The impact of the Financial Fair Play regulations on financial distress of Dutch professional football clubs

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Date: 31 March, 2021
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Acknowledgements

This thesis represents the last phase of my master 'Business Administration' with a specialization in 'Financial Management' at the University of Twente. I would like to speak a word of thanks to a handful people who helped me during my master thesis and this study.

First of all, I would like to thank my supervisors Prof. Dr. R. Kabir and Dr. T. Van der Burg. Their role as supervisors have been of great value. Due to their guidance, feedback, knowledge and critical questions, I was able to constantly improve my master thesis. In addition, thanks to the KNVB, professional football clubs and my former employer for granting me access to the necessary data to conduct this research. Last of all, many thanks to my family and friends for their support and encouragement throughout my years of study.

Koen Havekes,

March, 2021

Abstract

European professional football clubs invest large amounts of money in football players. Previous studies found evidence that this led to financial distressed situations. To improve the financial position of European football clubs, the UEFA implemented Financial Fair Play regulations in 2011. This study investigated for 11 Dutch professional football clubs the impact of: (1) player expenditures on financial distress, (2) Financial Fair Play on financial distress, (3) Financial Fair Play on the relation between player expenditures and financial distress. OLS regressions are performed for a sample of 110 club-year observations between 2008 and 2018. The results found evidence that player expenditures positively impact financial distress. Furthermore, there is strong evidence for a negative impact of Financial Fair Play on financial distress, which means that Financial Fair Play regulations improved the financial position of Dutch football clubs. Lastly, no unambiguous evidence is found for an impact of Financial Fair Play in the relation between player expenditures and financial distress. This study contributes to the scarce literature about Financial Fair Play by analysing a unique Dutch sample.

Keywords: Financial Fair Play, financial distress, player expenditures, overinvestment, soft budget constraints

Table of Contents

1. Introduction

First, this chapter starts with an introduction of the research topic. Second, an overview is given about financial distress in Dutch professional football. Third, the problem statement and contributions of this thesis to the literature are stated. Lastly, the structure of this thesis is described.

1.1 Introduction of the topic

Football is the most popular sport in the world. Contemporary, European football clubs are dominating the sport. Football players all over the world are attracted to play in European competitions by the offer of high salaries (Peeters & Szymanski, 2014). In European football, a competitive battle takes place between clubs to create the best performing team (Sloane, 2015). Better performance on the field is accompanied by more television money, prize money and a better chance of qualification for the European competitions. In particular, the revenues for good performance in the lucrative Champions League has risen sharply last decades (Bullough, 2018). To not miss out on those revenues, new spheres of player expenditures exist. One of the most poignant examples is the record transfer fee of Neymar from FC Barcelona to Paris Saint-Germain. In 2017, Neymar transferred for the amount of 222 million euros (NOS, 2017). Furthermore, the NOS (2021) reported that Messi signed a players contract in 2017 which would earn him 555 million euros in four years time, excluding a signing fee of 155 million and 77 million euros in bonuses.

European football clubs spend enormous amounts of money in football players to achieve as many sporting results as possible (Transfermarkt, 2021). Smaller clubs take the risk to compete with bigger clubs, spending more than they can afford, resulting in financial distress (Franck, 2014). Mainly in the beginning years of the twenty-first century, the financial distressed situation in European football countries deteriorated, due to high player expenditures (Barajas & Rodriguez, 2014). As a result, the Union of European Football Associations (UEFA) expressed concerns about the financial situation in European football in the benchmarking report of 2010. The total net losses in 2010 of all European top division clubs combined, added up to 1.7 billion euros, which is three times as much as five years before (UEFA, 2013). According to Franck (2014), 38% of the European clubs represented a negative net equity in 2010, with assets smaller than debts. Also in the same year, auditors expressed concerns about one of each seven clubs for the ability to trade normally within twelve months' time.

In 2010, as a reaction on the financial distressed situation of European football clubs, the UEFA introduced Financial Fair Play. The aim of Financial Fair Play is to better the financial situation of European club football (UEFA, 2012). Clubs that wishes to take part in two biggest European club competitions, the Champions League and Europa League, have to meet certain criteria. The two key regulations of Financial Fair Play are: the 'enhanced overdue payables rule' and 'the break-even requirement' (Peeters & Szymanski, 2014). The enhanced overdue payables rule requires clubs to fulfil all their financial obligations towards tax authorities, employees and other clubs punctually (Franck, 2018). The break-even rule requires football clubs to balance football income and football expenses between an acceptable deviation (Schubert, 2014).

After the introduction of Financial Fair Play, it seemed difficult for prominent European football clubs to comply with the Financial Fair Play regulations. In 2014, the UEFA imposed penalties on seven clubs because of the great instability in the financial households and the failure to comply with Financial Fair Play rules (Algemeen Dagblad, 2014). In 2015, the UEFA

again issued substantial sanctions. According to Voetbal International (2015), ten clubs have been penalized. Among them are well-known clubs as Italy's AS Roma & Internazionale, France's AS Monaco and Portugal's Sporting Lisbon. The greatest example of a penalty for non-compliance with Financial Fair Play rules is Manchester City. Algemeen Dagblad (2014) reported that Manchester City and also France's Paris-Saint Germain have been punished with a penalty of 60 million euros for non-compliance with the Financial Fair Play rules. Additionally, on 14 February 2020, Manchester City has been banned from participating in European football for two seasons by UEFA (NOS, 2020). Also, the club has been fined for 30 million euros. Manchester City allegedly misled the European football federation in giving up sponsorship income and also violated the Financial Fair Play break-even requirement. According to the NOS (2020), Manchester City reported a much higher contribution from the main sponsor than the club actually gets. The rest of the amount would be coughed up by the company owner. That is against the Financial Fair Play rules, because the club owner was able to artificially increase Manchester City's annual budget, so that it could continue to invest heavily in new players. On 13 July 2020, the message came out that the two-year exclusion from European football for Manchester City is reversed. The fine has also been reduced from 30 million to 10 million euros (NOS, 2020). The football world reacted surprised after this decision by the CAS. Maarten Fontein, member of the UEFA strategic committee, even wonders whether this decision means the end of Financial Fair Play (NOS, 2020).

Since the Financial Fair Play regulations have recently become active, academic research on Financial Fair Play is scarce. Research on financial distress in professional football industry has been studied more often. English (Szymanski, 2010; Szymanski, 2017), Spanish (Garcia & Rodriguez, 2003; Barajas & Rodriguez, 2010), Italian (Baroncelli & Lago, 2006; Hamil, Morrow, Idle, Rossi & Faccendini, 2010), German (Frick & Prinz, 2006; Szymanski & Weimar, 2019), French (Andreff, 2007; Scelles, Szymanski & Dermit-Richard, 2018), Portuguese (Mourao, 2012) and Russian (Litvishko, Vyprikov and Lubyshev, 2019) financial distress in professional football industry has been examined. After these seven competitions, the next competition according to the UEFA coefficient ranking at the starting point of this research is the Netherlands (Transfermarkt, 2020). However, there is no academic literature publicly available for Dutch professional football clubs about financial distress. Therefore, this study dives into this gap and focuses on Dutch professional football clubs. In the following paragraph, an outline about financial distress in the Dutch professional football industry is given. Thereafter, the problem statement and the contributions to the literature are stated.

1.2 Dutch professional football context

There is no academic research available about financial distress or Financial Fair Play which focuses specifically on the Dutch football industry. Since this thesis focuses on Dutch professional football, this paragraph provides background information about the Dutch football industry, mainly based on non-academic articles.

Dutch professional football consists of two divisions, which are organized and monitored by the KNVB, which is the Dutch football association (KNVB, 2020). Contemporary, the Dutch highest division is called the 'Eredivisie', which consists of eighteen teams. The division below is called the 'KeukenKampioen Divisie' and consists of twenty teams. A promotion and relegation system is used, whereby the two bottom clubs of the Eredivisie exchange with the top two clubs of the KeukenKampioen Divisie at the end of each season. A third club can also relegate or promote, which is decided by play-offs at the end of the season. There are five tickets distributed to Dutch clubs for participation in the European football competitions: the Champions League and the Europa League (KNVB, 2020).

Since the establishment of Dutch professional football in 1954, no club in the Eredivisie has ever gone bankrupt. Contrary, the now-called KeukenKampioen Divisie experienced nine cases of bankruptcy: Xerxes/DHC, FC Vlaardingen, Amersfoort, FC Wageningen, VC Vlissingen, HFC Haarlem, RBC Roosendaal, AGOVV Apeldoorn & BV Veendam (NOS, 2013). This situation is in line with the researches of Szymanski (2017), Scelles et al. (2018) and Szymanski & Weimar (2019), which stated that bankruptcies in the highest division of respectively England, France and Germany are extremely scarce, while bankruptcies in lower divisions are more common. In the Eredivisie existed examples of severe financial distress last decade. FC Emmen, Feyenoord, NAC Breda and RKC Waalwijk are examples of Eredivisie-clubs which faced financial distress, but were saved from bankruptcy by third parties (Gerritsen, 2015). The most poignant example of financial distress is FC Twente (NOS, 2015). Irresponsible financial risks have been taken. As a result, FC Twente went almost bankrupt. The financial distressed situation has led to minus six points for FC Twente in the ranking of season 2014/2015. This penalty was the result of non-compliance with the Financial Rating System of the KNVB (KNVB, 2020). This Financial Rating System is developed by the KNVB to assess clubs based on their financial position. The aim of the system is to guarantee the continuity of professional football in the Netherlands.

The Financial Rating System of the KNVB is separate from the Financial Fair Play regulations of the UEFA, where this research is about. The KNVB is the national football association of the Netherlands, while UEFA is the controlling body for football between European countries. However, the Dutch licensing rules are broadly in line with those of the UEFA. But there is an important difference. According to the KNVB (2020), a license to participate in the Europa League and the Champions League, organized by UEFA is provided for one year. In the Dutch licensing system, there is room for a club to be in violation with the licensing requirements within a specified time without direct impact on the national license. In UEFA rules, this option does not exist for a large part of the licensing requirements. The result of not obtaining the UEFA license is that a club cannot participate in the UEFA competitions (KNVB, 2020).

1.3 Problem statement and contribution to the literature

As mentioned in paragraph 1.1, financial distress is a major problem in European football. The UEFA attempted to reduce the situation of financial distress in European football by introducing Financial Fair Play. Therefore, the first research goal is to find out the direct impact of Financial Fair Play on financial distress. As also stated, the financial distressed situation in professional football is mainly caused by player expenditures. One of the aims of the Financial Fair Play regulations is to force clubs to not spend more than they earn between an acceptable deviation, to ultimately reduce financial distress. Emphasis of these rules lie on reducing player expenditures (Peeters & Szymanski, 2014). Therefore, the second research goal is to explore the role of Financial Fair Play in the relation between player expenditures and financial distress. However, to explore the role of Financial Fair Play on the aforementioned relation, this research first investigates the relationship between player expenditures and financial distress.

As earlier mentioned, financial distress already have been examined in major countries as England, Spain, Germany, Italy, France, Portugal and Russia. For this reason, it is interesting to base this research on a new sample of Dutch football clubs, which has not been investigated regarding this topic. As can be seen in paragraph 1.2, Dutch football clubs also deal with situations of financial distress. Based on the research goals and the gap in the literature about Dutch professional football, the following research question is derived:

RQ: What is the impact of the Financial Fair Play regulations on financial distress of Dutch professional football clubs?

Financial Fair Play was introduced in 2010. So, it is a relatively new concept in the academic literature. Existing literature in the beginning years of Financial Fair Play was mainly predictive and theoretical (Lindholm, 2010; Vöpel, 2011; Franck, 2014; Szymanski, 2014; Preuss, Haugen & Schubert, 2014; Peeters & Szymanski, 2014; Madden, 2015). Last years, studies provided empirical evidence about Financial Fair Play (Nicoliello & Zampatti, 2016; Heiskanen, 2017; Freestone & Manoli, 2017; Franck, 2018; Ghio, Ruberti & Verona, 2019; Özaydin 2020; Gallagher & Quinn, 2020; Garcia-del-Barrio & Rossi, 2020; Plumley, Serbera & Wilson, 2020; Dimitropoulos & Scafarto, 2021). However, the literature yearns for more studies about Financial Fair Play, while the financial distress literature is still missing a sample of Dutch football clubs. Therefore, this research contributes to the existing literature by investigating the impact of Financial Fair Play on financial distress for a unique sample of Dutch professional football clubs.

Furthermore, for the UEFA, the Financial Fair Play regulations function as a guiding thread in improving the financial situation of the football industry (UEFA, 2018). Careful research into the effectiveness of Financial Fair Play regulations is necessary, so that the UEFA can adjust the rules if there is no effect, which shows the practical contribution of this study.

1.4 Thesis structure

The structure of this thesis is organized as follows. First of all, chapter 2 reviews existing literature about financial distress and Financial Fair Play. In the last paragraph of chapter 2, hypotheses are developed. Thereafter, chapter 3 describes the methodology of this research, which also contains a description of the variables. Then, chapter 4 discusses the data sample of this study. Further, chapter 5 presents the results of this study, including the robustness tests. Lastly, chapter 6 displays the conclusions, limitations and recommendations for future research.

