact. This particular study had events from 2008, which was a year of financial crises. Given that Manchester United is listed on the New York Stock Exchange, its behavior and patterns in terms of returns, at least to a degree, align with trends observed in the United States market. In conclusion to this, external economical factors could possibly affect the abnormal returns either positively or negatively, therefore, distort the results. The dependent variable in the regression is named as Ab_Return, which represents abnormal stock returns.

Change in the club's league standing can result in promotion to the qualification zone and relegation from it. As discussed in the literature review chapter, qualifying for European tournaments, either UEFA Champions League or UEFA Europa League, have significant financial benefits for clubs. Also, Andersson et al. (2008) study had a great example of a big club not qualifying for the UEFA Champions League affects the club, causing a -8,3% drop in the club's stock price. Therefore, the effect of relegation is also relevant to study and add into the regression. The independent variable in the regression is named as Relegation.

While there are varying conclusions about the impact of wins, draws and losses for football clubs, most studies suggest that draws and losses cause greater reaction on stock prices compared to wins. As Floros (2014) stated, the direction of a stock price reaction depends on

the club. Since this research focuses on Manchester United, how its stock price reacts to different outcomes, wins, draws and losses should be taken into account. Studies that included Manchester United in their sample, e.g. Apredianto et al. (2020), Frijns (2020), Renneboog & Vanbrabant (2000), and many other studies found that out of the three variables, wins, draws and losses, wins cause the least stock price movements. Therefore, out of the three components, this research focuses on the effect of draws and losses, thus, added to the regression as independent variables as Draw and Loss.

Naturally, clubs standing in the league table tells a lot about their current seasonal performance. In the case of the English Premier League, clubs that are within the top five places in the table usually get the most recognition as their performance has been strong and consistent enough to qualify for the European tournaments. On top of that, they have the most chance to fight for the league title, although the closer to the end of the season, the battle usually narrows down to two or three clubs. Playing against teams that are in the top places in the league table are naturally more difficult to play against, therefore, important matches. Opponents in the top five places in the league table have been added to the regression as an independent variable, Opponent_top5.

The research employs three different regression models, each categorized by two time frames concerning the dependent variable: 1-day returns and 3-day returns. The justification for these divisions is supported by the literature framework, referencing studies like Ahola (2016) & Frijns (2020) to validate their findings. The Model 1 includes all of the seasons from the data, from 2012/2013 to 2022/2023, sample size being 154. The Model 2 has the exact same variables, however, the sample size is reduced to 84, samples taken from six different seasons: 2012/2013, 2013/2014, 2014/2015, 2019/2020, 2020/2021, and 2021/2022. Why these specific seasons are selected for our sample for the Model 2 has a specific reasoning. Since the requirement for English Premier League clubs for qualifying for the UEFA Champions League is to finish within the top 4 places in the table, it would be preferred to choose seasons that meet those requirements. The club finished in first, second, third, and fourth places at the end of the seasons 2012/2013, 2020/2021, 2019/2020, and 2014/2015, respectively. This feeds one of our research hypotheses, H2: The stock price of Manchester United PLC is influenced by relegation from qualification places in the Premier League table. For this hypothesis, it would be preferred to also include events where the club

finished below the qualification places as well. Seasons 2021/2022 and 2013/2014, where the club finished sixth and seventh in the Premier League table, respectively, serves this need.

