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RELATIONSHIP BETWEEN FOOTBALL CLUBS' COMPETITIVE PERFORMANCE AND REVENUE STREAMS

Bachelor's thesis

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I hereby declare that I have compiled the thesis independently
and all works, important standpoints and data by other authors
have been properly referenced and the same paper
has not been previously presented for grading.

The document length is 8867 words from the introduction to the end of the conclusion.

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ABSTRACT

There has been a great increase in revenues in Spanish La Liga since the beginning and the 20th century. Subsequently, three teams have been able to dominate the league since the given time period while maintaining the highest revenue streams amongst the 20 teams. This paper looks at the impact of revenue streams and transfer expenditure on competitive performance to see whether the revenue disparity affects the competitive performance of teams in the league since more available funds make it possible to invest in players. The author thus compares the three teams to see if we can distinguish any differences in their competitive performance based on the revenues the teams were able to generate. The author found evidence of a revenue disparity among the three and that revenues are a significant indicator when it comes to competitive performance. Being able to generate more revenue resulted in teams being able to obtain more La Liga points which was the measure of competitive performance. Player transfers, however, had no significant effect on the performance of the teams and can't be considered an indicator for competitive performance.

Keywords: La Liga, Competitive performance, Revenues, Transfer expenditure, Disparity

INTRODUCTION

Football today is a billion-dollar industry which attracts investors from different sectors all around the world. This has caused a huge increase in the revenues of football clubs in the last 20 years, especially in Europe. Football teams' main sources of revenue are matchday revenue, broadcast revenue, and commercial revenue. (Batmunkh, 2021, p.48)

The Spanish league "La Liga" was founded in 1929 and currently contains 20 teams, which is variated by relegating the last 3 teams and promoting the top 3 from the lower division (Moreno, 2020).

La Liga clubs FC Barcelona and Real Madrid made up 0,12% of the Spanish GDP in 2019 with a combined revenue of €1.594 million. Compared to 2003, the teams generated revenue of €316 million, comprising 0,04% of the Spanish GDP (Somoggi, 2019). Since La Liga has major financial significance, according to Somoggi (2019), studying the contributor more closely is important. The increase in revenues is approximately 404% between the time frame, which clearly indicates how fast the football industry in Spain is growing.

Between 2003-2019 there have been 4 different league winners in La Liga, and the most frequent were Club Atlético de Madrid, S.A.D (ATM), Futbol Club Barcelona (FCB), and Real Madrid Club de Fútbol (RM) with 15 championships shared amongst the three (Carnicero, 2022).

Based on this information, one could argue that money is solely the most influential aspect of modern-day football and would not be wrong. Financial Fair Play (FFP) policies have been implemented by the Union of European Football Association (UEFA) during the past ten years to counter and partially limit the financial clout of the richest clubs in Europe. These regulations have been put in place to promote sustainability and combat financial doping (Cormack, 2023). Financial doping is determined as excessive external funding to cover player transfers and wages, according to Müller et al. (2012)

However, Calahorro-López et al. (2022) in their research suggest that it's possible that disparities between rich and poor clubs are growing, which might create competitive asymmetries due to FFP regulations. There are new implementations for the FFP rule to take place in the 2025/26 season to target the problem of creating competitive asymmetries by placing a spending gap on wages, transfer, and agent fees to be 70% of the total revenue (Cormack, 2023).

However, this will continue the dominance of ATM, FCB, and RM. La Liga stopped allowing teams to negotiate their TV rights contract individually in 2015, despite this, for the season 2021/22, the three clubs generated €450,85 million in tv rights. The total for the season in La Liga was €1.426,86 million allowing ATM, FCB, and RM to make up 31,6% of the total share for 20 teams. (La Liga Santander, n.d.)

This is a longitudinal study for the period 2012-2021 aiming to investigate how different revenue streams individually affect the sporting success of selected teams in La Liga. The author will utilise Deloitte when gathering information about the various revenue streams teams have generated, which is the major source of information for the author. Deloitte is a financial auditing and consulting advisory organisation that offers revenue streams for the top 20 revenue-generating teams in a detailed way in their yearly "Deloitte Football Money League xxxx", which dates to 2006

If the author can prove the revenue disparity between the three teams, La Liga could be able to find a solution for a more even playing field when it comes to revenue distribution and thus create more competitiveness in the league.

The investigation of the connection between revenues and competitive performance is a crucial focus of the research presented in this paper. The study will use an empirical regression analysis to determine how specific variables comprising the annual revenue of chosen teams' affect the team's competitive performance. The study will also focus on the relationship between the competitive performance of the team and transfer investments which are strongly linked to teams' performance, to determine their relationship and the financial disparity between the capability to invest (Quansah et al., 2021, p.13). To investigate the matter, the author aims to answer the following question:

Q1: How do matchday revenue, broadcast revenue, and commercial revenue impact the competitive success of the team?
Q2: How does investment in player transfers impact competitive success?

It is clear that money has a great influence on football today and continues to keep growing the industry and competitiveness around Europe. The objective of the research is to determine how revenue streams affect the competitiveness of the football teams in the league.
The research also tries to see the influence of player transfers on competitiveness since it is found by previous research that competitive performance and transfer expenditures are strongly linked,

according to Liu et al. (2016). This research could provide new insight and alternative ways for teams to operate. For leagues to regulate and investors to invest in the league.

1. LITERATURE REVIEW

The purpose of this theoretical review is to examine already existing literature and studies regarding the subject. It is important to identify gaps in already existing studies to formulate new research questions and be able to provide insight into the subject from a new viewpoint. Many studies have investigated the relationship between financial and competitive performances in sports. There has been prior research on how sporting results influence the revenues and economies of Spanish football. However, most of the studies have focused strictly on English Premier League, and a few studies, in general, have studied La Liga. There is no recent study about the financial and competitive relationship between Spanish teams since the last study was in 2005. The author will study the different sources of revenues' effects on competitive performance, which have no prior research as well as the effect of player transfers on the competitive performance.

1.1.   Competitiveness

Competitiveness was originally a term used in economics since international trade among nations accelerated (Bhawsar & Chattopadhyay, 2015, pp.665-670). However, the concept of competitiveness has changed shape and expanded along with the history of economic thinking, according to Voinescu and Moisoiu (2015). The same article states that, despite competitiveness being used as a term amongst rivalling nations exclusively from a macroeconomic perspective, it has eventually become a subject of study beyond just the economies of nations but also for governments and institutions. Since competitiveness has gained a lot of popularity, more companies and the general population are paying more attention to the competitiveness of a nation in the hopes of identifying opportunities in various fields of business and a more in-depth understanding of the state of the welfare of the nation (Voinescu and Moisoiu, 2015, p.513). However, with the increase of opportunities given by competitiveness, economies also face risks related to competitiveness.