2. Literature review

This chapter starts with an outline of financial distress in general. Thereafter, existing literature about financial distress in the professional football is reviewed. In the next paragraph, which concerns Financial Fair Play, the concept, the requirements and the punishment and control process are explained. The following paragraph reviews the literature about the impact of Financial Fair Play. Lastly, hypotheses are developed.

2.1 Financial distress definition

In financial studies within the professional football industry, no clear distinction is made between financial distress and bankruptcy. Authors define these terms somewhat different and use them interchangeably. Therefore, this paragraph shows the difference between bankruptcy and financial distress. However, the main purpose of this paragraph is to provide a financial distress definition.

Platt & Platt (2008) stated that a company in bankruptcy finds itself in a financial situation where the company's performance is so insufficient that it cannot longer honour commitments made to lenders. Regardless of the initiating event, companies in bankruptcy must work through the legal framework to restructure their financial situation to emerge from the process as a viable company, if possible. According to Farooq, Qamar & Haque (2018), the outcome of bankruptcy depends on the legal framework in the firm's country and can be liquidation, restructuring or acquisition by a third party. Farooq et al. (2018) defined bankruptcy as "a legal term where business operations are terminated under the specific legal framework". The bankruptcy of a firm can be the result of a situation of financial distress. However, it is not the only outcome. A financially distressed company can on its own recover to become healthy again. Bankrupt companies can only do this by going through proceedings within their specific legal framework. So, financial distress and bankruptcy differ from their legal perspectives. A financially distressed firm is not declared insolvent by the court, while a bankrupt firm is officially declared insolvent by the court. Thus, financial distress is a situation that occurs before bankruptcy. Although financial distress will not necessarily lead to bankruptcy, it still faces costs of financial distress (Platt & Platt, 2008).

Financial distress often lacks a specific definition, because there exist various degrees of financial distressed situations. For example, Wruck (1990) defined financial distress as a situation where cash flow is insufficient to cover current obligations. However, this definition of financial distress focuses on liquidity. On the other hand, Pindado, Rodrigues & De La Torre (2008) looked mainly at profitability within their financial distress definition. According to Pindado et al. (2008), financial distress occurs when profitability of a firm is not sufficient enough to cover its financial obligations and whenever the firm suffers from a negative growth in market value. Contrary, Ojala, Collis, Kinnunen, Niemi & Troberg (2016) keeps it simpler and define financial distress as a situation that occurs when a company has a negative equity on its balance sheet, whereby this financial distress definition especially considered the solvability of a company.

So, there are different aspects regarding financial distress. This research follows the definition of Kane, Richardson & Velury (2006), which defined financial distress as "*a severe financial condition, where there is a likely risk of failure*". Whereby 'a severe financial condition' must be interpreted as a worrying liquidity, profitability or solvability of the company, which is a summary of the given definitions above. The reason to choose the broadest definition of financial distress, is that different sides of financial distress can be included in the literature review. In the methodology chapter, the definition of financial distress is made measurable.

2.2 Financial distress in professional football

In this chapter, the literature about financial distress in professional football is outlined. In the first paragraph, a paradox in European football is established. Thereafter, two main causes of the paradox and financial distress in European professional football are explained: overinvestment in players and soft budget constraints. Also, empirical evidence is presented.

2.2.1 Paradox

In European football there exists a paradox. Despite the tremendous revenue growth, European football is characterized by financial distress, while bankruptcies are very scarce.

Revenues in European football have increased significantly in recent years (Franck, 2014). For example, the total revenues in European football added up to 13.2 billion euros in 2010 (Franck, 2014). The most recent measure by Deloitte (2019) represented a total revenue of 28.4 billion euros for European club football in 2018. So, there is a revenue increase of more than 100% in the years between 2010 and 2018. Furthermore, as presented by Hamil & Walters (2010), the total revenues of English football increased even with 900% between 1992 and 2007.

Despite the revenue growth, studies in European football noted financially distressed situations. For example, Barajas & Rodriguez (2010), analysed Spanish football and concluded that Spanish football is in a very poor financial situation and need a huge capital injection. Also, Hamil & Walters (2010) showed that English football since the introduction of the Premier League never presented a pre-tax profit. Szymanski & Weimar (2019) researched the common perception that the German football system was financially more stable. In fact, the research showed that Germany is not more immune to the problem of worsening financial condition than other European competitions. Furthermore, Baroncelli & Lago (2016) noted that operating losses in Italian football increased from 1996 until 2002 from an aggregate 144 million to 982 million euros. So, financial distress seems to be a huge problem in European professional football.

Besides financial distress, there is also a history of extreme stability in professional football. Storm & Nielsen (2012) noted that football clubs are very stable when looking at the survival rate compared to other businesses. For professional English football, in 1923 there existed 88 teams, of which 97% still exists in 2008. 85% of those football clubs are still in the top four divisions of England. When taking a look at the English top 100 companies in 1912, only 20 are still in the top 100 in 1995. The same trend is shown in Italian and Spanish football. Only two of the top 60 football clubs in 1929 in Italian football are out of business in 2010, while in Spain all 59 teams that participated in the top league since 1929 still exist (Storm & Nielsen, 2012). Also, the studies of Szymanski (2017), Scelles et al., (2018) and Szymanski & Weimar (2019) indicated that bankruptcies in the highest division of respectively England, France and Germany are extremely rare. As stated in paragraph 1.2, this is in line with the Netherlands, where in the history of the 'Eredivisie', no club went bankrupt, while financial distress is more common.

Kearney (2010) argued that if football clubs were operating in a 'normal' industry, English football would be one year from bankruptcy. It is therefore interesting to find out what causes the paradox in professional football, with situations of huge financial distress without actually going bankrupt. Storm (2012), Storm & Nielsen (2012) and Franck (2014) distinguish soft budget constraints as the cause of this paradox. Furthermore, they distinguish overinvestment in players as a cause of financial distress in professional football. Therefore, overinvestment and soft budget constraints are explained in paragraph 2.2.2 and 2.2.3.

2.2.2 Overinvestment in football players

As pointed out by Modigliani and Miller (1958), investment decisions are independent of its financial structure in perfect capital markets. However, capital markets are not perfect and there exist market imperfections. According to Pindado & De La Torre (2009), these market imperfections lead to distortion in investment decisions for policy makers. More specifically, there exist conflicts of interests between different stakeholders (Pindado & De La Torre, 2009). These conflicts of interests between stakeholders leads to firms that invest above or below their optimal investment levels, which is called overinvestment or underinvestment (Pindado & De La Torre, 2009).

When looking at the professional football industry, there is a difference between the interests of stakeholders. According to Solberg & Haugen (2010), the two main objectives of football clubs are 'profit maximizing' and 'win maximizing'. Sloane (2015) mentioned that the main goal of North American football clubs is to profit maximize to satisfy their stakeholders, while European football clubs are considered as win maximizing. To win maximize, European football clubs spend over their budget to buy players with transfer fees and offer them lucrative salaries with the aim to better perform better (Storm & Nielsen, 2012). Better competition performances are accompanied by increased revenues (Solberg & Haugen, 2010). However, an element of every competition is that no club can move up a place in the rankings without causing another club to fall (Dietl, Franck & Roy, 2003). Due to this element of competition, the majority of the football clubs hugely invest in football players to stay competitive (Franck, 2014). The problem of European football clubs is that every individual club gambles on better performance, which is accompanied by increased revenues (Franck, 2014). Generalized to all clubs of the competition, it is illusionary for the majority. The result is a huge demand for good football players. This huge demand of good football players involves paying high salaries and large transfer fees in comparison to a clubs' revenues, which drives clubs into financial distress (Storm & Nielsen, 2014).

Dietl, Franck & Lang (2008) pointed out the following explanatory factors for European football clubs to overinvest in football players: potential participation in the lucrative UEFA competitions; unequal distribution of league revenues; increased inequality between first and second division clubs; the promotion and relegation system. Also, Storm & Nielsen (2012) recognized the problem of promotion and relegation as a threat which places ever-increasing pressure on clubs to invest in players to avoid being relegated, because a football club misses a lot of income due to relegation. Conversely, promotion increases revenues significantly, so there are also incentives for second division clubs to overinvest in football players (Storm & Nielsen, 2012). Based on theoretical articles above, in European football there are several factors to overinvest in football players. Overinvestment in football players led to financial distressed situations in European football. The following paragraph discusses if there is empirical evidence for this phenomenon.

2.2.2.1 Empirical evidence

In the professional football literature, there exist a few studies that provide empirical evidence on the relation between player expenditures and financial distress (Barajas & Rodriguez, 2010; Barajas & Rodriguez, 2014; Garcia & Rodriguez, 2010). However, drawback of those researches is that they did not intend to explain the relation between overinvestment and financial distress. Due to this gap in the literature, this paragraph discusses the empirical evidence of player expenditures on financial distress.

First, Barajas & Rodriguez (2010) looked at the financial situation of Spanish football clubs in 2008. The research showed that the player expenditures divided by the operating revenue is 0.99 for highest division clubs and 0.98 for second division clubs. This means that almost all revenues of those clubs in a financial year is spent on football players. Also, in 2008, 88,6% of the Spanish clubs presented operating losses (Barajas & Rodriguez, 2010). Furthermore, 51,4% of the football clubs were technically insolvent. However, the regression results of Barajas & Rodriguez (2020) did not show a significant relation between player expenditures and financial distress for Spanish football clubs. A drawback of their research was the low quality of data and the small sample size. Furthermore, the research only based the results on the annual reports of 2008.

Second, Barajas & Rodriguez (2014) analysed the financial distressed situation of football clubs in Spain between 2007 and 2011. The results indicated that the financial situation in Spain has become weaker year after year. According to Barajas & Rodriguez (2014), this is clearly caused by huge expenditures in players. Especially, second division clubs are showing bad results. Second division clubs in Spain expend more than 110% of their total revenues on salaries and wages. With a percentage of 66%, it is better for the highest division clubs in Spain. Simulation results of Barajas & Rodriguez (2014) showed that a capital injection of 900 million euros is needed to make the financial situation even acceptable. Barajas & Rodriguez (2014) suggested that this injection needs to be accompanied by a huge reduction in wages and salaries. A drawback of this research is that Barajas & Rodriguez (2014) did not use multiple financial distress measurements, but only used the Altman's scores for financial distress.

Third, Garcia & Rodriguez (2003) also looked at the financial situation in Spain. Their research focussed on the years between 1992 and 2001. The research pointed out that almost all Spanish clubs in the highest division became stock companies in 1992 to cancel their debts. However, those money injections had the opposite effect for the clubs' financial problems. Transfer fees and player salaries were increasing substantially. Football clubs were even spending money from future revenues on players. Garcia & Rodriguez (2003) concluded that money capital injections even led to more player expenditures, which as a consequence did not solve the financial problems of Spanish football clubs. A drawback of the study of Garcia & Rodriguez (2003) is that no additional statistical tests were conducted to validate the results.

So, there is some empirical evidence about the impact of player expenditures on financial distress in professional football. However, there is a gap in the literature, since empirical evidence mainly comes from samples of Spanish football clubs.

2.2.3 Soft budget constraints

Storm & Nielsen (2012) and Franck (2014) linked financial distress in professional football to the theory of soft budget constraints from Kornai (1986). According to Kornai (1986), soft budget constraints (SBC) are the case if managers of a financially distressed firm assume that when bankruptcy threatens, it will be rescued by a third party. Although several football clubs are saved from bankruptcy, it is not what makes the SBC syndrome an important phenomenon. It is the effect of expectations on the behaviour of support in case of financial difficulties that matters (Kornai, 1986). Managers and other decision makers expect bailouts by a third party in case of financial distress. As a result, managers have incentives to increase expenditure above their budget. Franck (2014) and Storm & Nielsen (2012) distinguish the following 'supporting organizations' in case of deficit in professional football: the state, football fans and sugar daddies. These are further explained below.

2.2.3.1 Football fans

In the classical literature of the soft budget constraints, businesses serve mainly social contributions that are supported by a wide audience. Storm & Nielsen (2012) stated that these important social contributions make companies 'too big to fall'. This is translated in support if an organization threatens the case of bankruptcy. However, referring at 'too big to fall', football clubs are not that big according turnover. For example, Real Madrid, biggest club of the world, had in 2008 only half of the turnover of the lowest ranked company from the top 500 US companies (Storm & Nielsen, 2012). Football clubs are big regarding the social impact they have on football fans. Storm & Nielsen (2012) argued that supporters will help out the club and make resources available in case of threatening bankruptcy, because of their social dependency regarding the survival of their favourite football club. According to Kornai (1986), when managers take this goodwill of football fans into account when drawing up their budgets, there is an SBC phenomenon.

2.2.3.2 The state

For the state, there are several ways to save football clubs from bankruptcy. According to Franck (2014), the state is able to do this by applying 'soft taxation', 'soft administration' or 'soft credit'. 'Soft taxation' is tolerance in collecting tax liabilities by the state. 'Soft credit' exists when loans from the state to football clubs are routinely redeployed or moved forward. A form of 'soft administration' is buying a stadium from a football club for a favourable price, or buying ground from a football club by the state in case of impending bankruptcy.