The dependent variable is the abnormal returns of the Manchester United PLC stock. The independent variables are the following: relegation from qualification places (dummy variable), loss (dummy variable), draw (dummy variable), opponent is within the top five places (dummy variable). Model 1 and Model 2 formulated as follows:

$$Ab\_return = constant + \beta1*Relegation + \beta2*Loss + \beta3*Draw + \beta4*Opponent\_top5 + \varepsilon \quad (1)$$

Ab_return - Abnormal stock return
constant - Intercept term
β1*Relegation - Match outcome is relegation from a qualification place
β2*Loss - Match outcome is a loss.
β3*Draw - Match outcome is a draw
β4*Opponent_top5 - Opponent is within the top five places in the league before a match
ε - Error term

The third model uses a robust regression approach, which is an alternative for the traditional least squares regression. The approach is used when there are outliers in the data, or observations that are influential. It can also help to detect those influential observations. (UCLA, n.d.) How this specific regression model differs from the first and second model is that it focuses more on the impact of relegation. Independent variables, Loss and Draw are taken out of the model, and point distance to the team above after the match is added, which is named Distance_above in the regression. In addition, similarly to the Model 1 and Model 2, the Model 3 also uses 1-day returns as well as 3-day returns. The idea is to see how much the point distance plays apart when the club relegates from a qualification place. From the relegating clubs point of view, it would be preferred if the point distance to the team above after a match is as small as possible in hopes that the club does not get left behind in the race of securing an European tournament place. As discussed in the literature review chapter, the advantage of finishing in the top four, or at least top five, has substantial financial benefits.

The dependent variable is the abnormal returns of the Manchester United PLC stock. The independent variables are the following: relegation from qualification places (dummy variable), opponent is within the top five places (dummy variable), point distance to the team above after a match (continuous variable). The Model 3 is formulated as follows:

$$Ab\_return = constant + \beta1*Relegation + \beta2*Opponent\_top5 + \beta3*Distance\_above + \varepsilon \quad (2)$$

Ab_return - Abnormal stock return
constant - Intercept term
β1*Relegation - Match outcome is relegation from a qualification place.
β2*Opponent_top5 - Opponent is within the top five places in the league before a match
β3*Distance_above - Point distance to the team above in the table after a match
ε - Error term

These multiple regression models, Model 1, Model 2, and Model 3, were implemented in the statistical software Gretl, playing a pivotal role in deriving the final results and drawing conclusions, which are being discussed in the following chapters.

3. EMPIRICAL RESULTS

In this section, the outcomes of the research endeavors are provided. Following thorough analysis and interpretation of the gathered data, statistical findings that clarify the main results are explained.

3.1 Regression model

Multiple regression was used to find the possible relationship between the dependent variable, abnormal returns, and independent variables, relegation, draw, loss, and whether the opponent is within the top 5 places in the league before the event. The expectations of the independent variables impact on the dependent variable were discussed and justified in the literature review part, formulating the research hypothesis. As discussed in the previous chapter, the research used three different regression models. Out of the three models, Model 1 was the only one that included the whole data, 154 events in total. In the following table (Table 1), the results of the Model 1 are presented.

The results of the Model 1 multiple regression, which included the entire data set of 154 samples, indicates that none of the independent variables, Relegation, Loss, Draw, or Opponent_top5, demonstrate statistical significance with either 1-day or 3-day abnormal returns. This inference is drawn from the p-values, which are all above conventional thresholds of significance (0.10, 0.05, 0.01). Additionally, the adjusted R-squared values for both 1-day and 3-day returns are negative, -2%, implying that the model fails to explain any meaningful variation in the dependent variable, stock returns. However, from these results, one interesting finding can be observed from the 3-day returns. Although not significant, it is worth noting that the p-value associated with the Loss variable is 0.17, which is not too far from the 0.10 level of significance. It could be argued that with more data, the results could indicate more statistical significance and more optimal Adjusted R-squared. Nevertheless,

since the current model does show the evidence behind the assumption, we can only speculate.

Table 1. Regression results: Model 1

	Dependent Variable: 1-day returns			Dependent Variable: 3-day returns		
	Coef	St.Er	P-value	Coef	St.Er	P-value
const	0,33	(0,30)	0,28	0,44	(0,44)	0,33
Relegation	0,19	(0,46)	0,68	-0,11	(0,66)	0,87
Loss	-0,21	(0,44)	0,63	**-0,80**	**(0,59)**	**0,17**
Draw	-0,18	(0,42)	0,66	-0,52	(0,68)	0,44
Opponent_top5	-0,14	(0,35)	0,69	0,22	(0,52)	0,67
N	154			154		
Adj. R2	-2%			-2%		

Note: * - p-value < 0.10, ** - p-value < 0.05, *** - p-value < 0.01

Source: Arku (2024), Author's calculations.