Competitiveness cant be considered to be having a single meaning which could be applied to the term. However, many researchers identify competitiveness in a unique way for their respective

research. According to Bhawsar & Chattopadhyay (2015), the term involves all the elements explaining the success of nations, firms, industries, and regions. Comanescu et al. (2018) support the idea of competitiveness being a complex concept that describes how a firm can survive in nationally and internationally faced conditions of competition. They identify the assessment of a company's competitiveness by analysing its economic efficiency compared to competitors. They do this by analysing the obtained yield of the company and how the company's products and services affect the market. The bottom line is that the company ensures their competitiveness when its results are equal to or surpass its competitors, which is highly affected by the company's internal conditions. While this might be an accurate measurement for a company as a whole, many other metrics should also be considered when it comes to competitiveness. Bhawsar & Chattopadhyay (2015) believe that broad measures for competitiveness aim to explain the strength of a nation, firm, industry, or region when measuring market shares, selected productivity, profitability, product quality, growth rate, the balance of the trade, and technological indicators. While these are not so different from when measuring yield and how the services and products affect the market, it takes in a lot of different considerations for competitiveness, even though these metrics can also be considered widely general.

Buckley et al. (1988) believe that the various measurement methods can be simplified into three categories: competitive performance, competitive potential, and competitive process, called the "3P Framework".
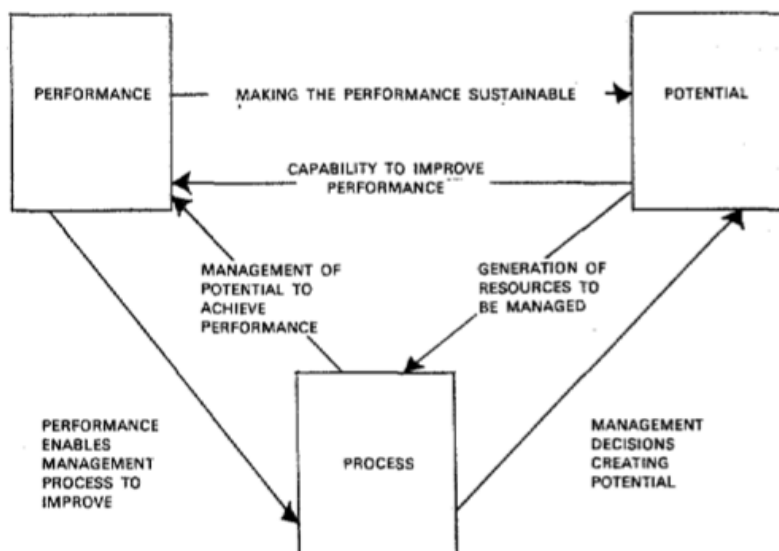

FIGURE 1   The interrelationship between measures of competitiveness

Figure 1 The interrelationship between measures of competitiveness

Source: Buckley et al. (1988)

The author believes that from the 3P framework perspective, competitiveness is an ongoing process rather than a standstill concept which does not evolve. The three measurements live in a symbiosis, from which performance measures the outcome of operations, process measures the management of the operation, and potential describes the inputs in operation. Buckley et al. (1988) believe that focusing on a single measure leaves uncertainty, unanswered questions and the inability to maintain competitiveness at a company level. The article believes that performance measures should always at least involve the potential measure, which the author of this research focuses on by involving the inputs of the operation, which is the revenue that supports the performance measure.

While competitiveness has been studied thoroughly using various methods, Michael Porter is a major contributor to researching the topic, especially with his article "The Five Competitive Forces That Shape Strategy"—an industry-focused article about competitiveness. In the review of the work, Porter (2008) believes that there is no single explanation for competitiveness, but it is determined by a wide range of factors and the quality of the business environment. This is also supported by Ketels (2006), who states that various complex and interrelated factors influence competitiveness and cannot be strictly labelled. When competitiveness is measured, it is crucial to distinguish precisely what is measured and how it is measured. Porter (2008) claims that one can be competitive in one field while not being competitive in another, saying that when competitiveness is analysed, it must be done separately to study competitiveness from a broader perspective. While many of the works have slightly differing opinions when it comes to the generality of the term competitiveness, they have many similarities. The unified belief was the complexity of competitiveness, and that competitiveness is something that evolves with the ongoing development of economies and globalisation. However, all of the articles study competitiveness from different viewpoints, one studying a nation's competitiveness, one focusing on firms, and one taking industries into account. While there is variation, competitiveness has many more shapes and definitions on individual levels when studying it from a bigger perspective.

When it comes to sports, Saá Guerra et al. (2012) conducted a study to evaluate the competitiveness of each game in two different basketball leagues. However, they believe their model can also be useful for other sports, such as football. De Saá Guerra et al. (2012) believe external factors, such as revenue disparities, talent, and competition structure, can influence competitiveness. The study argues that if external factors are analysed, it may help organisations and teams to have a better understanding of competitive imbalances and develop strategies for the problems. Thus, it is important to understand that competitiveness in sports is not solely on who

plays the best but that it may have other factors as well. Another study by Koning (2009) supports the idea that measuring competitiveness is complex and has multiple combinations of different methods how to measure competitiveness. Koning (2009, pp.234-235) suggests that football often uses winning percentages to measure competitive balance, from where you can draw lines to measure competitiveness by making comparisons between the mean value and acquired value. The concentration ratio is another way, where the proportion of a season's points won by the top n sides within a k team league. These methods allow us to have an overview of the specific metric and draw conclusions when visualised. Based on the data, these metrics can effectively measure competitiveness by reaching a certain value.

For the study, the author has distinguished the meaning of ''competitive performance,'' which is La Liga points, so that he is able to draw a line of what can and will be accounted for to create a specific study. With La Liga points, we can exclude international competitions and focus solely on the domestic league and the points gathered. If the author were to include all competitive factors, he might overlook critical factors that are competition-specific or inaccurate conclusions about competitiveness, according to Porter (2008).

1.2. Football as a business sector

Throughout history, sports have been considered to have had a meaningful effect on the political and economic shape of various nations. Football is the number one sport in the world, offering means for investments, developing international business linkages, socio-cultural relationships, and ways to enhance the political role of a nation, according to Karpavicius and Jucevicius (2009, p.86). The footballing industry has been extensively researched throughout the 2000 century, analysing the industry as well as focusing on a specific topic.

There have been various analytical types of research studying the business side of football. (Buck & Ifland., 2022; Szymanski., 2010; Karpavicius & Jucevicius.,2009).

The football sector is believed to be more recession-proof than other industries due to brand loyalty amongst football clubs and fans (Szymanski, 2010, pp.5-6). This is supported by a claim from Karpacivius et al. (2009, p.87), where they figure that customers are one of four elements in football clubs' microenvironment.

Buck and Ifland (2022) highlight the importance of fans and also suggest that the COVID-19 pandemic destroyed the earlier business model football clubs maintained, with fans being one of

the vocal points. According to Buck and Ifland (2022), the implementation of FFP, as well as the pandemic, created extra value for business model innovations to be a key competitive factor for football clubs. They suggest that the complexity of the environment has caused the lack of clear guidelines for a working business model for football clubs and needs further research. Overall, the industry can be considered a complex and multifaceted industry with various stakeholders.