European countries have different degrees of softness regarding state support. Craven (2014) researched 'the state' as supporting organization in the professional football industry. Their study indicated that regarding professional football, there exists a failure to address state aid according to the legal rules until year 2013. After 2013, any complaint about possible state aid should be answered with a judgement by the European Court and the European Ombudsman (Van der Burg, 2019). For example, the European Commission decided in 2016 that football club Valencia has received prohibited state aid. In 2010, the local government issued guarantees on loans from the club, which were under the fair market value (Van der Burg, 2019). Valencia was rescued by the local government without submitting a restructuring plan, even though this is one of the conditions for state support. As a result, the club had to repay the obtained benefit to the government. However, the same thing happened in FC Twente's case in 2017. The municipality has given a guarantee on a loan without a restructuring plan, which was also against the rules. The European Commission did not intervene this time (Van der Burg, 2019). A possible reason for this is that a negative judgement leads to the disappearance of important football clubs.

The disappearance of football clubs damages the local economy (Franck, 2014). The state weigh up the costs of bankruptcy of a football club and the damage by the collapse of a football club, versus the cost of a bailout to rescue the football club. Franck (2014) distinguish different elements that play a role for the state: employees losing their jobs, unhappy football fans, suppliers are not paid, a huge stadium loses its value, and also the image of the city loses value. According to Storm & Nielsen (2012), football clubs' managers understand this calculation and adjust their behaviour, which is soft budget constraints behaviour. According to Franck (2014), this gives incentives for managers to spend more on players and gamble on UEFA Champions League qualification, which creates much more enthusiasm and glamour for the policy makers. However, if the gamble goes wrong, the salaries, transfers and other expenditures must still be

paid. If the club fails, the consequence for a normal company would be to initiate insolvency proceedings (Franck, 2014). However, managers know that the damage from a local football club that goes bankrupt is sometimes greater than the bailout package for the state (Franck, 2014). So, when drawing up their budgets, managers of football clubs take into account the option to be bailed out in case of threatening bankruptcy, which is considered as SBC behaviour.

2.2.3.3 Sugar daddies

In addition to bailouts by supporters and the state, football clubs are also rescued by private owners, called sugar daddies (Franck, 2014). The question arises why sugar daddies pour money in a loss-making football club. Losing money in football can be quite rational for rich people (Franck, 2010). Sugar daddies acquire a certain status by running a football club and this publicity helps them with other business activities (Franck, 2014).

Sugar daddies increase team investment (Grossman, 2015), but often raise club debts and losses (Storm & Nielsen, 2012). Additionally, the financial policy of a football club is so focussed on the sugar daddy who contributes money if necessary (Franck, 2014). In the end, this makes a football club financially dependent of a sugar daddy. Furthermore, a consequence is the lack of self-restraint in investment intentions (Franck & Lang, 2014). If the option of bailout is available, managers do not spend enough energy and own time into developing successful projects or sorting out bad projects and are willing to take riskier investments.

2.2.3.4 Empirical evidence

Empirical evidence about soft budget constraints in professional football is scarce. Andreff (2018) investigated the link between soft budget constraints and the player market for talent. Andreff (2018) concluded with data in the period of 1996 and 2007 in French football that clubs with soft budget constraints recruit top players for gigantic amounts of money, which results in an excess demand for superstars. This also leads to a disequilibrium on the labour market. As a result, too many less talented players are overpaid, which drives clubs' finances into the red. A drawback of this research was the data paucity about players' individual wages. The research of Andreff (2018) is based on transfer fees.

A side note about the empirical evidence that follows below, is that the researches did not investigate soft budget constraints explicitly. However, the articles below provide evidence for the help of football fans and sugar daddies in case of financial distress, which is considered as soft budget constraints behaviour. In this way, empirical evidence of De Ruyter & Wetzels (2000) looked at the intention of football fans to buy shares of their favourite football club in financial distress. Their sample existed of 203 questionnaires in the Netherlands during May 1998. The results indicated that football fans are very motivated to buy shares from a social norm of reciprocity in case of financial distress.

Rohde & Breuer (2016) provided the first empirical research for the financial impact of sugar daddies on team investments and profitability. They researched a sample of English football clubs between 2005 and 2012. Their results presented that clubs with a sugar daddy have superior incentives to invest into the team, compared to clubs with distributed ownership. Furthermore, their study concluded that clubs with a sugar daddy are less profitable. A drawback of the study of Rohde & Breuer (2016) is that the authors only used player wages as a measurement for team investments, while transfer fees must also be considered as a relevant measurement.

2.3 Financial Fair Play

First, section 2.3.1 provides an overview of the purpose of Financial Fair Play. Paragraph 2.3.2 explains the rules of Financial Fair Play. Paragraph 2.3.3 discusses the punishment and control process in case of non-compliance with the Financial Fair Play rules.

2.3.1 Purpose of Financial Fair Play

Financial Fair Play (FFP) is the name given by UEFA to a system of introduced regulations (Peeters & Szymanski, 2014). The UEFA introduced the Financial Fair Play regulations on 1 June 2010 as an enhancement of the UEFA's club licensing system. Initially, the UEFA was willing to introduce a salary cap for players in European competitions in line with North America. Due to a missing legal framework, this was never realized (Lindholm, 2010).

As also mentioned before, the reason for the UEFA to implement Financial Fair Play was that European football clubs were financially worsening year after year (Franck, 2018). The purpose of Financial Fair Play is to turn European football clubs into self-sustainable entities and to restore the competitive balance in European football, creating more equal financial chances for every football club (Vöpel, 2011). According to Peeters & Szymanski (2014), the officially stated goals of the UEFA to introduce Financial Fair Play are "*To improve the economic and financial capability of the clubs, increasing their transparency and credibility; to place the necessary importance on the protection of creditors and to ensure that clubs settle their liabilities with players, social/tax authorities and other clubs punctually; to introduce more discipline and rationality in club football finances; to encourage clubs to operate on the basis of their own revenues; to encourage responsible spending for the long-term benefit of football; and to protect the long-term viability and sustainability of European club football."*

2.3.2 Regulations of Financial Fair Play

Any club that wishes to take part in UEFA's two main competitions, the Champions League and Europa League, must obtain a licence from their association certifying that they meet certain criteria. According to Peeters & Szymanski (2014) and Schubert & Frias (2019), the two financial key regulations of Financial Fair Play are:

The enhanced overdue payable rule: This is monitored from June 2011. Clubs playing in UEFA competitions must fulfil all their financial obligations towards social/tax authorities, employees and other football clubs punctually. Every football club must prove that it has no overdue payables as at 30 June of each year. If a club does not meet this requirement, it must also prove that it has no overdue payables at 30 September.

The break-even requirement: This requirement is monitored from season 2013/2014. European football clubs playing in UEFA competitions must achieve a sustainable balance between its expenses and their income. However, this applies only on 'relevant income' and 'relevant expenses'. Relevant income consists of income earned in the football market, which includes among others gate receipts, sponsoring, advertising, broadcasting and commercial income. Relevant expenses consist among others of player transfer amortization and employee expenses. Balancing these two factors means that clubs must be able to perform their core football activities without third party contributions. At the same time, clubs can still invest and attract third party contributions on infrastructure, youth development, and community activities. Because such investments are for the long-term benefit of the club, the corresponding expenses are considered as 'non-relevant' for the purpose of the break-even calculation. There

are also other relevant and non-relevant income and relevant expenses. Therefore, table 1 shows in more detail which income and expenses are distinguished by UEFA as 'relevant' and 'non-relevant' for the break-even requirement.

Table 1: Relevant income and expenses of the break-even requirement (Schubert & Frias, 2019)

Relevant Income	**Relevant Expenses**
Operational Revenue consisting:	Cost of Sales
• Gate receipts	Employee benefits expenses
• Broadcasting rights	Other operational expenses
• Sponsorship & Advertising	Amortisation or costs of player registration
• Commercial activities	Finance costs and dividends
• UEFA solidarity and prize money	
• Other operational revenue	
Profit on disposal of players	
Finance income	
Non-Relevant Income	**Non-Relevant Expenses**
Income from non-football operations	Youth development activities
Non-monetary items	Women's football activities
Related party transactions above fair value	Infrastructure costs
	Community development activities
	Non-monetary items
	Finance costs (limited)

According to Peeters & Szymanski (2014), the break-even requirement is complex, since it does not coincide with simple accounting definitions. A football club could in theory declare an accounting profit, while failing to meet the break-even requirements and vice versa. Additionally, clubs must balance 'relevant income' and 'relevant expenses' not in one financial year, but in monitoring periods consisting of three financial years (Franck, 2018). To monitor these requirements, the Club Financial Control Body (CFCB) is created. The first monitor of the break-even assessment took place in 2013/2014, but then the CFCB only looked at the financial years 2011/2012 and 2012/2013. In the year 2014/2015, the first completed monitoring period consisted of financial years 2011/2012, 2012/2013 and 2013/2014. The Financial Fair Play regulations are updated in 2012 (UEFA, 2012), 2015 (UEFA, 2015) and 2018 (UEFA, 2018).

The most important changes are the acceptable deviations of the break-even requirement. Acceptable deviations allow clubs to pass the Financial Fair Play break-even requirement, but within an acceptable limited loss. The acceptable deviation for each monitoring period is 5 million euros, for 'normal' clubs without third party support. However, if a club has financial support in the form of equity participants or related third parties, there is a larger acceptable deviation possible. According to Geey (2011), for monitoring period 2013/2014 and 2014/2015, the acceptable deviation with financial third party contributions can exceed to 45 million. For the monitoring period of seasons 2015/2016, 2016/2017 and 2017/2018, the acceptable deviation for the break-even requirement may exceed to 30 million euros when a football club is covered by equity participants or third parties. Table 2 provides a graphical summary of the acceptable deviations of the break-even requirement. The acceptable deviations are available because of the large impact of sportive results on financial results. However, it must be questioned why clubs with contributions from third parties may have bigger acceptable

deviations than clubs without third party contribution. When purely looking at the concept 'Financial Fair Play', this does not sound very fair.

Table 2: Acceptable deviations of the break-even requirement (Geey, 2011)

Monitoring period	Total years	Financial years included in monitoring period			Acceptable deviation	
		T-2	T-1	T	(€) With third party contribution	(€) Without third party contribution
2013-2014	2	N/A	2011-2012	2012-2013	45 million	5 million
2014-2015	3	2011-2012	2012-2013	2013-2014	45 million	5 million
2015-2016	3	2012-2013	2013-2014	2014-2015	30 million	5 million
2016-2017	3	2013-2014	2014-2015	2015-2016	30 million	5 million
2017-2018	3	2014-2015	2015-2016	2016-2017	30 million	5 million
2018-2019	3	2015-2016	2016-2017	2017-2018	<30 million	5 million

2.3.3 Punishment and control of Financial Fair Play

To demonstrate that a football club complies with the Financial Fair Play rules, every football club that wishes to take part in the UEFA competitions must submit annual reports to the UEFA. Those annual reports must be audited by an independent entity. On the basis of the financial information provided, the CFCB judges the individual football clubs regarding the violation of Financial Fair Play (Franck, 2018). The investigatory chamber of the CFCB determines the facts and gathers relevant evidence on individual cases. It decides with the following four options: "dismiss the case; impose minor disciplinary measures; conclude a settlement agreement; or refer the case to the second chamber which is the adjudicatory chamber" (Franck, 2018). The adjudicatory chamber takes the final decision on a case referred by the CFCB. The adjudicatory chamber can decide to give the following disciplinary measures (Franck, 2018):

1. Warning, reprimand;
2. Fine;
3. Deduction of points;
4. Withholding of revenues from a UEFA competition;
5. Prohibition on registering new players in UEFA competition;
6. Restriction on clubs' number of players registered for participation in UEFA competitions;
7. Disqualification from competition in progress and/or the exclusion from future competitions.

However, for football clubs there is also an option to appeal the decisions of the adjudicatory chamber by the Court of Arbitration in Sport (CAS). As can be seen in the introduction of this study, Manchester City went to the CAS about the decision of their punishment for the exclusion from European football. Thereafter, the CAS proved Manchester City right. According to Franck (2018), the CFCB have shown that the most important instrument is to conduct settlement agreements. Franck (2018) stated that 28 clubs including prominent ones as Manchester City, Inter Milan, AS Roma Paris-Saint Germain, AS Monaco entered settlement agreements. Instead of going through a lengthy judicial procedure, clubs with the clear potential to come back into compliance rather quickly sign settlement agreements with the investigatory chamber.

2.4 Impact of Financial Fair Play

As also described in paragraph 2.3, Financial Fair Play is a relatively new concept, introduced in 2010. However, Financial Fair Play regulations have been an interesting topic for both policy makers and academics over the past years. In the beginning of the Financial Fair Play literature, academic articles were mainly predictive and theoretical (Lindholm, 2010; Vöpel, 2011; Franck, 2014; Szymanski, 2014; Preuss et al., 2014; Peeters & Szymanski, 2014; Madden, 2015). Some of the researchers are positive about certain aspects of Financial Fair Play, however there exists also criticism about the Financial Fair Play regulations. First, paragraph 2.4.1 and 2.4.2 discusses theoretical literature about the consequences of Financial Fair Play. Thereafter, empirical evidence about Financial Fair Play is discussed in paragraph 2.4.3.