As mentioned in the methodology chapter, the second model that was used to run a regression, Model 2, included the exact same variables as the Model 1, except, the sample size was reduced from 154, which represented the entire dataset between the seasons 2012/2013 to 2022/2023, to a sample size of 84, which included seasons 2012/2013, 2013/2014, 2014/2015, 2019/2020, 2020/2021, and 2021/2022. In total, the six seasons that were included in the Model 2 each corresponded to a specific final standing rank in the Premier League table ranging from 1st to 7th place (except 5th place), sample selections being justified in the methodology chapter. In the following table (Table 2), the results of the Model 2 are presented.

The results of 1-day returns show no statistical significance with the variables. As with Model 1, where the Loss variable had a p-value of 0.17, it could be argued that the p-value of Draw in 1-day returns, also 0.17, could possibly be significant if the dataset was larger, however, such speculation is inconclusive without further statistical evidence. Compared to the findings of the Model 1, which did not find any statistical significance when the whole dataset was included in the sample, the Table 2 shows that the Model 2 provides evidence of significance when it comes to 3-day returns. More specifically, both Relegation and

Opponent_top5 variables have a p-value of 0.05, indicating statistical significance at the significance level of 0.05. With 3-day returns, the coefficient of Relegation indicates that the variable is associated with an increase in the stock returns of 1,52%, whereas the coefficient of Opponent_top5 variable indicates that the variable is associated with an increase in the stock return of 1,42%. The Adjusted R-squared for 3-day returns indicates that the model explains 1% of the variance in the dependent variable, stock returns.

Table 2. Regression results: Model 2

	Dependent Variable: 1-day returns				Dependent Variable: 3-day returns			
	Coef	St.Er	P-value		Coef	St.Er	P-value	
const	0,85	(0,38)	0,03	**	-0,37	(0,58)	0,52	
Relegation	0,72	(0,83)	0,39		**1,52**	**(0,79)**	**0,05**	*
Loss	-0,46	(0,59)	0,43		-0,71	(0,75)	0,35	
Draw	-0,83	(0,60)	0,17		-0,13	(0,87)	0,88	
Opponent_top5	0,03	(0,51)	0,96		**1,42**	**(0,71)**	**0,05**	**
N	84				84			
Adj. R2	-2%				1%			

Note: * - p-value < 0.10, ** - p-value < 0.05, *** - p-value < 0.01

Source: Arku (2024), Author's calculations.

After getting the results with the Model 2, it was observed that Relegation has an impact on the stock returns. Therefore, it was decided to try to focus more on the impact of relegation, as the previous model proved significance with the variable. With the Model 3, Loss and Draw variables were excluded from the regression due to not being statistically significant, and replaced with a new variable, point distance to the team above in the table after a match, named Distance_above. The idea was to get a deeper explanation on the impact of relegation when the point distance to the team above is added, as this variable can contribute to explaining how much weight the relegation holds depending on the size of the gap. In simpler terms, it is used as a measure of magnitude of the Relegation variable. In the following table (Table 3), the results of the Model 3 are presented.

The results of the Model 3 regression shows that no statistical significance was found with 1-day returns. Additionally, the Adjusted R-Squared is negative, -1%, which indicates that the

model does not explain any meaningful variation in the dependent variable, stock returns. Similarly to the Model 2 however, the Relegation and Opponent_top5 variables were found to be statistically significant when it comes to 3-day returns. The coefficient of Relegation indicates that the variable is associated with an increase in the stock returns of 1,58%, whereas the coefficient of Opponent_top5 variable indicates that the variable is associated with an increase in the stock return of 1,19%. The Adjusted R-squared for 3-day returns indicates that the model explains 2% of the variance in stock returns.