1.3. Revenues

Top football clubs' revenue consists of three major categories: commercial revenue, matchday revenue, and broadcast revenue, which holds the largest portion of the three. According to Deloitte's (2022a, p.6) annual review of football finances Spanish clubs generated €2.948 million in revenues for the season 2020/21, which was still highly affected by Covid-19. Broadcast revenue made up 68% of the total revenue generated, commercial revenue followed with 30% leaving matchday revenue with 2% (Deloitte, 2022a, p.6). This is visualised in figure 1. While commercial revenue stayed stable, matchday revenue was highly affected by the Covid-19 pandemic forcing games to be played behind closed doors. However, this saw an increase of 23% in broadcast revenues between the seasons 2019/20-2020/21 but still an overall decrease in total revenues of 5%. (Deloitte, 2022a, p.6)
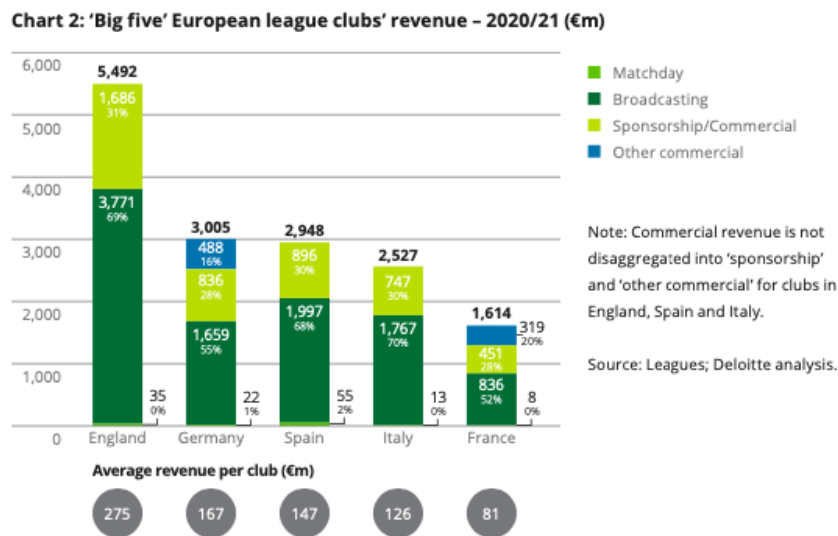

Figure 2 'Big five' European league clubs' revenue – 2020/21(€m)
Source: Deloitte: Annual Review of Football Finance

Revenues have grown steadily in La Liga from the 1996/97 season all the way until the 2018/19 season. The only dip that has been seen was in the seasons 2019/20 and 2020/21 due to Covid-19, but Deloitte (2022a, p.6) projected the revenues to stabilise and continue increasing for the 2021/22 season onwards. While matchday revenue has not been the most important revenue stream since the globalisation of football and increasing broadcasting revenues, Nufer and Fischer (2013, p.55) believe that if a club does not have a loyal fan base attending games, it has a negative influence on sponsorship and media interest. While Cox (2012) believes that broadcast is a substitute for matchday revenue and found that increasing live broadcasting has a negative influence on matchday revenue. When Covid-19 shocked the footballing world, a study by Bond et al. (2020) found that most clubs in England were facing financial distress even with increasing broadcast revenue. Bond et al. (2020, p.3) stated the following: "A football club co-exists in a symbiotic relationship with its spectators, the greater the loyalty, the more resources will flow from them to the football club", which also supports ideas by Nufer and Fischer (2013). This shows that even while being the smallest revenue stream generated by the clubs out of the three, matchday revenue is still highly influential for the sake of financial stability for the clubs.

1.4.   The Spanish Premier League (LaLiga)

Research has been done about the Spanish premier league (La Liga), which mostly focuses on financial and broadcasting-related issues. These papers often also bring out the competitive imbalance of the league.

Prior studies regarding La Liga bring out the financial inequality and unevenly distributed tv-rights which are usually compared with other European leagues. (Bergantiños & Moreno-Ternero, 2022; Montes et al., 2014; Beck et al., 2022)

According to Montes et al. (2014). the competitive imbalance affects not only the competitive side of the league but also influences the financial side of La Liga. They indicate that the imbalance influences low attendance at stadiums which affects a major revenue stream for teams.

A law was implemented by the Spanish government in 2015 after the outrage of smaller Spanish clubs in La Liga, which would create more balance in tv-rights distribution within the league. However, according to Bergantiños & Moreno-Ternero (2022), the results still show a disproportionate share of broadcasting revenue even with the implemented law. Bergantiños and Moreno-Ternero (2022) found that success in international competitions and the introduction of

new players positively affect the distributed revenue. Alternatively, this does not support smaller teams, according to Montes et al. (2014).

Beck et al. (2022) also suggest that the competitive balance does not only impact the appeal of the league in a negative way but also the decline of the national team of Spain since most of the players play for the top 3 teams. The article states that competitive balance is one of the critical components of football itself, and the increase in imbalance only harms the sport's long-term viability, which could be fixed by financial regulations, revenue sharing, league restructuring, and grassroots investments.

1.5.   Transfer expenditure

Player transfers are a big part of football, and whether it is in the fifth tier of the Spanish football league or La Liga, they have always been and will be present in the game. According to a study by Liu et al. (2016), large transfer fees positively correlated with team performance. The study included over 400 teams across the world between 2011-2015. Transfer fees have been academically studied before, and the topic has a common belief that player transfers have a positive relationship with competitive performance. Another study was made by Matesanz et al. (2018), where they found supporting findings to the study by Liu et al. (2016) and concluded that transfer expenditure has a lot of effects on the competitiveness in international competitions held by UEFA and domestic leagues. The study mentions that the findings support the imbalance of football, and the competitive level is decreasing since top teams are able to attract and purchase the players that smaller teams have no access to. The outcome's uncertainty level decreases in domestic and international competitions, which harms the sport's long-term viability, as Beck et al. (2022) suggested. While Mertten (2022) holds the same ideology true that higher transfer expenditure leads to better sporting performances, the performance happens with a lag of one to two years. This suggests that the teams maximise the results from the transfer expenditure after the player has played at least one season. This belief makes sense since the player would need some time to get used to living in a different country/city and possibly playing in a different league with a different style. However, a study contradicts the earlier studies by Bhatia (2020), where the author shows that high transfer fees suggest a negative relationship between the club's rating.

While all the studies believe that transfer expenditure has either a positive or a negative relationship with competitive performance, Jagielski, M. (2022) suggested that spending has little

or no significance with performance in the league. The author suggests that since there is no causal relationship between the two, rather than spending money on player transfers, the clubs should focus on player development and scouting young players.

1.6. Relationship between competitive and financial performance

As mentioned in the introduction, there has not been any recent research regarding the relationship between financial and competitive performance in Spanish La Liga. However, there is much research regarding the topic In the English premier league. The reason for this might be the lack of competitiveness in La Liga in recent years, or the league's attractiveness is not on par with the English league.

A study by Barajas et al. (2005) concluded that sporting revenues are the best-explaining variable to explain the performance of the teams in Spain independently. These results are like Carmichael et al. (2010), who claim that despite inconsistent evidence, research implies a positive correlation between revenue and sporting performance. Studies show that there is a "sweet spot" for sporting performances that maximises the economic outcome (Barajas et al., 2005; Carmichael et al. 2010). Both studies in question used a parametric approach, with Barajas et al. (2005) using a linear regression model while Carmichael et al. (2010) used a fixed regression model, which wielded similar results when compared together.