2.4.1 Regulating overinvestment in players

As earlier described, one of the aims of Financial Fair Play is to prevent European football clubs from spending more than they earn. According to Peeters & Szymanski (2014), the break-even requirement of Financial Fair Play operates corresponding to a salary cap, which forces clubs to spend a maximum amount of their income on salaries. Vrooman (1995) argued that the main goal of a salary cap is to keep salaries at an acceptable level, which is also the case for Financial Fair Play. In comparison to a salary cap, the break-even requirement of Financial Fair Play ensures an individual football club of spending in proportion to its own resources, by balancing 'relevant income' and 'relevant expenses'.

Since the Financial Fair Play regulations require clubs to stay within an acceptable deviation, the research of Franck (2014) suggested that Financial Fair Play restores the incentives for good management and innovation, providing a way to financial healthiness in European football. Moreover, Franck (2014) proposed that Financial Fair Play reduces the competitive gap between big and smaller football clubs. This is due to the disappearance of the advantage that bigger clubs gain from sugar daddy money. Also, Preuss et al. (2014), stated that Financial Fair Play must in principle be assessed as a first step in the right direction, as initially the power of sugar daddies will be reduced. Furthermore, Peeters & Szymanski (2014) showed with simulation results that Financial Fair Play reduces salary spending by 15% in European football.

Despite the good intentions of Financial Fair Play, criticism about the Financial Fair Play rules exist. Main criticism of the Financial Fair Play regulations is that it will result in a decline of the competitive balance. Perfect competitive balance is the situation where no football club has an unfair financial advantage over other clubs. Vöpel (2011) argued that Financial Fair Play decreases the competitive balance between football clubs, in favour of the bigger clubs. Also, Szymanski (2014) stated that the regulations further strengthen the financial power of the wealthiest clubs by restraining the smaller clubs. So, the name of 'Fair Play' is questioned if the competitive gap between healthier and poorer clubs will be enlarged due to Financial Fair Play.

Furthermore, Vöpel (2011) argued that monitoring of Financial Fair Play is very costly in comparison to the potential benefits. According to Vöpel (2011), a redistribution of income, such as in Northern America, is additionally needed to restore the competitive balance in European football. Vöpel (2011) suggested that redistribution of income would be less costly and more effective than the regulations of Financial Fair Play. Redistribution of income gives clubs more certainty about their long-term revenue and it also lowers the incentives for sugar daddies to become involved in a football club.

2.4.2 Hardness of the budget constraints

Franck (2014) stated that Financial Fair Play acts as an instrument for moving the European football industry from a status with soft budget constraints to a status with harder budget constraints. Harder budget constraint means that the environment will not tolerate financial distressed situations anymore, where emphasis is on punishment (Kornai, 1986). In this regard, the Financial Fair Play regulations have characteristics of hard budget constraints, because penalties are given if the rules are not followed.

Franck (2014) argued that the UEFA has gone as far as it can go with Financial Fair Play in hardening the budget constraints of football clubs. The argument of Franck (2014) is that the UEFA is not a national government, which has to implement insolvency legislation. However, criticism of Madden (2015) is that hardness of the budget constraints due to Financial Fair Play prevents the football industry to benefit from substantial injections of external finance. Franck (2014) believes that this downturn is far less obvious than assumed. Before the introduction of Financial Fair Play, many club owners were free to inject money afterwards. This is not possible anymore with the introduction of the break-even requirement. Franck (2014) argued that club owners will adapt to the harder budget constraints and write fair market value sponsorship contracts after the introduction of Financial Fair Play, instead of injecting money afterwards. Those sponsorship deals have to be pre-arranged. For this reason, managers of football clubs have complete knowledge of the sponsorship revenues prior to a financial year. Therefore, Franck (2014) suggested that managers have no reason to show soft budget constraint behaviour anymore.

However, those sponsorship deals must be at the fair market value. If a sponsoring agreement is higher than a comparable amount of exposure costs in the free market, a club is inflating relevant income (Franck, 2014). As a consequence, a club can operate at a higher level of relevant expenses before getting into conflict with the break-even requirement (Franck, 2014). This was also the issue regarding the punishment of Manchester City, as earlier stated in the introduction. It turns out that new problems arise to determine the fair market value of a sponsorship deal by club owners (Franck, 2014). Mainly in the implementation period of the Financial Fair Play regulations, clubs operate in a grey area how to deal and interpret the rules. Preuss et al. (2014) therefore suggested that in the beginning years, the Financial Fair Play regulations result in higher costs for accounting, by exploiting loopholes in the complex Financial Fair Play regulations.

So, football clubs have to find a way to deal with the Financial Fair Play rules. Due to the break-even requirement, club owners cannot inject money afterwards, but have to write pre-arranged sponsorship deals at the fair market value. For this reason, Franck (2014) agrees with Madden (2015) that it cannot be excluded that Financial Fair Play prevents some money to flow into football by sugar daddies due to hardness of the budget constraints. However, Franck (2014) supposed that this has the potential to make football more equal and fair, what the name of the regulations indicates: ‘Fair Play’. Money which would otherwise immediately expended on players, may be instead invested in youth academies, infrastructure and the stadium, which are considered as ‘non-relevant’ for the break-even requirement.

2.4.3 Empirical evidence

This paragraph reviews empirical evidence of researches about Financial Fair Play in professional football, that give direction to this research.

The first article that provided empirical evidence of Financial Fair Play, is the study of Nicoliello & Zampatti (2016). The research goal of their study was to investigate if Italian football clubs were ready to confront the challenges of the Financial Fair Play break-even requirement. Their research is conducted for 15 Italian clubs between 2011 and 2013. Nicoliello & Zampatti (2016) focused on the determinants of football clubs' profitability after the introduction of the break-even requirement. The results showed two determinants: player wages on the expenses side, and income out of player trading on the income side. Furthermore, Nicoliello & Zampatti (2016) concluded that Italian clubs were not ready to face the Financial Fair Play regulations, due to two reasons: player wages are very high and the acquisition of young players, which is a precondition to profit from player trading, is limited. The main limitation of their study is that it only focused on the highest Italian league. Therefore, it is not generalizable to other countries.

The research of Franck (2018) showed that after the introduction of Financial Fair Play, European football is characterized by financial recovery. The study showed that since the introduction of Financial Fair Play, the overdue payables decreased by more than 90% and that the aggregate net-operating losses decreased every year. Ultimately, it resulted in a change of the aggregate net losses of 1.7 billion euros in 2011, to a 600 million euros profit in 2017. However, a drawback of the research is the question to what extent these changes are caused by Financial Fair Play. Franck (2018) relied mainly on descriptive data by the UEFA and did not conduct additional statistical tests.

Heiskanen (2017) also found positive signs of Financial Fair Play. The author researched 79 football clubs in the top five European football competitions between 2008 and 2015. The research showed that the Financial Fair Play regulations reduced the salary-revenue ratio in professional football. The regulations had the greatest impact for clubs in Spain and in England, while it had the lowest effect in Germany. Furthermore, the research showed that UEFA-competition qualifiers have reduced their salary to revenue ratio remarkably, while for other teams no such effect has been found. The results indicated that the Financial Fair Play regulation has shifted the soft budget constraint environment of European professional football towards more financially responsible behaviour.

Özaydin (2020) investigated the impact of Financial Fair Play on the transfer activity between 2007 and 2019 for Russian football clubs. The research investigated 2083 Russian transfers. Specifically, the research focused on the impact of the break-even requirement, because Özaydin (2020) argued that this rule prevents clubs from overinvestment through a variety of sanctions. The empirical evidence suggested that the break-even requirement forces clubs to adjust their transfer activities, through buying, educating and transferring younger players. According to Özdadin (2020), poorer clubs were hit hardest by the Financial Fair Play regulations, resulting in a deteriorated competitive balance in favour of the bigger clubs. A drawback of the research is the non-generalizability of the results, due to the specific Russian transfer deadlines. Russian transfer deadlines have different time periods than other European countries.

Furthermore, Gallagher & Quinn (2020) investigated the impact of the Financial Fair Play regulations for English football clubs. The sample consisted of English football clubs between 2003 and 2017. The results indicated that elite clubs are less handicapped than their peers, deteriorating the competitive balance in favour of the elite clubs. Another research that agreed

with Gallagher & Quinn (2020) and Özaydin (2020) about the deteriorating competitive balance, is the study of Garcia-del-Barrio & Rossi (2020). Their study showed with 560 club-year observations between 2009 and 2016 for clubs in England, Spain, Italy and France that the Financial Fair Play regulations increased financial stability. However, in line with the researches mentioned above, the competitive balance decreased in favour of the larger clubs.

Contrary, Ghio et al. (2019) and Freestone & Manoli (2017) showed different results than the three studies above. The empirical evidence of Freestone & Manoli (2017) provided no indication that the Financial Fair Play regulations have resulted in a decline in competitive balance in the England's' Premier League. Instead, a positive impact has been found. In line with this, Ghio et al. (2019) found that Financial Fair Play decreased the gap between bigger and smaller clubs, thus found a positive effect on competitive balance.

The research of Plumley et al. (2020) found mixed results of the impact of Financial Fair Play regulations on financial distress. Plumley et al. (2020) investigated for an English sample of 43 Premier League and Championship clubs between 2002 and 2019 whether Financial Fair Play impacted financial distress. The results suggested that for Championship football clubs, financial distress have even been worsened after the introduction of Financial Fair Play, while the results of the Premier League clubs showed no significant impact. However, splitting the sample in top-6 clubs, the results showed that financial distress has improved for the top-6 clubs in the Premier League. For the other football clubs in the Premier League, no such impact was found. So, the researchers doubted the effectiveness of Financial Fair Play. The authors advised the UEFA to redesign the Financial Fair Play regulations. A drawback of their research is that it consisted of a sample that also included Championship clubs, which is doubtful. Second division clubs have no real chance of playing in European competitions, so those clubs are barely impacted UEFA Financial Fair Play regulations.

The research of Dimitropoulos & Scafarto (2021) is most closely to the research structure of this study. Their research investigated among others the impact of Financial Fair Play on the relation between player expenditures and financial performance. An Italian sample of 15 professional football clubs between 2007 and 2017 is investigated. Financial Fair Play showed a positive effect on the relation between player expenditures and clubs' financial performance. Criticism of this study is the non-generalizability of the results.

So, empirical research about Financial Fair Play is contradictory. Most studies showed that Financial Fair Play contributed to financial healthier situations in professional football (Heiskanen, 2017; Franck, 2018; Dimitropoulos & Scafarto, 2021), while the empirical results of Plumley et al. (2020) did not fully agree. Furthermore, some articles concluded that Financial Fair Play regulations are mainly in favour of the elite clubs in comparison to poorer clubs (Gallagher & Quinn, 2020; Garcia-del-Barrio & Rossi, 2020; Özaydin, 2020). On the other hand, Freestone & Manoli (2017) and Ghio et al. (2019) showed that the competitive gap between healthier and poorer clubs became smaller.

2.5 Hypotheses development

This section describes the hypotheses that are tested during this research. This study has two research goals: (1) to investigate the direct impact of Financial Fair Play on financial distress, (2) to investigate the impact of Financial Fair Play on the relation between player expenditures and financial distress. To meet the research goals, the first hypothesis in paragraph 2.5.1 consists of the relation between player expenditures and financial distress. The second hypothesis in paragraph 2.5.2 describes the impact of Financial Fair Play on financial distress. The third hypothesis in paragraph 2.5.3 states the impact of Financial Fair Play on the relation in the first hypothesis. Lastly, section 2.5.4 gives an overview of the hypothesized relations.

2.5.1 Hypothesis 1: Player expenditures on financial distress

As outlined in the literature review, European professional football is characterized by financial distress. A main reason for financial distress is the high player expenditures in comparison to football clubs' revenues (e.g. Barajas & Rodriguez, 2010; Storm & Nielsen, 2012; Barajas & Rodriguez, 2014; Franck, 2014). Player expenditures exist in the form of salaries and transfer fees. As earlier outlined, European football clubs invest large amounts of money into football players. For example, Barajas & Rodriguez (2010) showed that highest division football clubs spent 99% of their revenues into football players in 2008, while these revenues also had to cover all other costs. Furthermore, Garcia & Rodriguez (2003) even showed that clubs were spending money from future revenues on football players.

The reason for European football clubs to invest above their budgets into football players, is to satisfy stakeholders by maximizing their clubs' pitch-performance. If the overinvestment in football players works out, it generates increased revenues in the form of television money, prize money and qualification for European competitions. Although for some clubs overinvestment in players does pay off in increased income, it is illusionary for the majority of the football clubs (Franck, 2014). For example, Barajas & Rodriguez (2014) showed that high player expenditures in comparison to revenues causes high financial distress. Therefore, a positive impact of player expenditures on financial distress is hypothesized.

H1: Player expenditures positively impact football clubs' financial distress

2.5.2 Hypothesis 2: Financial Fair Play on financial distress

As earlier mentioned, the first research goal of this study is to find out the direct impact of Financial Fair Play on financial distress. In the literature review, there is consensus that Financial Fair Play is a first step in the right direction to financial healthiness (e.g. Preuss et al., 2014; Franck, 2014; Peeters & Szymanski, 2014). Due to the break-even requirement of Financial Fair Play, clubs may not exceed a maximum acceptable loss when balancing 'relevant income' and 'relevant expenses'. If a football club exceeds the acceptable deviation in a monitoring period, the UEFA punishes the club. Football clubs are punished with fines, which even added up to 60 million euros for individual clubs. In extreme cases, football clubs are excluded from participation in European competitions. To prevent these penalties, clubs adjust their financial policies in a healthier way, providing good management practices (Franck, 2014). With the introduction of the break-even requirement, it is not possible for third parties to pour infinite money into a football club anymore. This encourages the financial self-sustainability of football clubs (Franck, 2014). Furthermore, the enhanced overdue payables rule of Financial Fair Play reduced the overdue debts in professional football (Franck, 2018).