Table 3. Regression results: Model 3

	Dependent Variable: 1-day returns			Dependent Variable: 3-day returns			
	Coef	St.Er	P-value	Coef	St.Er	P-value	
const	0,34	(0,28)	0,23	-0,71	(0,49)	0,15	
Relegation	0,52	(0,83)	0,53	**1,58**	**(0,74)**	**0,03**	**
Opponent_top5	-0,08	(0,53)	0,88	**1,19**	**(0,70)**	**0,09**	*
Distance_above	0,05	(0,06)	0,40	0,05	(0,07)	0,51	
N	84			84			
Adj. R2	-1%			2%			

Note: * - p-value < 0.10, ** - p-value < 0.05, *** - p-value < 0.01

Source: Arku (2024), Author's calculations.

3.2 Discussion and limitations

The main hypotheses in this research were based around the following outcomes: draws, losses and relegation. The first hypothesis, H1: "Draws and losses have a negative impact on Manchester United PLC", did not yield any statistical significance. However, as discussed in the results part, in Model 1, Loss variable had a p-value of 0.17 with 3-day returns, and in Model 2, Draw variable had a p-value of 0.17 with 1-day returns, which are quite close to being significant. The fact that many other studies with larger samples have found significance with draws and losses, it could be argued that with more data, significance could possibly be found in this research. E.g. Edvardsen and Furulund (2020) study, which found that the stock market reacts negatively to draws and losses, had a sample size of 2146, which is significantly larger compared to the models in our research.

When it comes to the second hypothesis, H2, “The stock price of Manchester United PLC is influenced by relegation from qualification places in the Premier League table.”, the results exhibit partial alignment, which are validated by 3-day returns by Model 2 and Model 3. In Model 2, with the Relegation variable, statistical significance was established at 0.05 level. The coefficient of the variable is 1,52, meaning that the club entering the relegation place is associated with the increase of 1,52% in stock returns. In Model 3, even greater statistical significance was obtained for the variable, p-value being 0.03, with a coefficient of 1,58. Although generally, relegation is found to be associated with a negative reaction on stock price, it is important to note that statistical significance was only found with 3-day returns.

In Andersson et al. (2008) study, the negative effect on stock price of not qualifying for the UEFA Champions League was witnessed almost immediately, on the following trading day. Additionally, in Renneboog & Vanbrabant (2000) study, which focused on the effect of relegation from a domestic league, also found that the negative effect occurred on the following trading day. They also observed that the negative effect diminished over the week by a percentile point. This evidence could be possibly used to argue in favor of our positive effect of a relegation, suggesting that the result may be attributed to a diminishing effect over time, particularly given the 3-day returns as the time frame. However, without any statistical evidence, it is important to acknowledge that the extent of this analysis is speculative at best.

As for the time frame of the results, many other studies found the effect of outcomes to be incorporated to the stock with a delay of up to three days. In Ahola (2016) study, which focused solely on Manchester United and its match outcomes, did not find statistical significance with 1-day returns, whereas with 3-day returns, significance was found. This finding, alongside with other studies, is in alignment with our results, suggesting that stock prices may indeed absorb match outcomes with a slight delay.

In our regression analysis, we introduced a variable named Opponent_top5, which indicated whether the opponent team was among the top five places in the league table. The aim was to examine whether matches against stronger opponents had a greater impact on stock returns. Similar to the Relegation variable, Model 2 and Model 3 indicated that the variable was statistically significant with 3-day returns. In Model 2, the p-value was 0.05, and in Model 3, it was 0.09. This indicates the stock price behaves more sensitively towards stronger

opponents, evidenced by coefficients of 1,43 and 1,19 respectively. Plausible explanation behind this phenomenon would be that top-ranked teams raise more attention amongst investors. Also, the risk associated with stronger opponents is naturally higher in terms of match outcome.