According to Barros & Leach (2006, p.396), efficiency can be measured either in a parametric or a non-parametric way which is the most relevant approach. Barros & Leach (2006) used a data envelopment analysis by which they investigated the English premier league's efficiency with financial and sporting variables in a non-parametric way. The study found that transfer spending and wages are positively associated with a club's efficiency but also suggest that they might reduce the profitability of the club and impact long-term financial sustainability. Overall, the importance of financial resources cannot be neglected since the relationship with competitive performance is highlighted in all the studies (Barajas et al., 2005; Carmichael et al., 2010; Barros & Leach, 2006).

In summary, this theoretical review aimed to bring out already existing research regarding the topic. Even though the competitive imbalance in Spanish La Liga has been proven by previous studies, there is limited research on the relationship between competitive and financial

performance. Also, previous research has been made about the relationship in the English premier league which allows the author to have supporting studies while making this one. However, the effect of major revenue streams is not studied comprehensively enough. Due to the evolution of the sport, it is important that studies are made about various leagues with various aspects to distinguish patterns of inequality, possibly across Europe. The lack of research might lead to inefficient policies and regulations as well as losing the understanding of how teams perform and how various variables affect performance.

2. Methodology

The author will use regression analysis to examine how different revenue variables affect the team's competitive performance. In this study, the author will conduct a multiple linear regression model using competitive performance as the dependent. The author will use regression analysis to examine how different revenue variables affect the team's competitive performance. With a multiple linear regression model, the author is able to analyse the relationship between multiple independent variables and the dependent variable.

When conducting the multiple regression analysis, the author believes that excluding intercepts for revenue-based variables is appropriate for the model. The author suggests that a team cannot compete or collect any points from the domestic leagues if the generated revenues are €0. Teams can operate with loan money, but suggesting that a team would be able to operate without generating any revenue from any of the revenue streams is not logical.

It is suggested that the intercept is to be excluded only when there is theoretical evidence to do so. What this means is that when an intercept is included, there is a belief that the dependent variable has values even if all the independent variables are set to zero. According to Turgal and Doganay (2017), there should be careful consideration before deciding not to include an intercept, and it should have theoretical reasoning why not to include the intercept. The author excluded the intercept because La Liga has Financial Fair Play rules (FFP) which require teams to keep their wages below 70% of total revenue and generate a minimum amount of revenue that is not reported publicly. (*Football Benchmark - Overview of the New UEFA Financial Fair Play Regulations*, 2022)

The regression model, when excluding the intercept, will use the following equation:

$$LaLigapoints = \beta_1 BroadcastRevenue + \beta_2\ CommercialRevenue + \beta_3\ MatchdayRevenue + \varepsilon$$

Where La Liga points represent the points each team has gathered in the given time frame. Broadcast revenue, commercial revenue, and matchday revenue all represent the revenues the teams gathered within the given time frame. The ε represents the error term with a mean of zero and a constant variable. It accounts for the variability within the dependent variable that the independent variable can't explain.

The author will conduct a separate regression model for the dependent variable and transfer expenditure since there is no belief that transfer expenditure should exclude the intercept. The regression model with the intercept included uses the following equation:

$$LaLigapoints = \beta_0 + \beta_1 TransferExpenditure + \varepsilon$$

Where the dependent variable has the same meaning as in the multiple variable regression. The β_0 represents the expected La Liga points when the transfer expenditure is zero, also known as the expenditure.

2.1. Data collection

The data sample for this study includes three La Liga teams that have been the most successful teams in the league in the 21st century. All the teams in question have won the league at least two times in the given period of seasons 2012-2022, meaning they have been competing in the same league during the time span. The small sample group was chosen because no major success within the domestic league has been captured outside the chosen teams regarding titles. Also, the lack of publicly available financial data from Spanish teams is hard to acquire for the given time frame. The teams chosen for the study by the author are ATM, FCB, and RM. The time span for the study is ten years which in football terms year is described as 2012/13 and called a season. This differs from the traditional way of measuring the changes over a normal fiscal year and how other businesses would. The sample will ultimately offer 30 observations for each variable which are four in total. The sample starts from the season 2012/13 and ends in 2021/22 so that we can possibly see if the Covid-19 pandemic had any effect on the results.

The revenues are broken down into three major categories, which are mentioned above by Deloitte. From the same report, the author is able to gather data about the transfer expenditure as well for the seasons 20/21 & 21/22 but has to gather information for the other nine seasons from various online sources. The league position and points can be gathered by various online sources as the league position, and statistics are public information. Excel will be used to gather the data and form graphs, as well as descriptive statistics.

2.2. Variables & hypotheses

The La Liga points will act as the dependent variable. Matchday revenue, broadcast revenue, commercial revenue, and transfer expenditures shall be identified as the independent variables which will be used in the regression models. All the independent variables are stated in millions of euros. However, the LaLiga points will be stated as how many points are gathered within each season. Regression models were conducted in Excel, which was used also to gather data and create visuals for the models.

2.2.1. LaLiga points

The LaLiga points a team gathers within one season will serve as the dependent variable for the correlation and regression analysis. The variable represents the team's competitive performance, which the independent variables affect.

La Liga points	
Mean	83,866667
Standard Error	1,4619569
Median	86
Mode	87
Standard Deviation	8,0074678
Sample Variance	64,11954
Kurtosis	-0,646083
Skewness	-0,259347
Range	32
Minimum	68
Maximum	100
Sum	2516
Count	30

Figure 4 Descriptive statistics
Source: Created by the author based on Appendix 1

The mean points gathered by the teams within the given period were 83.86 points by the performed descriptive statistics. The least points gathered were 68 points, while the maximum was 100 points.

The maximum and minimum points were both approximately two standard deviations away from the mean which means the data is normally distributed. Given the skewness of ≈ -0.25 means, the data mostly clustered around the mean.

Null Hypothesis: Independent variables are not significant predictors for the dependent variable.

2.2.2. Broadcast revenue

The broadcast revenue represents the amount the team has gathered from participating in the domestic league, cups, and UEFA cup competition in which all three teams have played in the given period. Broadcast revenue is one of three revenue-related variables within the model and will serve as one of the independent variables used to measure the dependent variable.

Broadcast revenue	
Mean	206,626667
Standard Error	11,5101134
Median	206,8
Mode	#N/A
Standard Deviation	63,0434876
Sample Variance	3974,48133
Kurtosis	0,77888349
Skewness	-0,665705
Range	270,5
Minimum	40
Maximum	310,5
Sum	6198,8
Count	30

Figure 3 Descriptive statistics

Source: Created by the author based on Appendix 1

H_0 – generated broadcast revenue will have no significant effect on points achieved

H_1 – generated broadcast revenue will have a significant effect on points achieved

The descriptive statistics show that the mean broadcast revenue generated was around €206 million euros, while the minimum generated amount was €40 million and the maximum €310 million. The given data is relatively symmetric due to the similarities with the mean and median, but the given data has a moderately large standard deviation.

2.2.3. Commercial revenue

The commercial revenue includes sponsorships, merchandising, and revenue from other commercial operations. The variable in question will serve as the second revenue-related variable within the model.