Empirical evidence showed that the Financial Fair Play regulations have a favourable impact on the financial position of European football clubs (e.g. Heiskanen, 2017; Franck, 2018; Garcia del-Barrio & Rossi, 2020). Following the argumentation and empirical evidence above, the Financial Fair Play regulations improves the financial situation of football clubs' and thus negatively impact financial distress. The following hypothesis is developed.

H2: The Financial Fair Play regulations negatively impact football clubs' financial distress

2.5.3 Hypothesis 3: Financial Fair Play in player expenditures on financial distress

The second research goal of this study is to explore the impact of Financial Fair Play on the relation between player expenditures and financial distress. As can be seen in the first hypothesis, a positive impact of player expenditures on financial distress is stated.

As earlier mentioned, goals of the UEFA to introduce Financial Fair Play are among others to encourage responsible spending behaviour and to restore the financially deteriorated situation in European football. Due to the introduction of Financial Fair Play, clubs have to balance 'relevant income' and 'relevant expenses' between an acceptable deviation. To stay within the acceptable deviation, clubs that otherwise would exceed these deviations, could cut on the 'relevant expenses' side or increase the 'relevant income' side. To stay within the maximum loss allowed by Financial Fair Play regulations, Özaydin (2020) showed that clubs behave financially more responsible by adjusting their transfer policy. Furthermore, predicational simulations of Peeters & Szymanski (2014) showed that player salaries will decrease to stay within the acceptable deviation allowed by the UEFA. So, due to the Financial Fair Play regulations which forces football clubs to not exceed a maximum loss in a monitoring period, clubs adjust their player expenditures. Both the player expenditures and financial distress (argumentations provided in the previous hypothesis) will be reduced by Financial Fair Play, which as a consequence also affects the relationship between these variables.

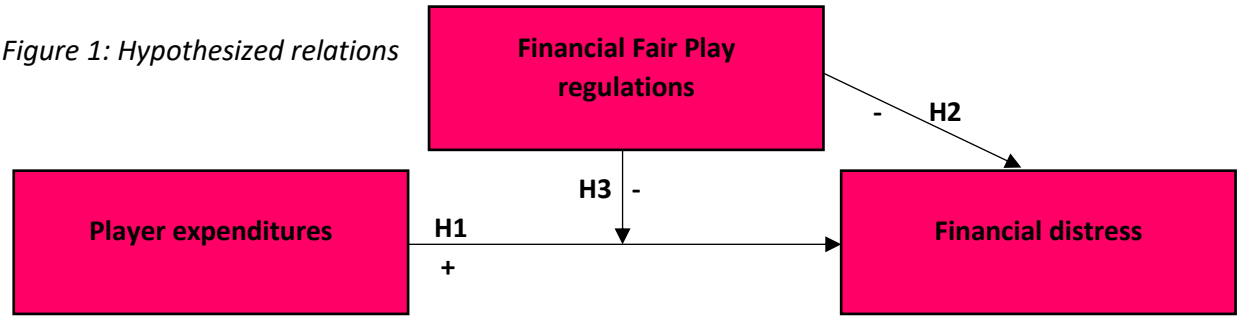
In the final judgement about the hypothesized impact of Financial Fair Play on the relation between player expenditures and financial distress, this study follows the prior study of Dimitropoulos & Scafarto (2021). Their study provided empirical evidence for a positive impact of Financial Fair Play on the relation between player expenditures and financial performance. However, financial performance is a counterpart of financial distress, so a reversed negative impact of Financial Fair Play on the relation between player expenditures and financial distress must be interpreted. Therefore, the following hypothesis is developed.

H3: The Financial Fair Play regulations negatively impact the relation between player expenditures and financial distress

2.5.4 Hypotheses summary

A visual representation of the hypotheses in this study are presented below in figure 1.

Figure 1: Hypothesized relations



3. Methodology

This chapter discusses the methodology that is used to answer the research question of this study. To answer the research question, this study investigates (1) the impact of player expenditures on financial distress, (2) the impact of Financial Fair Play on financial distress and (3) the impact of Financial Fair Play on the relation between player expenditures and financial distress.

Almost all financial professional football studies used regression analyses to conduct quantitative empirical research about Financial Fair Play or financial distress (e.g. Nicoliello & Zampatti, 2016; Rohde & Breuer, 2016; Heiskanen, 2017; Szymanski, 2017; Scelles et al., 2018; Szymanski & Weimar, 2019; Dimitropoulos & Scafarto, 2021). On the other hand, Freestone & Manoli (2017) used the Herfindahl Index, while Ghio et al. (2019) used a stochastic frontier analyses. Those researches measured the impact of Financial Fair Play on respectively competitive balance and cost efficiency, which differ from this study. To be consistent with previous studies that correspond with this research, regression analyses are conducted.

First, section 3.1 discusses different regression models. Furthermore, an appropriate model for this research is chosen. Second, paragraph 3.2 presents the research models of this study. Lastly, in section 3.3, the variables in the research models are made measurable.

3.1 Regression models

A regression analysis is an approach to examine the relationship between a dependent variable Y and one or several independent variables X, which are the predictors (Hair, Black, Babin & Anderson, 2009). There exists simple regression and multiple regression. Simple regression consists of a relation between one dependent and one independent variable. Multiple regression is used to predict the value of a dependent variable, based on the value of two or more other variables (Hair et al., 2009). This research consists of an independent variable (player expenditures), a moderating variable (Financial Fair Play), a dependent variable (financial distress) and multiple control variables. Therefore, multiple regression is appropriate. With a regression analysis, moderation can be tested. Moderation affects the direction and/or the strength of the relation between an independent and a dependent variable (Fairchild & MacKinnon, 2009). So, moderation tests whether the prediction of a dependent variable, Y, from an independent variable, X, differs across levels of a third variable, Z.

According to Hair et al. (2009), there are three different forms of regression: probit, logistic and linear regression. Probit and logistic regression are types of regression where the dependent variable is dichotomous. Linear regression is used when there is a metric dependent variable, which is an interval or ratio variable. In this study, the dependent variable financial distress is measured with a metric variable. Therefore, linear regression is used in this research.

There are different regression models. In the professional football industry, most researches used a fixed effects model (e.g. Rohde & Breuer, 2016; Szymanski, 2017; Scelles et al., 2018; Szymanski & Weimar, 2019). A method closely related to the fixed effects model, is the random effects model. This method is less common in financial professional football studies. Furthermore, Nicoliello & Zampatti (2016) and Heiskanen (2017) used the ordinary least squares regression model. The study of Dimitropoulos & Scafarto (2021) used the seemingly unrelated regression model. Below, the differences of these models are briefly discussed. Thereafter, an appropriate regression model for this research is chosen.

3.1.1 Fixed/random effects model

The fixed effects model (FEM) and the random effects model (REM) have in common that those models are mainly used in studies with panel data. A characteristic of panel data is the collection of data over time for the same individuals (Maddala, 1987). Most researches in the professional football industry conducted researches with panel data (e.g. Rohde & Breuer, 2016; Szymanski, 2017; Scelles et al., 2018; Szymanski & Weimar, 2019). In those researches, specific variables of football clubs in a certain time-period are collected, which have the characteristics of panel data. Often, a Hausman test is performed to determine whether the FEM or REM is suitable. For example, the research of Rohde & Breuer (2016) performed a Hausman test. In their research, the null hypothesis of no systematically different results between fixed and random models was rejected. Therefore, the test favoured the fixed effect models instead of the random effect model in their research.

In FEM, the parameters are fixed or non-random quantities, which are specified by the researcher. On the other hand, REM assumes that all or at least some of the model parameters are non-fixed or random quantities. Furthermore, in the random effects model, the group means are a random sample from a population, while the fixed effects model the group means are fixed or non-random. As mentioned earlier, most researches in professional football performed the fixed effect model instead of the random effect model. In those studies, the parameters are non-random or fixed, where the choice of FEM instead of REM is logical. Furthermore, Szymanski & Weimar (2019) chose the fixed effects method to allow for unobserved heterogeneity associated with clubs, which is an advantage of FEM as opposed to REM.

3.1.2 Ordinary least squares model

Ordinary least squares (OLS) is one of the most used regression models. This is due to the reason that OLS is easy to produce and to understand. The OLS model estimates the unknown parameters in a linear regression. Looking at a graph of the simplest form of OLS, values for an independent variable are represented on the X-as and values of a dependent variable are represented on the Y-as. Thus, with multiple observations, several observations points can be drawn in a graph. With these observation points, an estimated linear line and function can be developed. Vertical differences arise between the observation points and the estimated line, which are called residuals. OLS minimizes the sum of squares of the residuals, to have a regression line and regression coefficients as close to the observed data as possible.

However, Wooldridge (2012) argued that ordinary least squares is not always able to estimate precisely, due to endogeneity problems. Endogeneity is a problem that arises due to reversed causality, simultaneous causality, omitted variables or measurement errors in the regression model. So, when using OLS, careful consideration must be taken to limit this problem. The opposite of endogeneity is exogeneity. Exogeneity is one of the required underlying assumptions to use OLS. Other assumptions are no multicollinearity, linearity, normality and homoscedasticity of the error term. If the research model meets the above mentioned requirements, OLS can be performed. An OLS technique used on panel data, is the pooled ordinary least squares regression. Wooldridge (2012) argued that pooled OLS provides efficient and constant parameters estimations on panel data, if the homoscedasticity assumption is achieved. Homoscedasticity means that that the error term is the same across all values of the independent variable. In the professional football industry, Nicoliello & Zampatti (2016) and Heiskanen (2017) conducted a pooled OLS, because it is the simplest panel method.

3.1.3 Seemingly unrelated model

The seemingly unrelated regression (SUR) is very similar to the ordinary least squares regression, which is discussed above. The difference between OLS and SUR is that the seemingly unrelated regression consists of more equations, each having its own dependent variable and different sets of independent variables. Each equation is comparable with a linear OLS regression model and can be estimated on its own, which is why the system is called 'seemingly unrelated'. However, assumptions of SUR is that the error term has to be correlated across the equations and the explanatory variables must be exogenous. So, if the error terms are uncorrelated between equations and when each equation consist exactly the same set of regressors, OLS is equivalent to SUR. The benefit of SUR regression compared to OLS is that it is time efficient if there are more equations, which was the reason for the study of Dimitropoulos & Scafarto (2021) to choose the seemingly unrelated regression model.

3.1.4 Method of this study

This research uses multiple regression with ordinary least squares. The reason why OLS is used, is because it is the simplest method. The model is easy to compute, interpret and read. Additionally, the type and number of variables used in this research are suitable to conduct an ordinary least squares regression. Furthermore, the research design of this study is very comparable to the studies of Nicoliello & Zampatti (2016), Heiskanen (2017) and Dimitropoulos & Scafarto (2021), which used respectively OLS and SUR regression. As earlier mentioned, SUR is actually an extension of OLS. SUR is mainly used to make efficiency goals if a research consists of more equations. Also, this research consists of multiple equations, where OLS equals SUR. Therefore, this research follows the above mentioned researches to conduct a multiple linear regression with the ordinary least squares model.

3.2 Research model

This paragraph first describes how to meet the ordinary least squares assumptions. Thereafter, the three research models of this study are presented.

3.2.1 OLS assumptions

In order to test the hypotheses, ordinary least squares regression is used. As earlier mentioned, OLS can only be performed if the assumptions are met. To check if the assumptions of linearity and homoscedasticity are met, scatter plots are drawn. Furthermore, to check if there is no multicollinearity, a correlation matrix of the variables is drawn. A correlation matrix shows several correlations between two quantitative variables and is often written as r. r is always a number between -1 and 1. Values near 0 indicate very weak correlation and -1 and 1 mean very strong negative and positive correlation. The best situation would be that a number of independent variables are highly correlated with the dependent variable and low correlated with other independent variables. However, correlation is not the same as causality. Besides the correlation matrix, a variance inflation factor (VIF) is conducted, which should be smaller than 10 to have no issues regarding multicollinearity.

Furthermore, the endogeneity problem must be limited. Endogeneity is a problem that arises due to omitted variables, measurement errors, reversed causality or simultaneous causality. To limit the problem of measurement error and omitted variables, research models and the measurement of variables of comparable studies (e.g. Dimitrpoulos & Scafarto, 2021) are critically analysed and where possible, followed.

Also, problems of reversed and simultaneously causality must be limited. This research investigates among others the impact of player expenditures on financial distress. However, reversed causality may exist. This means that an association exists between those variables, but not in the way it is hypothesized. For example, it could happen that low financial distress causes high player expenditures. Furthermore, simultaneously causality may exist, which means that the independent and the dependent variable impact each other at the same time. To limit these problems, the two-stage least squares model can be conducted. According to Wooldridge (2012), this model is an extension of the ordinary least squares. This method adds an instrumental variable that is correlated with the endogenous variable, but uncorrelated with the error term. Disadvantage of this method is that if weak instruments are used, the outcome will have a low variance. Furthermore, inconsistent estimators are generated if the correlation of the instrument variables and the error term are hard to measure. None of the researches in professional football used this model to limit endogeneity.