Point distance to the team above in the league table after a match, a variable named Distance_above, was included into the regression in Model 3 as a final addition. However, the p-value was far from significant in both 1-day returns and 3-day returns, the values being 0.40 and 0.51, respectively, and both having the coefficient value of 0.05. The intention of adding this variable was to try to measure the impact of the magnitude of a relegation event. However, it ultimately did not provide anything meaningful.

This research had a few limitations. Firstly, because most of the matches in the Premier League are played during weekends when the stock market is closed, the adjusted close prices for the stock returns were recorded with a delay. The effect of delayed returns were addressed by Ahola (2016), who did not include weekend matches in his regression due to this dynamic. The limited sample size of 154 of the whole dataset, not to mention the sample sizes 84 with Model 2 and Model 3, could further underscore the potential distortion with the results.

The second limitation are the external factors that were discussed in the literature review chapter. As the stock price of a football club is affected beyond on-pitch performance, the impact of different external variables is important to acknowledge. In terms of this research, a concerning finding was observed by Hof (2020), who found that player transfers affect the stock price more than on-pitch performance, thus, as weekend matches, could possibly cause a distortion in results. A suggestion for future research would be to include external factors into regression analyses as independent variables to further investigate their overall impact when it comes to stock returns of a football club.

CONCLUSION

This research focused on the investigation between on-pitch performance and stock returns of Manchester United PLC. More specifically, it examined the relationship between the dependent variable, abnormal stock returns of Manchester United PLC in a time frame of 1-day returns and 3-day returns, and the independent variables related to match outcomes, Draw, Loss and Relegation. Additionally, an independent variable reflecting the opponent's strength, Opponent_top5, which explained whether the opponent was within the top five places in the league table before the match, and a variable reflecting the magnitude of the event of Relegation, Distance_above, which explained the point distance to the team above in the league table after a match, were included. All data related to aforementioned information were gathered from two separate sources: data for the abnormal stock returns of Manchester United PLC were gathered from Yahoo Finance, and data for all the independent variables from Premier League official website. To test the significance of these variables, three regression models were used to find the answer for our research hypotheses:

H1: Draws and losses have a negative impact on the stock price of Manchester United PLC.

H2: The stock price of Manchester United PLC is influenced by relegation from qualification places in the Premier League table.

The results regarding the first hypothesis, H1, were found not to be statistically significant, meaning, the research did not find evidence that draws and losses have an impact on the stock returns of Manchester United PLC. This outcome was obtained from all of the regression models, including both 1-day returns and 3-day returns. This result does not align with previous studies, as most found losses and draws to have an impact on stock prices, including Renneboog & Vanbrabant (2000), Edvardsen & Furulund (2020), and many others.

The second hypothesis, H2, was found to be statistically significant, but only with 3-day returns for Model 2 and Model 3. This means that with that specific time frame, relegation from a qualification place was found to have an impact on our dependent variable, abnormal stock returns. However, the direction of the reaction is the opposite compared to previous studies. This result can be argued by the possible diminishing effect of negative reactions, which e.g. Renneboog & Vanbrabant (2000) observed.

In conclusion, the research aim of this thesis was to discover whether the stock price of Manchester United PLC is affected by negative match outcomes, such as draws, losses, and relegation from the qualification places. While draws and losses did not show any evidence of affecting the stock prices, relegation from the qualification places exhibited significance for 3-day returns. This thesis encountered several limitations, including delayed recording of adjusted close prices for weekend matches, a small sample size, as well as not including external factors into the regression, which may have affected research outcome. These findings suggest a need for further exploration into the relationship between sporting performance and stock market reactions, considering the external factors for a more comprehensive understanding, as they have been found to have a significant impact on the stock prices of football clubs.

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