Commercial revenue	
Mean	217,316667
Standard Error	20,7675372
Median	245,7
Mode	#N/A
Standard Deviation	113,748486
Sample Variance	12938,718
Kurtosis	-1,4699766
Skewness	-0,2762088
Range	342,6
Minimum	40,9
Maximum	383,5
Sum	6519,5
Count	30

Figure 4 Descriptive statistics

Source: Created by the author based on Appendix 1

H_0 – generated commercial revenue will have no significant effect on points achieved

H_1 – generated commercial revenue will have a significant effect on points achieved

Presented descriptive statistics in *Figure 5* show that the mean commercial revenue was approximately €217 million, while the minimum generated revenue was around €41 million, and the maximum was €383 million. Commercial revenue has the largest standard deviation meaning the data varies more than other variables. This could be explained by the fact that FCB and RM both had a mean commercial revenue of over €280 million, while the largest achieved commercial revenue by ATM was €108 million. This causes the dispersed data, which is also seen from the Kurtosis.

2.2.4. **Matchday revenue**

The matchday revenue is mostly derived from gate receipts which include ticket and corporate hospitality sales. This is the last revenue-related variable in the model and will be measured in millions of euros like every other variable excluding the points gathered.

Matchday revenue	
Mean	88,87
Standard Error	8,66779632
Median	111
Mode	144,8
Standard Deviation	47,4754757
Sample Variance	2253,92079
Kurtosis	-1,3256222
Skewness	-0,388446
Range	155
Minimum	4,2
Maximum	159,2
Sum	2666,1
Count	30

Figure 5 Descriptive statistics

Source: Created by the author based on Appendix 1

H_0 – generated matchday revenue will have no significant effect on points achieved

H_1 – generated matchday revenue will have a significant effect on points achieved

The descriptive statistics show that the mean generated matchday revenue is approximately €89 million and has the smallest mean out of the three. The minimum matchday revenue generated was €4 million during covid, and the maximum was €159 million. The minus skewness could be explained by covid like mentioned when the revenue generated was relatively low. Matchday revenue also holds the lowest mean among revenue streams and less extreme values according to the Kurtosis.

2.2.5. **Transfer expenditure**

Transfer expenditure is the last independent variable in the model. It consisted of money invested in acquiring players from other teams around the world. This only considers the money spent but not the money made from the transfers. Transfer expenditures are measured in millions of euros.

Transfer expenditure	
Mean	122,954
Standard Error	16,9358232
Median	99,55
Mode	#N/A
Standard Deviation	92,7613242
Sample Variance	8604,66327
Kurtosis	1,86456715
Skewness	1,43575478
Range	375,6
Minimum	4,5
Maximum	380,1
Sum	3688,62
Count	30

Figure 6 Descriptive statistics

Source: Created by the author based on Appendix 1

H_0 – transfer expenditure will have no significant effect on points gathered

H_1 – transfer expenditure will have a significant effect on points gathered

The mean expenditure in transfers is approximately €123 million. The minimum value was €4,5 million spent, while the maximum value was €380 million. The high values force the skewness to be drifting to the right, where most of the data points would be located if displayed in a histogram.

3. Results

3.1. Analysis

The models were created, with one being a multiple regression analysis and one being a single regression analysis, as mentioned. Conducting two separate regression models allowed the author to have a more accurate estimation of the coefficient for the predictor variables. This also allowed the author to explore different assumptions about the relationship between the independent and dependent variables. Since there was no theoretical justification for assuming the y-intercept is zero for every independent variable, it allowed the *transfer expenditure* variable to avoid biased estimations while conducting two models.

3.1.1. Multiple linear regressioon

With the regression model excluding the intercept, we can see from *Figure 8* that there is a strong positive correlation between the independent and dependent variables according to the multiple R. The R-square indicates that the independent variables can explain 91% of the variation in the dependent variable. This supports the earlier studies brought out by the author about financial inequality and competitive imbalance in La Liga. According to the model, revenue variables are a strong estimator for the gathered league points. The provided standard error is clearly higher than in the model with included intercept in Figure 7. Since the dependent variable varies between 60-100 and the independent variables between 0-400, the standard error can be considered relatively large. However, we can accept the higher standard error due to the data's availability and variability since the dataset can be considered small with a lot of variation, according to Statistics (2022), who suggest that larger datasets lead to a smaller standard error while smaller datasets might have a higher one.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,958653386
R Square	0,919016315
Adjusted R Square	0,880409755
Standard Error	24,8127524
Observations	30

ANOVA

	df	SS	MS	F	Significance F
Regression	2	195629,1649	97814,58246	158,8743262	1,16715E-15
Residual	28	17238,83508	615,6726816		
Total	30	212868			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 90,0%	Upper 90,0%
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Broadcast revenue	0,295613395	0,046467312	6,361749405	6,95311E-07	0,200429421	0,390797369	0,216566413	0,374660377
Matchday revenue	0,184770467	0,099858795	1,850317415	0,074846613	-0,019781001	0,389321936	0,014897582	0,354643352

Figure 7 Multiple regression model

Source: Created by the author based on Appendix 1

Distinguishable from the ANOVA table, we can reject the null hypothesis "independent variables are not significant predictors for the dependent variable" according to the F-value of 158.87 and p-value of 1.16715E-15, which is much less than the typical alpha value of 0.05. Therefore, the used independent variables broadcast and matchday revenues are significant predictors of the dependent variable. For statistical reasons, the author had to exclude the independent variable "Commercial revenue," which the author will address later.

The regression model offers statistically significant results and can confirm the usage of the model. The independent variable, Broadcast revenue, holds a p-value of 6.95311E-07 which can be considered very small. With this p-value, the variable is able to reject the null hypothesis meaning it has a significant effect on the dependent variable. However, Matchday revenue has a p-value of 0.07 which can be considered slightly higher. The p-value suggests that the independent variable is not able to reject the null hypothesis and has no significant effect on the dependent variable when analysed from a conventional significance level $\alpha=0.05$. Since the dataset is considered small, according to Thiese et al. (2016, p.929), it is more appropriate to hold the significance slightly lower as $\alpha=0.10$, which would reject the null hypothesis for the independent variable. Therefore, the author can reject both used independent variables' null hypotheses and conclude that both revenue streams significantly affect the dependent variable.

Both coefficients in the model suggest a positive relationship between the independent variables and the dependent variable. The coefficient of "*Broadcast revenue*" indicates that for every €1 million the team can generate from this revenue stream, the team is able to gather an additional 0.29 points in the league. "*Matchday revenue*" coefficient provides us information that with a €1

million increase in the given revenue stream, the team is able to gather 0.18 points more in their respective league.

3.1.2. Single linear regression

The single linear regression model aimed to assess the relationship between the dependent variable and transfer expenditure with the intercept included due to the nature of the data. From *Figure 9*, we can immediately see that the models r squared (0,00013826), or adjusted r square (-0,035571088), were very low. This means that the model explains very little of the variance in the dependent variable. The given standard error was significantly lower than the multiple regression model but still relatively high, with a standard error of 8.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,011758383
R Square	0,00013826
Adjusted R Square	-0,035571088
Standard Error	8,148640504
Observations	30

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0,257089083	0,257089083	0,0038718	0,950826656
Residual	28	1859,209578	66,40034206		
Total	29	1859,466667			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	83,9914678	2,497218733	33,63400518	3,4769E-24	78,87614712	89,10678849	78,876147	89,106788
Transfer expenditure	-0,001015023	0,016312451	-0,062223819	0,95082666	-0,034429564	0,032399518	-0,0344296	0,0323995

Figure 8 Single regression model

Source: Created by the author based on Appendix 1

The ANOVA table indicates that the overall model used was not statistically significant. The p-value indicated as significance F had a value of 0.95 which is a lot greater than the typical $\alpha=0.05$ and even in the case of this study with a smaller sample size when the $\alpha=0.10$ (Thiese et al., 2016, p.929). Thus, the author cannot reject the null hypothesis for the variable "*Transfer expenditure*", which was stated as "transfer expenditure will have no significant effect on points gathered".