Some studies in professional football used one-year lagged variables (Acero, Serrano & Dimitropoulos, 2017; Scelles et al., 2018; Szymanski & Weimar, 2019). Dimitropoulos & Scafarto (2021) used a lagged variable in some of their equations. It is not entirely clear why this study used lagged variables for some variables in some equations and for others not. However, Dimitropoulos & Scafarto (2021) did different measurements of player investments by lagging one and two years in their robustness tests. Their empirical evidence remained unaffected by using lagged variables.

To control for the endogeneity problem in this study, one-year lagged variables for the independent variable player expenditures and the moderating variable Financial Fair Play are used. According to Dimitropoulos & Scafarto (2021) player expenditures are a type of capital investment, since player contracts may last several years. Therefore, this study assumes that player expenditures in the previous year impacts financial distress in the present year. Furthermore, Financial Fair Play was introduced on June 2010, but the rules were implemented from football season and financial book year 2011/2012. This study used Financial Fair Play as a dummy variable for the post-implementation period. However, the announcement of the introduction of Financial Fair Play on June 2010 Financial Fair Play in the previous football year may also impact financial distress in football season 2011/2012. Therefore, to control for endogeneity, t-1 for the implementation period of Financial Fair Play and for player expenditures are included in the research models below.

3.2.2 Model 1: Player expenditures on financial distress

The first research model tests hypothesis one: '*Player expenditures positively impact football clubs' financial distress*'.

$$FD_{it} = \alpha + \beta_1(PLAYEXPEND)_{it-1} + \beta_x(CONTROLS)_{it} + \varepsilon_{it}$$

FD_{it} =	Financial distress for firm i in year t
α =	Constant
$PLAYEXPEND_{it-1}$ =	Player expenditures of firm i in year t-1
$Controls_{it}$ =	Control variables of firm i in year t
ε_{it} =	Error term of firm i in year t

3.2.3 Model 2: Financial Fair Play on financial distress

The second research model tests hypothesis two: '*The Financial Fair Play regulations negatively impact football clubs' financial distress'.*

$FD_{it} = \alpha + \beta_1(FFP)_{it-1} + \beta_x(CONTROLS)_{it} + \varepsilon_{it}$

FD_{it} =	Financial distress for firm i in year t
α =	Constant
FFP_{it-1} =	Financial Fair Play regulations implemented for firm i in year t-1
$Controls_{it}$ =	Control variables of firm i in year t
ε_{it} =	Error term of firm i in year t

3.2.4 Model 3: Moderating impact of Financial Fair Play

The third research model tests hypothesis three: *'The Financial Fair Play regulations negatively impact the relation between player expenditures on financial distress'.*

$FD_{it} = \alpha + \beta_1(PLAYEXPEND)_{it-1} + \beta_2(FFP)_{it-1} + \beta_3(PLAYEXPEND * FFP)_{it-1} + \beta_x(CONTROLS)_{it} + \varepsilon_{it}$

FD_{it} =	Financial distress for firm i in year t
α =	Constant
$PLAYEXPEND_{it-1}$ =	Player expenditures of firm i in year t-1
FFP_{it-1}=	Financial Fair Play regulations implemented for firm i in year t-1
$PLAYEXPEND*FFP_{it-1}$ =	Moderating effect of player expenditures and FFP for firm i in year t-1
$Controls_{it}$ =	Control variables of firm i in year t
ε_{it} =	Error term of firm i in year t

3.3 Measurement of variables

This section describes the measurement of the dependent, independent, moderator and control variables.

3.3.1 Dependent variables

The dependent variable in this study is financial distress. In the literature, there is a difference between accounting-based and market-based financial distress models. Accounting-based models use information from financial statements, normally in the form of ratios to describe the risk of failure of a firm. Market-based models do not only rely on accounting data, but include data from the market such as stock shares. Because AFC Ajax is the only listed football club in the Netherlands, market-based models are not applicable in this study. So, the measurement of financial distress is based on accounting-based models. The most used accounting-based models are that of Altman (1968), Ohlson (1980) and Zmijewski (1984).

In the literature review, financial distress is defined by Kane et al. (2006) as a severe financial condition, where there is a likely risk of failure. Kane et al. (2006) measured financial distress with the Altman's Z-score. Altman (1968) developed the Z-score originally for predicting bankruptcy, but it is also regarded as a valuable tool to measure financial distress (Kane et al., 2006). The original Z-score model includes five ratios: working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, market value of equity to total liabilities, and sales to total assets. The original Z-score is only applicable to publicly listed firms, because this model uses the market value of equity (Altman, Iwanicz-Drozdowska,

Laitinen & Suvas, 2017). AFC Ajax is the only listed football club in the Netherlands. Therefore, the original Z-score is not usable for the whole sample. The original Z-score is replaced by Altman (1983) into two revised versions. In line with Altman et al. (2017) and Munoz-Izquierdo, Laitinen, Camacho-Minano & Pascual-Ezama (2020), these revised versions are called the Z' and Z''-score in the remaining part of this study. In the Altman's Z' model, the market value of equity is replaced by the book value of equity (Altman et al., 2017). Therefore, the Altman's Z'-score is applicable for samples of non-listed firms. Furthermore, Altman et al. (2017) reported that in the Altman's Z'' model, the fifth factor of sales to total assets is excluded, because of potential industry effect that may take place. Thus, the Altman's Z''-score consists of only four ratios.

Studies in the professional football industry have investigated the accuracy rate of different financial distress models. Carin (2019) showed that the use of a revised version of Altman's Z' model is best applicable for French professional football. On the other hand, Gerritsen (2015) found for the Dutch professional football industry that Zmijewski's model had the highest accuracy rate, where the Altman's Z'-score had the second highest accuracy rate. Furthermore, Barajas & Rodriguez (2014) and Plumley et al. (2020) both used the measurements of the Z' and Z''-scores in their studies about financial distress in professional football. In line with Barajas & Rodriguez (2014), Gerritsen (2015), Carin (2019) and Plumley et al. (2020), financial distress is measured with the Altman's Z'-score, Altman's Z''-score and the Zmiijewski-score. The measurement of these variables are outlined below.

FD_1: ALTMANSZ' (Altman et al., 2017)

Z'	=	$.717X_1 + .847X_2 + 3.107X_3 + .420X_{4b} + .998X_5$
X1	=	Working capital/Total assets
X2	=	Retained earnings/Total assets
X3	=	Earnings before interest and taxes/Total assets
X4b	=	Book value of equity/Book value of total liabilities
X5	=	*Sales/Total assets *(*The definition of sales for football clubs is clarified in table 4)*

Firms are in the safe zone if Z'>2.90, are in distress zone if Z'<1.23. The zone between 2.90 and 1.23 is considered as the grey zone.

FD_2: ALTMANSZ'' (Altman et al., 2017)

Z'	=	$Z'' = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_{4b}$
X1	=	Working capital/Total assets
X2	=	Retained earnings/Total assets
X3	=	Earnings before interest and taxes/Total assets
X4b	=	Book value of equity/Book value of total liabilities

Firms are in the safe zone if Z''>2.60, are in distress zone if Z''<1.1. The zone between 2.60 and 1.1 is considered as the grey zone.

FD_3: ZMIJEWSKI (Zmijewski, 1984)

Zmijewski	=	$- 4.3 - 4.5X_1 + 5.7X_2 + .004X_3$
X1	=	Net income/Total assets
X2	=	Total liabilities/Total assets
X3	=	Current assets/Current liabilities

Firms are in the safe zone if the Zmijewski-score is <0.5. Firms are in distress zone if the Zmijewski-score is >0.5.

An overview of the financial distress zones is shown in table 3. The Zmijewski-score differs from the revised Altman's Z' and Altman's Z''-scores in interpretation of the financial distressed zones. For the Altman's Z' and Z''-scores, the lower a firm scores, the higher financially distressed the firm is. For the Zmijewski-score it is different: the higher a firm scores, the higher financially distressed the firm is. In order to test the results in the same direction for all variables, they must be recoded. For example, He, Rui & Zhu (2016) recoded the Altman's-scores and made use of dummy variables, whereby firms below the sample median were considered as financially healthy, and above the sample median were considered otherwise. However, Fernandes, Malaquias, Figueiredo, Rocha & Lins (2019) provided evidence that recoding metric quantitative variables into categorical variables usually leads to inefficient and biased estimates. Therefore, the Z' and Z''-scores are recoded as follows: positive scores on Z' and Z'' are recoded in the same negative scores, while negative scores on Z' and Z'' are recoded in the same positive scores. So after recoding, the higher an observation on the dependent variable is, the higher financially distressed a firm is and vice versa. The recoding process of the Altman's Z' and Altman's Z''-scores took place after the presentation of the descriptive statistics. So, the descriptive statistics represent the original Z' and Z''-scores.

Table 3: Financial distress zones

Financial distress zones			
	Altman's Z'-score	**Altman's Z''-score**	**Zmijewski-score**
Distressed zone	Z' < 1.23	Z''<1.10	Zmijewski > 0.5
Grey zone	1.23 > Z' < 2.90	1.1 > Z'' < 2.60	Zmijewski = 0.5
Safe zone	Z' > 2.90	Z'' > 2.60	Zmijewski < 0.5

3.3.2 Independent variables

The independent variable in this study is player expenditures. As earlier mentioned in the literature review, player expenditures arises in the form of expenditures on transfer fees and player salaries.

To measure player salaries, Nicoliello & Zampatti (2016) used the ratio between cost of total salaries, divided by the net turnover. Dimitropoulos & Scafarto (2021) measured player salaries by the annual player wages, deflated by turnover. A large part of the Dutch football clubs are concise and do not make a distinction between the costs of player salaries and costs of salaries for other staff members in their annual reports. What must be mentioned is that the total salaries for football clubs for the greatest part exists of player salaries and only for a small fraction for other staff members. So, it is assumed that the difference between player salaries and total salaries barely impacts the results. Therefore, due to the limitations of the annual reports and in line with the study of Nicoliello & Zampatti (2016), the following variable is developed.

SALARIES: is the club's annual salaries divided by net turnover.

To measure the expenditures on transfer fees, football clubs activate the purchase value of transfer fees on the balance sheet under intangible assets. The purchase value is depreciated on a straight-line basis over the contract term to a residual value of zero. Annually, the depreciation costs of the investments in players are charged to the profit and loss account under 'depreciation transfer fees'. Besides the transfer costs from buying football players, clubs also

sell players. The result of player earnings is the transfer fee that is received, less a player's book value at the time when the player is sold. So, if the book value of a player is greater than the transfer fee received, clubs lead a book loss and vice versa.

Yearly, football clubs present the transfers results on the profit and loss account under 'result on transfer fees'. Nicoliello & Zampatti (2016) used the result on transfer fees divided by net turnover as a variable. However, their study used the variable to analyze the income side of a football club. This study focuses on the expenses side. Therefore, this study used this variable in the other way around. So, if the score on transfer fees is positive, there are costs. If there is a negative score on transfer fees, there is a profit. Therefore, the following variable is developed for transfer fees.

TRANSFERFEES: is the club's annual depreciation on transfer fees minus the result on transfer fees, divided by net turnover.

In the context of player expenditures, it is interesting to analyze costs of salaries added up by the transfer fees. The variable developed below is a collection of the two variables above added up. So, the variable explains the yearly player expenditures of a football club. However, this variable is not supported by other researches.

SALARIES&TRANSFERFEES: is the club's annual player expenditures consisting of salaries and transfer fees, divided by net turnover.

3.3.3 Moderator variable

As earlier mentioned, a moderator variable impacts the direction and/or the strength of the relation between an independent and a dependent variable. In this research, the moderating impact of Financial Fair Play is investigated. The Financial Fair Play regulations are implemented in 2011. The Financial Fair Play regulations are measured with a dummy variable which has only two values: 1 if it is active (from football season 2011/2012 and after) and 0 it is not active (the years before football season 2011/2012). This is in line with Dimitropoulos & Scafarto (2021), which also used a moderator dummy variable for Financial Fair Play. Furthermore, Nicoliello & Zampatti (2016) made use of a dummy control variable for the years where Financial Fair Play was involved. This research builds forward on the measurement of Dimitropoulos & Scafarto (2021). So, the following variable is derived:

FFP: is a dummy variable receiving (1) in the years (financial years of football season 2011/2012 and after) that the Financial Fair Play regulations are active and (0) otherwise (financial years before football season 2011/2012).

3.3.4 Control variables

Variables that have an impact on financial distress, but where the research does not pay special attention to, should be included as control variables. According to Wetting (2020), the age of a firm and industry dummies are often used as control variables regarding researches of financial distress. In professional football researches, age of the football club is not used as control variable and therefore will not be used in this research. Furthermore, this research consists of only the football industry, so controlling with an industry dummy has no impact. However, club-effects could influence the results of this study, due to club-specific differentiations. In comparison, Acero et al. (2017) used dummies for the league effects. However, in contrast with Acero et al. (2017), this research only exist of one league. So, in contrast to league dummies,

dummy variables for each club are used to control for the club effects. Furthermore, most similar research of Dimitropoulos & Scafarto (2021) did not control for year-effects in their research models. Their study used a year-FFP effect as a dummy variable as explained in the section 3.3.3, which is the same in this research. For this reason, it is decided to exclude the year dummy variables in this study.