Even though there is not a significant linear relationship between the dependent and independent variables, the model suggests that the intercept is statistically significant and has an impact on the dependent variable. This can be concluded by the t-static value of 33.63 and a p-value < 0.05. The t-static provides us knowledge of whether the estimated coefficient is different from zero and whether the intercept term is significant for the model.

The high t-static value could also indicate that there are other factors or variables that are not included in the model but are still captured by the intercept term.

3.2. Limitations

The findings of this study have to be seen in the light of some limitations. While the author conducted the multiple linear regression model, it became evident that the independent variable *"commercial revenue"* was causing a disturbance in the model. Firstly, the results obtained from the regression model did not seem accurate, resulting in the author testing for multicollinearity between the variables and autocorrelation within the independent variables themselves. This resulted in the author excluding the mentioned independent variable from the research to obtain more accurate results for the remaining variables.

Multicollinearity refers to the independent variables correlating with each other, which is not ideal for a regression model where the variables are due to be independent. While facing multicollinearity, the precision of the estimated coefficients will be reduced, and the model might offer p-values for the independent variables, which cannot be trusted even when they are statistically significant (Frost, 2017). The author tested the multicollinearity with a correlation matrix (See Appendix 2), from where the multicollinearity can be stated when the correlation coefficient is >0.7 among two or more predictors (Rekha Molala, 2020). The author used Excel to compute a correlation matrix. *Commercial revenue* offered a correlation coefficient of ~0.76 with *broadcast revenue* and ~0.70 with *matchday revenue*, which states multicollinearity.

The author wanted to test the fit of the *commercial revenue* with autocorrelation as well, which is often seen in time series data. When a variable has autocorrelation, the random errors in the model are often correlated positively over time, which causes the random errors to be not so random over time (*10.2 - Autocorrelation and Time Series Methods | STAT 462*, n.d.). The autocorrelation was calculated using Excel, from where the function provided a correlation of 0.78 (See appendix 3).

Another limitation of the study is the limited size of the data. The author was able only to find details about 3 Spanish teams with enough available information from a ten-year period. The transparency of Spanish teams is not on par with, for example, English teams which allowed the author to study only the top three performing teams. There is high variability within the different revenue streams and with a smaller data set, trends and patterns are harder to visualize. A larger data set would have allowed for obtaining more accurate results and trends from the model.

3.3.   Findings

After analysing the competitive performance of the three teams by calculating averages, the author discovered some differences between the teams. Among the three, ATM had the lowest average of 79.2 points per season and never generated the highest revenue in any category. The lowest average points could be explained by ATM's total revenue being far behind FCB and RM, who had average total revenues of €621,34 million and €649,48 million, respectively. The top two teams, FCB and RM, averaged 87.6 and 84.8 points per season.

ATM's average total revenue was €267,62 million, which was €353,72 million less than FCB and €381.86 million less than RM. With the multiple regression model, these findings can be supported since the model the capable of explaining a positive relationship between competitive performance and revenues. This would explain the point difference between ATM compared to FCB, and RM by looking at the revenues (see Appendix 4)

The independent variables were also used to create scatter plots to illustrate the linear relationship between the dependent variable. According to Friendly and Denis (2005, p.103): "the scatterplot is arguably the most versatile, polymorphic, and generally useful invention in the history of statistical graphics.". With the scatter plot, the author is able to easily provide the reader with information about the shape of the relationship, the sample size, as well as any extreme values or outliers the data might have (Sainani, 2016). The author clarifies that even though the scatter plot is an effective way to bring out statistical results, they do not completely explain the correlation between the variables due to the complexity of the relationship. The author aims to use scatter plots to illustrate trends and relationships between the variables.

3.3.1.   Broadcast revenue

The figure below shows us how the gained La Liga points change in relation to the amount of broadcast revenue gained by the teams in the 10-year span. As we can see from the figure, the correlation coefficient of ~0.006 implies to be having an extremely weak relationship. From this, the author can state that the x has little to no predictive power individually when explaining the variation in y. We still should not be only analysing the r-coefficient since it does not consider all the factors when dealing with the relationship between the dependent and independent variables.
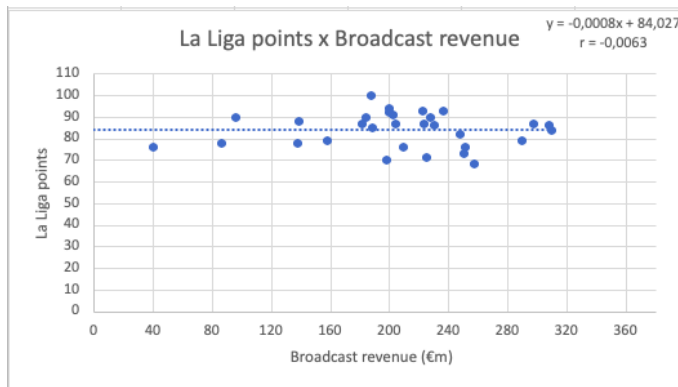
Figure 9 La Liga points x Broadcast revenue

Source: Created by the author based on Appendix 1

We can see from *Figure 10* that the individually broadcast revenues trendline gradient stands at -0.0008, meaning that the y changes at this rate with respect to x. This indicates that individually the variables have a negative linear slope even though it is minimal.

The data is mostly scattered above the trend line. However, the author is able to distinguish a very small scatter between the revenue region of €160-240 million, where teams have been able to gather more league points than when going above or below this revenue level. According to the data, out of the 10 available championships, six were won between the stated revenue level, where the winners were always above the mean La Liga points level.