CLUB: is a dummy variable for each club in the sample.

As earlier mentioned in the literature review, the size of a football club does matter in financial professional football studies (Gallagher & Quinn, 2020; Garcia-del-Barrio & Rossi, 2020; Özaydin, 2020). Furthermore, Douma, George & Kabir (2006) argued that size is used as a control variable in almost all studies that explained the financial performance of firms. According to Wetting (2020), size has also has also an impact in financial distress studies. Therefore, this research included size as a control variable in the research model. Douma et al. (2006) used the total sales in millions as a proxy for the size of a firm. Also, the assets are used as control variable in other financial studies (e.g. Khodavandloo, Zakaria & Nassir, 2017). Specifically, in the professional football study of Acero et al. (2017), size is used as a control variable measuring the natural logarithm of the total assets. In this study, in the descriptive statistics, the total annual sales and assets in million euros are displayed. After the descriptive statistics, the total sales and assets are transformed into their natural logarithm, to reduce skewness. So, the regressions are performed with the natural logarithm of total sales and assets.

SIZE1: is the natural logarithm of the total sales
SIZE2: is the natural logarithm of the total assets.

According to Wetting (2020), leverage is also a factor that impacts financial distress. In financial professional football studies, leverage is often used as a control variable (e.g. Acero et al., 2017; Dimitroupoulos & Scafarto, 2021). Furthermore, in financial studies outside the football world, leverage is also often included as a control variable (e.g. Margaritis & Psillaki, 2010). Based on the research of Van Beusichem, De Jong, DeJong & Mertens (2016) an appropriate way to measure leverage is the ratio of long-term debt divided by the book value of total assets. Also, the ratio of total debt to total assets is used as a measurement of leverage (Margaritis & Psillaki, 2010; Dimitropoulos & Scafarto, 2021). In line with these definitions, the following control variables are developed.

LEVERAGE1: is the ratio of long-term debt to total assets.
LEVERAGE2: is the ratio of total debt to total assets.

Furthermore, Dimitropoulos & Scafarto (2021) controlled for participation in the UEFA competitions. Their research measured UEFA participation with a dummy variable if a club participated in the Champions League or Europa League in the observed season. Also, Dutch football clubs take part in these UEFA competitions every year. In contrast to some other competitions, Dutch football clubs often has to play preliminary rounds to participate in these UEFA competitions. For this variable, only clubs that played in the main stage of the UEFA competitions are taken into account. Therefore, the following control variable is developed.

ECPARTICIPATION: is a dummy variable receiving (1) if a club has participated in the main stage of the UEFA competitions in the observed season and (0) otherwise.

3.3.5 Variable definitions

This paragraph consists a summary of the variable definitions given above. The variables presented in table 4 are used to test the hypotheses of this study.

Table 4: List of variables

Dependent variables		
Financial Distress		
Altman's Z' Score	AltmansZ'	$Z'=.717X_1 + .847X_2 + 3.107X_3 + .420X_{4b} + .998X_5$ X1 = Working capital/Total assets X2 = Retained earnings/Total assets X3 = Earnings before interest and taxes/Total assets X4b = Book value of equity/Book value of total liabilities X5 = *Sales/Total assets
Altman's Z'' Score	AltmansZ''	$Z'' = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_{4b}$ X1 = Working capital/Total assets X2 = Retained earnings/Total assets X3 = Earnings before interest and taxes/Total assets X4b = Book value of equity/Book value of total liabilities
Zmijewski's Model	Zmijewski	$Zmijewski = - 4.3 – 4.5X_1 + 5.7X_2 + .004X_3$ X1 = Net income/Total assets X2 = Total liabilities/Total assets X3 = Current assets/Current liabilities
Independent variables		
Player Expenditures		
Salaries	Salaries	is the club's annual salaries, divided by net turnover
Transferfees	Transferfees	is the club's annual depreciation on transfer fees, minus the result on transfer fees, divided by net turnover
Salaries and transfer fees	Salaries&Transferfees	is the club's annual salaries added up with the annual transfer fees, divided by net turnover
Moderator variable		
Financial Fair Play		
Financial Fair Play	FFP	is a dummy variable receiving (1) in the years (financial years of football season 2011/2012 and after) that the Financial Fair Play regulations are active and (0) otherwise (financial years before football season 2011/2012)
Control variables		
Club-effect	Club	is a dummy variable for each club in the sample
Size of sales	Size1	is the natural logarithm of the total *sales
Size of assets	Size2	is the natural logarithm of the total assets
Long-term debt pressure	Leverage1	is the ratio of long-term debt to total assets
Total debt pressure	Leverage2	is the ratio of total debt to total assets
Participation in European football	ECParticipation	is a dummy variable receiving (1) if a club has participated in the main stage of the UEFA competitions in the observed season and (0) otherwise

**Notes: All Dutch football clubs present the total net turnover on their profit and loss account (in Dutch it is called: "netto-omzet"). So, when the models and definitions above describe "turnover", "net turnover", "sales" or "total sales", this research used the total net turnover as a measurement. The total net turnover includes the income from the delivery of goods and services to third parties, after deduction of discounts and taxes levied on turnover (source: annual reports of the individual football clubs).*

4. Data

This section describes the sample size and data collection of this study. The data of this research is collected from football clubs' annual reports. A football season in the Netherlands runs from 30 June until 30 June, so the annual reports represent broken book years. Data is collected from football season 2008/2009 up to and including the season 2017/2018. So, a total of ten years of data is collected and analyzed. Since annual reports are publicly available, data is hand collected from football clubs' websites. For missing reports, the chamber of commerce and the KNVB are consulted. The sample clubs meet the requirements of a medium-sized company (except ADO Den Haag 2007-2009 and Heracles 2007-2011) according to Dutch legislation (KvK, 2021). So, the annual reports are audited by an accountant. Only for Heracles Almelo (2007-2011), it is not sure if the reports are audited, because Excel data for these years are received by the KNVB.

Dutch professional football consists of 38 teams playing in the 'Eredivisie' and the 'Keukenkampioen Divisie'. Since Financial Fair Play regulations only relate to clubs that play in European competitions, this research only takes into account the football clubs that have a real chance to qualify for European football. Dutch football clubs that have the probability of European football, are playing in the 'Eredivisie'. An exception are three clubs in the history of Dutch football which participated in European football competitions, but did not play in the 'Eredivisie' at that moment. This was because those clubs reached the cup final (Willem ll in 1963, NEC in 1983) or won the European fair play classification (Go Ahead Eagles in 2015). Those clubs were allowed to participate in European football competitions, while they were playing in the second division at that moment (NOS, 2015). However, these cases are very scarce, so this research does not take this possibility into account.

This research follows the dataset requirements of Nicoliello & Zampatti (2016) and Dimitropoulos & Scafarto (2021). Both researches contained a dataset of 15 football clubs in the highest Italian football division. However, the Italian Serie A consists of 20 teams every year. Therefore, the above mentioned researches made a distinction between clubs that have a real chance of playing in European competitions and the so-called lift teams. The lift teams compete for a few years in the highest league, rank low or downgrade to a lower league and have no chance of participate in UEFA Champions League (Dimitropoulos & Scafarto, 2021). Those researches excluded the lift teams from the sample. The restrictions of Dimitropoulos & Scafarto (2021) are followed. Therefore, the data sample of this research consists only of clubs that participated in the highest division for the whole sample period, or clubs that are relegated only one year. Appendix A and B contains an overview of the end position of football clubs in the sample period between 2008 and 2018. The green colored clubs are included in the sample, while the red colored clubs are excluded, due to the above mentioned requirements.

Only 11 clubs are left that do meet the above mentioned sample requirements. Furthermore, the second restriction of Dimitropoulos & Scafarto (2021) is that only clubs are included that have sufficient and non-missing data available. In this sample, all 11 remaining clubs have sufficient and non-missing data available in their annual reports. Therefore, Appendix C presents the full sample size of this research. The dataset consists of the following clubs: Ajax, PSV, Feyenoord, AZ, FC Utrecht, Heracles Almelo, FC Groningen, Vitesse, ADO Den Haag, SC Heerenveen and FC Twente. So, 110 club-year observations are collected and analyzed in this study. In comparison, similar researches of Dimitropoulos & Scafarto (2021) analyzed 165 club-year observations, while Nicoliello & Zampatti (2016) analyzed only 45 club-year observations. The data in this study is analyzed with IBM SPSS.

5. Results

This chapter presents the results of this study. First, the outliers of the data are discussed. Second, the descriptive statistics of the variables are described. Third, a correlation matrix is performed. Fourth, the regression results are presented. Lastly, robustness tests are performed.

5.1 Outliers

The data has been checked for outliers by conducting boxplots in SPSS. Multiple outliers for Vitesse have been detected for the measurement of player expenditures. For Feyenoord, multiple outliers for the financial distress and leverage measurements have been detected. There were no specific years that considered multiple huge outliers. To control for outliers, winsorizing is often used in financial studies (e.g. Douma et al., 2006; Merendino & Melville, 2019). Winsorizing instead of removing outliers will not decrease the sample size and prevents for losing information. For this reason, the dependent, independent and leverage variables are winsorized below the 5^{th} and above the 95^{th} percentiles.

5.2 Descriptive statistics

In table 5, the descriptive statistics are displayed. The table includes 110 club-year observations between the years between 2008 and 2018. The descriptive statistics of this research are compared with the financial distressed zones as shown in paragraph 3.3.1. Furthermore, the descriptive statistics of this research are compared with similar studies in Spain (Barajas & Rodriguez, 2014: sample period 2007-2011), Italy (Nicoliello & Zampatti, 2016: sample period 2011-2013; Dimitropoulos & Scafarto, 2021: sample period 2007-2017) and England (Plumley et al. 2020: sample period 2002-2019). A drawback in the comparison with the researches of Barajas & Rodriguez (2014) and Plumley et al. (2020) is that their sample sizes differ from this research. The sample size of the researches in Spain and England consist of first and second division clubs. To make a fair comparison, only the first division data of Barajas & Rodriguez (2014) and Plumley et al. (2020) are compared with the descriptive statistics in this research.

The dependent variable in this research is financial distress. It is measured with the Altman's Z'-score, Altmans' Z''-score and the Zmijewski-score. First, the Z'-score in this study has a mean of 0.987, which falls in the financial distressed zone. In comparison, Plumley et al. (2020) found a mean Z'-score of -0.125 for English clubs, while Barajas & Rodriguez (2014) found a mean Z' score of 0.014 for Spanish clubs in 2011. So the, mean Z' scores of studies in Spain and England are lower than for this study in the highest Dutch division. Second, The Altman's Z''-score in this study has a mean of -0.278, which falls in the financial distress zone. This is higher than in Spanish highest division, where a mean score of -2.565 is found (Barajas & Rodriguez, 2014). Furthermore, English football has a mean Z''-score of -5.890 (Plumley et al., 2020). So, the mean Z''-scores in England and Spain are lower than in the Netherlands. Third, the mean Zmijewski-score in this research is 0.438, which falls in the safe zone. Appendix D provides an overview of the club-year observations falling in the financial distressed zones. As can be seen, for AltmansZ', 64 of the 110 club-year observations are financially distressed, while for AltmansZ'' it is 72. For Zmijewski, 51 observations are considered as financially distressed.

The independent variable is player expenditures, which is measured with Salaries, Transferfees and Salaries&Transferfees. First, Salaries in this study show a mean score of 0.665. For comparison, Barajas & Rodriguez (2014) show mean Salaries of 0.664 in Spain. Furthermore, Nicoliello & Zampatti (2016) presented a mean score of 0.710 for Italian clubs. Second, Transferfees have a mean of -0.077, which means that there is an average profit on player

transfers. In comparison Dimitropoulos & Scafarto (2021) showed a mean score of -0.170 in Italy. Third, Salaries&Transferfees has a mean of 0.573. As earlier mentioned, this variable is not supported by other studies and therefore not comparable. A drawback of the comparable researches is that some researchers only had hard average data available, such as net turnover, salaries or transfer fees. Therefore, comparable mean scores had yet to be calculated.

Table 5: Descriptive statistics of the sample

Full Sample								
	N	**Mean**	**St.dev**	**Min**	**Q1**	**Median**	**Q3**	**Max**
Dependent variables								
AltmansZ'	110	0.987	1.159	-1.437	0.192	0.999	1.847	2.938
AltmansZ''	110	-0.278	3.359	-6.695	-2.775	-0.403	2.020	6.088
Zmijewski	110	0.438	2.108	-2.864	-1.245	0.351	1.941	4.928
Independent variables								
Salaries $_{t-1}$	110	0.665	0.194	0.432	0.545	0.626	0.727	1.233
Transferfees $_{t-1}$	110	-0.077	0.178	-0.504	-0.153	-0.066	0.042	0.213
Salaries&Transferfees $_{t-1}$	110	0.573	0.215	0.164	0.419	0.550	0.722	1.001
Moderator variable								
FFP $_{t-1}$	110	0.600	0.492	0	0	1	1	1
Control variables								
Size1 (€1mln)	110	34.855	28.533	6.427	14.191	22.617	47.952	118.223
Size2 (€1mln)	110	50.120	51.701	3.500	13.169	27.849	79.966	272.324
Leverage1	110	0.248	0.217	0.007	0.0450	0.192	0.445	0.645
Leverage2	110	0.787	0.329	0.244	0.563	0.786	0.956	1.547
ECParticipation	110	0.350	0.478	0	0	0	1	1

The moderator variable in this research is Financial Fair Play. The Financial Fair Play regulations were implemented in season 2011/2012. So, with a dummy variable of FFP $_{t-1}$,, there are four years of data pre-Financial Fair Play and six years of data post-Financial Fair Play. Logically, Financial Fair Play has a mean score of 0.600.