3.3.2. Commercial revenue

Figure 11 describes the change in relation to the amount of commercial revenue. Even though the independent variable was removed from the regression model, the author is still able to visualise the relationship between the dependent and independent variables individually. Even though commercial revenue provides the second highest correlation between the dependent variable, this could be considered a weak linear relationship among the variables. Individually the variable can explain ~21% of the variation in the dependent variable.
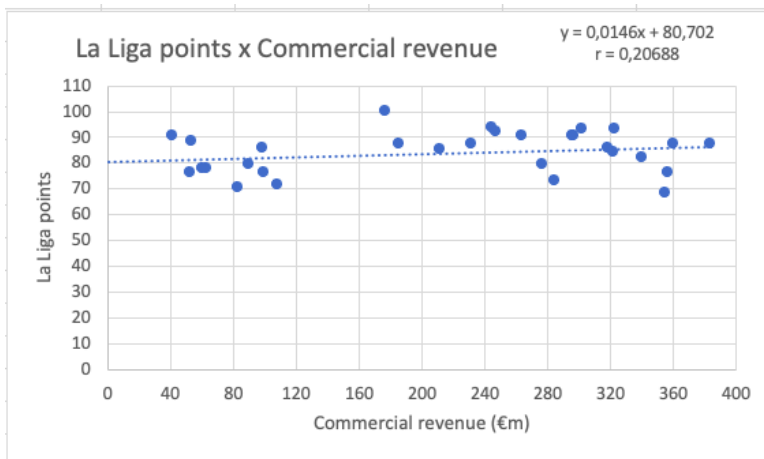
Figure 10 La Liga points x Commercial revenue

Source: Created by the author based on Appendix 1

The gradient trendline stands at 0.0146, meaning the *La Liga* points change at the rate of ~0.01 with respect to *Commercial revenue* when the team earns €1 million in commercial revenue. From *Figure 10,* we can distinguish a positive linear slope like the correlation coefficient suggests leaving 13 out of the 30 observations below the linear line. We can also distinguish that when a team has surpassed the revenue limit of €300 million, a team has only been able to gather 90 points twice out of nine occasions. In contrast, when a team has been unable to gather commercial revenue of less than €100 million, the 90-point limit has been reached only once and 80 points three times, while other observations have been less than the 80-point intercept term.

3.3.3. Matchday revenue

Matchday revenue's scatter plot figure below describes the relationship between the La Liga points and Matchday revenue. Compared to the independent variable "*Broadcast revenue",* the correlation coefficient of 0.3240 is significantly higher. The coefficient indicates a moderately positive correlation since it lands between 0.3 and 0.7 (Ratner, 2009). This means that the dependent variable can individually explain ~32% of the variation in the dependent variable.
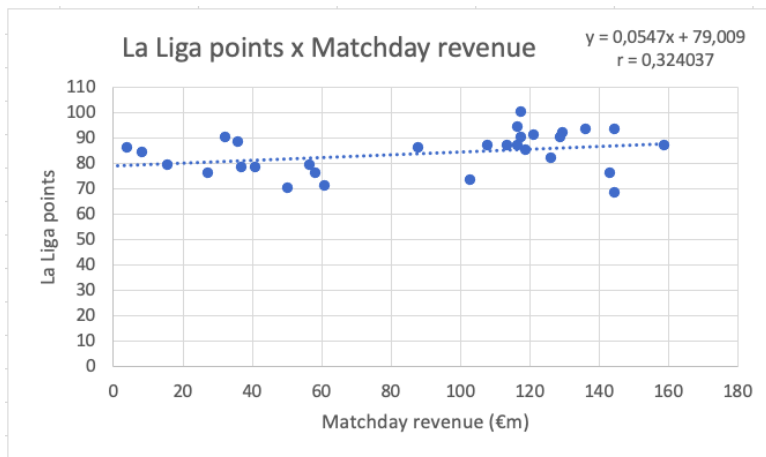
Figure 11 La Liga points x Matchday revenue

Source: Created by the author based on Appendix 1

The gradient of the trendline stands at 0.0547, which is also significantly higher than the trendline gradient compared to *Figure 10.* Thus, the *La Liga* points change at the rate of ~0.05 with respect to *Matchday revenue* when €1 million is earned in matchday revenue.

From *Figure 12*, it can be distinguished that most points were gathered when the matchday revenue was between €116-117 million, which is very much above the mean value of *Matchday revenue* which is ~€88 million. When a team was generating *Matchday revenue* between €115-120 million, the average points gathered was 91.2, which would be enough to win six titles out of a maximum of 10.

3.3.4. Transfer expenditure

As we can see from *Figure 13,* there is once more an extremely weak linear relationship between the acquired La Liga points and transfer expenditure by the team. The correlation coefficient stands at -0.01, meaning it can only explain -0.1% of the variation on the dependent variable. This suggests that other factors or variables may have more influence on the variation of y compared to the *Transfer expenditure.*
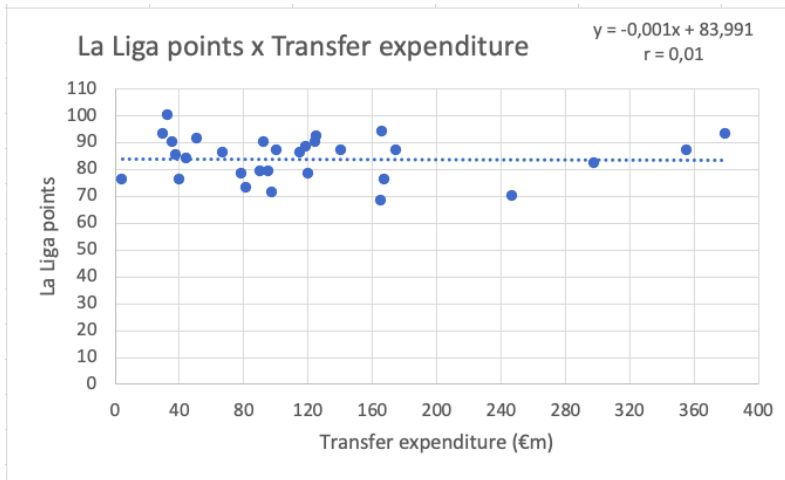
Figure 13 La Liga points x Transfer expenditure

Source: Created by the author based on Appendix 1

The equation of *y* indicated that an increase of €1 million would cause a point decrease of 0.001 in the dependent variable La Liga points. The scatterplot provided data scattered across the table from where it is hard to draw conclusions.

3.4. DISCUSSION

Based on the results obtained from the study for the first research question, the author created a multiple linear regression model, which was able to provide results that can be determined statistically significant with the provided p-value. The author was able to reject the null hypothesis of "independent variables have no significant effect on the dependent variable" in the first regression model. From the model, it was distinguishable that the *Broadcast revenue* had the highest effect on the dependent variable with a coefficient of 0.29. According to Deloitte (2022a), broadcast revenue is football teams' most influential revenue stream. The average total revenue for La Liga clubs in the 20/21 season was €147 million, but from the scatterplot, the author distinguished that when a club is able to generate solely broadcast revenue between the region of €160-240 million, they were more successful. The results support both studies and prove the still-existing imbalance despite the "balanced" tv rights distribution brought out by Bergantiños and Moreno-Ternero (2022).

The matchday revenue, however, despite not offering a coefficient as large as the broadcast revenue, when plotted individually, was able to explain significantly more variation than the broadcast revenue. With the given results, we can reject Cox's (2012) belief that increasing

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broadcast revenue negatively influences matchday revenue. A study supporting the rejection was also made by Bond et al. (2020). They found that even with increasing broadcast revenue, most football clubs in England were facing financial distress with the lowered matchday revenue during the Covid-19 pandemic. Nufer and Fischer (2013) also believed in the symbiotic relationship with higher spectator loyalty bringing more resources to the football club, which could explain why FCB is the most competitive with the highest matchday revenue. The author determines that the reason for the higher individual effect on the dependent variable is the atmosphere and support fans provide while playing. Since Ticket sales are a major contributor to matchday revenue, more people are attending games when the revenue increases.

Despite excluding the commercial revenue from the regression model, the author found that the variable can explain 21% of the variation within the dependent variable. When it comes to the relationship between competitive performance and revenues, the author was not able to examine the effect of all the revenue variables on the dependent variables. Although the results do not show that generating the most revenue leads to generating the most points, there is a clear gap between ATM and FCB & RM when it comes to competitiveness, which was measured by gathered points.

The second research question was not able to reject the null hypotheses with the single linear regression model. The provided p-value from the model stated that the model was not statistically significant, while the acquired r-squared and adjusted r-squared values do not offer a lot of variance in the dependent variable. The results contradict the common belief that transfer spending has a positive effect on sporting performances (Liu et al., 2016; Matesanz et al., 2018; Merten, 2022). The author's answer to the research question is that there is not a positive relationship between transfer expenditure and competitive performance due to the negative coefficient produced by the regression model and the scatterplot. The results slightly support the findings by Bathia, A. (2020) that the transfer expenditure affects sporting performances negatively rather than positively. The results gained by the author are similar to the findings by Jagielski, M. (2022), where transfer expenditure does not explain the performance of a team and can't be used as an indicator when looking for the causation of performance.

Since the author could not gain significant statistical values, no concrete conclusion can be drawn on how the transfer expenditure affects sporting performance, which relates to the findings of Jagielski, M. (2022).

CONCLUSION

The aim of the study was to determine the relationship between competitive performance with revenue streams and transfer expenditure. The author aimed to prove the ongoing revenue disparity in the league and provide proof that revenue has a major influence on their competitive performance. The study included three Spanish teams which were inspected over a ten-year span.

For the research, the author utilised information gathered from earlier research and timely information from Deloitte. The author used regression analysis for the research and created two models deemed the best fit for the data. Before conducting the regression models, the author used different statistical tests to test the fit of the data for the models used. With the test, the author was able to detect autocorrelation and multicollinearity, which should be avoided when conducting regression models. This forced the author to exclude an independent variable from the model but was still able to use it in the research on a smaller scale.

The author found that both revenue streams, "matchday revenue" and "broadcast revenue", are strong indicators for the La Liga points, acting as competitive performance in the study. When the independent variables were placed in multiple regression models, the author found that the two variables both have a positive coefficient with the performance which the author predicted based on earlier studies. Based on the author's study, it was proven that there is a competitiveness disparity even among the top three teams in La Liga. The performance of ATM was found to be far less competitive than that of FCB and RM, with a revenue difference of over €300 million. However, it was observed that the competitive difference based on revenues decreases when the difference in revenues is small.

The results from the singular regression model proved not to be statistically significant. If the transfer expenditure had a stronger relationship with La Liga points, when individually plotted, the variable would have a negative effect on the team's competitive performance. This relationship has differing opinions from multiple earlier research, with some finding a positive relationship while others have found contradicting results.

However, it is worth noting that the study has limitations since it does not consider all the factors that contribute to competitive performance, such as training facilities, quality of staff, and individual traits of players and staff. The main limitation was excluding one of the independent variables due to statistical issues. The research would have more accurate or even differing results

by expanding the sample size. This would also mitigate issues like multicollinearity and autocorrelation since their effects are possible to nullify in a larger data set.

The study serves as a valuable first step for La Liga to try evening out revenues within the league, beginning with the broadcast revenue. Also, gaining more recent information and patterns about La Liga can be used more when investigating the league in depth. Investigating how investments in training centres, youth programs, and staffing relate to competitive performance would also be beneficial. Studies about these resources could potentially aid lower-revenue teams with information on where to invest and bridge the gap between them and teams that generate higher revenues. Also, expanding the range of the same study would be preferable by including the whole league. Including other competitive performance, goals would also be ideal since reaching international competitions and winning domestic cups are goals set to reach by smaller teams, allowing higher income levels.

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APPENDICES

Appendix 1. Combined data table

Seasons	La Liga points	Broadcast revenue	Matchday revenue	Transfer expenditure	Commercial revenue	Teams
2013	76	40	27,50	4,5	52,5	Atletico Madrid
2014	90	96,5	32,50	36,1	40,9	Atletico Madrid
2015	78	86,6	37,20	120,35	63,3	Atletico Madrid
2016	88	139,4	36,00	119	53,2	Atletico Madrid
2017	78	138,4	41,00	78,8	60,6	Atletico Madrid
2018	79	158,2	56,80	95,6	89,4	Atletico Madrid
2019	76	209,4	58,60	168	99,6	Atletico Madrid
2020	70	198,5	50,40	247,35	82,9	Atletico Madrid
2021	86	230,5	4,20	67,1	98,1	Atletico Madrid
2022	71	225	61,00	98,1	108	Atletico Madrid
2013	100	188,2	117,60	33	176,8	Fc Barcelona
2014	87	182,1	116,80	101	185,7	Fc Barcelona
2015	94	199,8	116,90	166,72	244,1	Fc Barcelona
2016	91	202,7	121,40	51	296,1	Fc Barcelona
2017	90	184,7	117,90	124,75	296,2	Fc Barcelona
2018	93	223	144,80	380,1	322,6	Fc Barcelona
2019	87	298,1	159,20	141,1	383,5	Fc Barcelona
2020	82	248,5	126,40	298,5	340,2	Fc Barcelona
2021	79	289,6	15,90	90,8	276,6	Fc Barcelona
2022	73	251	103,00	81,8	284	Fc Barcelona
2013	85	188,3	119,00	38,5	211,6	Real Madrid
2014	87	204,2	113,80	175,5	231,5	Real Madrid
2015	92	199,9	129,80	126	247,3	Real Madrid
2016	90	227,7	129,00	92,9	263,4	Real Madrid
2017	93	236,8	136,40	30	301,4	Real Madrid
2018	76	251,3	143,40	40,5	356,2	Real Madrid
2019	68	257,9	144,80	165,75	354,6	Real Madrid
2020	87	224	108,20	355,5	359,6	Real Madrid
2021	84	310,5	8,60	44,7	321,6	Real Madrid
2022	86	308	88,00	115,6	318	Real Madrid

Source: (Deloitte; Carnicero, 2022)

Appendix 2. Correlation matrix

-	Broadcast revenue	Commercial revnue	Matchday revenue
Broadcast revenue	1	-	-
Commercial revenue	0,762582324	1	-
Matchday revenue	0,329874959	0,698128422	1

Source: Deloitte., author's calculations

Appendix 3. Autocorrelation

Lag	Broadcast revenue	Commercial revenue	Matchday revenue	Transfer expenditure
2	0,478104312	0,780881877	0,321895949	-0,061194312
3	0,323474925	0,640306538	0,263236957	-0,161339453
4	0,156618934	0,475261281	0,228805449	-0,048932981

Source: Deloitte., author's calculations

Appendix 4. Averages

Averages	Broadcast revenue (€m)	Commercial revenue (€m)	Matchday revenue (€m)	Total revenue (€m)	Points (€m)
Atletico Madrid	155,25	74,85	40,52	267,62	79.2
FC Barcelona	226,77	280,58	113,99	621,34	87.6
Real Madrid	240,86	296,52	112,10	649,48	84.8

Source: Deloitte., author's calculations

Appendix 5. Excel link

[Excel data for thesis](#)

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