The control variables that are used in this research are Size1, Size2, Leverage1, Leverage2 and ECParticipation. First, the mean Size1 measured by total sales is €34.855.000. The lowest score is €6.427.000 and the highest score is €118.223.000. For comparison, the mean size in Englands' first division (Plumley et al., 2020) is €111.900.000, which is almost as large as the highest score in the Netherlands. Furthermore, Barajas & Rodgriguez (2014) show a mean size of €83.500.000 in Spain, while in Italy it is €97.449.000 (Nicoliello & Zampatti, 2016). Second, Size2 measured by total assets has a mean score of €50.120.000 in this research. In comparison, Spanish highest division clubs show mean total assets of €198.900.000. Third, Leverage1 has a mean score of 0.248. No comparable researches presented scores for the ratio of long-term debt divided by total assets. Fourth, Leverage2 has a mean score of 0.787. Barajas & Rodriguez (2014) presented higher leverage in Spain with a mean score of 1.500. Also, with a mean score of 0.880, Italian football clubs are higher leveraged than Dutch clubs (Dimitropoulos & Scafarto, 2021). Lastly, 0.350 of the Dutch football clubs in this sample participated in the UEFA competitions, while Dimitropoulos & Scafarto (2021) showed a mean score of 0.410.

5.3 Correlation matrix

This section presents the bivariate analysis of this study in the form of a correlation matrix. The Pearson's correlation matrix is displayed in table 6. The dependent variables of financial distress show positive correlations at the 1% level with each other. AltmansZ' and AltmansZ'' are highly correlated (r = 0.806**). Also, the Zmijewski-score and AltmansZ'' are highly correlated (r = 0.918**). Furthermore, Zmijewski and AltmansZ' are positively correlated (r = 0.701**).

The independent variable player expenditures is divided into three variables. The independent variable Salaries positively correlates at the 5% level with AltmansZ' (r = 0.203*). The Transferfees variable shows no correlation with one of the dependent variables. Furthermore, Salaries&Transferfees correlates positively with all the three dependent variables at the 5% level: with AltmansZ' (r = 0.194*), with AltmansZ'' (r = 0.235*) and with Zmijewski (r = 0.208*), which indicates that clubs with higher Salaries&Transferfees are also more financially distressed. There is one independent variable which is positively correlated with other independent variables. Salaries&Transferfees is highly correlated with Salaries (0.621**) and Transferfees (0.690**). It is logical, because the Salaries&Transferfees variable added up the Salaries and the Transferfees variables.

The moderator variable Financial Fair Play negatively correlates at the 1% level with all the financial distress variables (AltmansZ', r = -0.291**; AltmansZ'', r =-0.403**; Zmijewski, r = -0.293**), which indicates that clubs after the implementation of Financial Fair Play expend less on football players. Furthermore, Financial Fair Play shows negative correlation at the 1% level with Transferfees (r = -0.272**) and Salaries&Transferfees (r = -0.303**), which suggests less financial distress after the implementation period of Financial Fair Play.

Regarding the size control variables, Size1 is negatively correlated with AltmansZ'' (r = -0.233*) and Zmijewski (r = -0.287**), which implies that clubs with higher sales are less financially distressed. Furthermore, Size1 is negatively correlated with Salaries (r = -0.450**) and Salaries&Transferfees (r = -0.333**). Size2 shows correlations in the same direction as Size1. The only difference is that Size2 correlates negatively at the 1% level with AltmansZ'', while Size1 correlates negatively at the 5% level. Size1 and Size2 are highly correlated with each other (r = 0.860**), which indicates that the assets and sales of Dutch football clubs are highly correlated.

Also, the leverage control variables show significant correlations. The long-term debt pressure is positively correlated at the 1% level with all the dependent variables (AltmansZ', r = 0.543**; AltmansZ'', r = 0.412**; Zmijewski, r = 0.549**). This is also the case for the total debt pressure measured by Leverage2 (AltmansZ', r = 0.390**; AltmansZ'', r = 0.712**; Zmijewski, r = 0.873**). So, higher leveraged clubs are also more financially distressed. Only Leverage2 shows a negative correlation with Financial Fair Play (r = -0.246**). This negative correlation is in line with the enhanced overdue payables rule of Financial Fair Play, which stated that this rule should reduce the total debt of football clubs. Furthermore, Leverage1 shows a positive correlation with Size2 (r = 0.210*), while Leverage2 negatively correlates with Size2 (r = -0.301**). Also, both leverage measurements are positively correlated with each other (r = 0.551**).

The control variable ECParticipation has negative correlation with AltmansZ'' (r = -0.223*) and Zmijewski (r = -0.276**), which indicates that clubs with participation in UEFA competitions are less financially distressed. Furthermore, ECParticipation is negatively correlated with Salaries&Transferfees (r = -0.224*). Lastly, ECParticipation is highly correlated with both Size1 (r = 0.719**) and Size2 (r = 0.647**). It suggests that UEFA participants are larger clubs regarding sales and assets.

Table 6: Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12
1	**AltmansZ'**	1.000											
2	**AltmansZ''**	0.806**	1.000										
3	**Zmijewski**	0.701**	0.918**	1.000									
4	**Salaries $_{t-1}$**	0.203*	0.121	0.086	1.000								
5	**Transferfees $_{t-1}$**	0.065	0.178	0.163	-0.043	1.000							
6	**Salaries&Transferfees $_{t-1}$**	0.194*	0.235*	0.208*	0.621**	0.690**	1.000						
7	**FFP $_{t-1}$**	-0.291**	-0.403**	-0.293**	-0.085	-0.272**	-0.303**	1.000					
8	**Size1**	-0.125	-0.233*	-0.287**	-0.450**	-0.012	-0.333**	0.014	1.000				
9	**Size2**	0.036	-0.307**	-0.371**	-0.260**	-0.046	-0.273**	0.094	0.860**	1.000			
10	**Leverage1**	0.543**	0.412**	0.549**	-0.093	0.064	-0.016	-0.060	0.059	0.210*	1.000		
11	**Leverage2**	0.390**	0.712**	0.873**	-0.171	0.167	0.065	-0.246**	-0.115	-0.301**	0.551**	1.000	
12	**ECParticipation**	-0.067	-0.223*	-0.276**	-0.170	-0.095	-0.224*	-0.148	0.719**	0.647**	0.048	-0.178	1.000

*Notes: **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tail).*

5.4 Regression results

Before conducting the regressions, OLS assumptions must be met. As can be seen in Appendix E, the Altman's Z'' score is checked for linearity and homoscedasticity. Figure 2 shows a normal P-P plot for the Altman's Z''-score of financial distress. The data follows more or less the regression line, which assumes linearity. Furthermore, the scatterplot in figure 3 shows that the data is normally distributed. This is also what the Shapiro Wilk-test in figure 4 suggested. The Shapiro Wilk-tests shows an insignificant result. It tells that the data is normally distributed, because the null hypothesis of population normality is retained.

To show if there is no multicollinearity, besides the Pearson correlation matrix performed in paragraph 5.3, also a VIF analysis is conducted. The VIF values are shown in figure 5 with dependent variable Altman's Z''. The VIF values score all below 10, which means that there is no multicollinearity. Earlier this research controlled for endogeneity, by using lagged dependent variables. So, after checking all the assumptions, OLS regression is appropriate with this dataset.

The remaining sections of this paragraph present the empirical results of the performed OLS regressions for each hypothesis. First, paragraph 5.4.1 tests whether player expenditures have an impact on financial distress. Second, paragraph 5.4.2 shows the impact of Financial Fair Play on financial distress. Third, paragraph 5.4.3 tests the moderation effect of Financial Fair Play on the relation between player expenditures and financial distress.

5.4.1 Player expenditures on financial distress

The fist hypothesis states that player expenditures positively impact financial distress. As independent variable in the regression analysis, Salaries&Transferfees is used, because it showed significant correlations with all the dependent variables. The measurements of Altman's Z'' and Zmijewski of financial distress are used in the main analysis, because those measurements have the highest correlations with Salaries&Transferfees. As control variables, Size1, Leverage1 and ECParticipation are used. Not conducted variables in the main analysis are later used in the robustness tests. There are six models to test hypothesis 1. Model 1 excluded the control variables. Model 6 used all the control variables. In models 2, 3, 4 and 5 some control variables are included and excluded, to check if the results are stable. In each model, club dummies are included.

Table 7 reports the results of the OLS regression. As can be seen, there is evidence for a positive impact of player expenditures on financial distress. With including all control variables, Salaries&Transferfees showed a positive significant impact at the 5% level on AltmansZ'' (β=3.196***, t=2.420). Furthermore, Salaries&Transferfees presented a positive and significant impact at the 5% level on Zmijewski when including all control variables (β=1.312***, t=2.106). Besides the impact of Salaries&Transferfees on AltmansZ'' (β=2.597*, t=1.669) at the 10% level, all other positive significant results of Salaries&Transferfees on financial distress are at the 5% level. However, in the second model when only Size1 is included as a control variable, the results showed no significant impact of Salaries&Transferfees on financial distress. Furthermore, model 1 for the Zmijewski-score does not show a significant impact.

Based on the main analysis, there is evidence for a positive impact of player expenditures on financial distress. According to the regression analysis performed, player expenditures show positive and significant results on AltmansZ'' and Zmijewski.

Table 7 – Hypothesis 1: Player expenditures on financial distress

	AltmansZ''						Zmijewski					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Salaries&Transferfees $_{t-1}$	2.597*	2.365	3.359**	3.122**	3.266**	3.196**	0.853	0.714	1.416**	1.279**	1.351**	1.312**
	(1.669)	(1.587)	(2.447)	(2.370)	(2.368)	(2.420)	(0.990)	(0.873)	(2.139)	(2.059)	(2.040)	(2.106)
Size1		-4.319***		-3.736***		-4.456***		-2.588***		-2.153***		-2.477***
		(-3.175)		(-3.112)		(-3.133)		-3.467		(-3.804)		(-3.692)
Leverage1			9.608***	9.141***	9.404***	9.314***			7.094***	6.824***	6.952***	6.902***
			(5.495)	(5.435)	(5.318)	(5.502)			(8.415)	(8.605)	(8.186)	(8.644)
ECParticipation					-0.623	0.804					-0.432	0.362
					(-0.830)	(0.347)					(-1.198)	(0.901)
Constant	-1.093	73.296***	-4.127***	60.371***	-3.644***	72.178***	-0.412	41.030***	-3.020***	34.522***	-2.649***	39.831***
	(-0.810)	(3.124)	(-3.160)	(2.908)	(-2.544)	(2.978)	(-0.551)	(3.407)	(-5.956)	(3.526)	(-4.144)	(3.484)
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.155	0.227	0.349	0.402	0.347	0.402	0.342	0.408	0.616	0.663	0.617	0.662
N	110	110	110	110	110	110	110	110	110	110	110	110

*Notes: This table presents the results of the OLS regressions of player expenditures and financial distress. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

5.4.2 Financial Fair Play on financial distress

The second hypothesis states that Financial Fair Play negatively impacts financial distress. The impact of Financial Fair Play on financial distress is measured with 6 models, in line with the previous hypothesis. The same models are used, but the independent variable player expenditures is changed with the measurement of Financial Fair Play.

Table 8 shows the results of the OLS regression for hypothesis 2. As can be seen, the results are unambiguously. Financial Fair Play shows a significant negative impact in all the models. For example, in model 4 with the highest explanatory power for AltmansZ'' (Adj. R^2 = 0.513), Financial Fair Play shows a negative significant impact (β=-2.458***, t=-5.363). The results are the same in model 4 with the highest explanatory power (Adj. R^2 = 0.714) for the Zmijewski-score (β=-1.076***, t=-4.664). Furthermore, in the model where all variables are included, Financial Fair Play show negative and significant impact on AltmansZ'' (β=-2.549***, t=-5.315) and Zmijewski (β=-1.076***, t=-4.664).

So, based on the main analysis, Financial Fair Play negatively impacts financial distress. The results are partially in line with the research of Plumley et al. (2020), which significantly showed that Financial Fair Play has a positive impact on financial distress. However, their research did not recode the AltmansZ'' scores. So, a reversed negative impact must be interpreted, which is in line with this research. A drawback of this comparison is that Plumley et al. (2020) only found evidence for the top 6 Premier League clubs and not for other clubs.

5.4.3 Moderating impact of Financial Fair Play

The third hypothesis states a negative impact of Financial Fair Play on the relation between player expenditures and financial distress. The results in paragraph 5.4.1 indicated that there is a positive impact of player expenditures on Financial Fair Play. Before conducting the regression analysis of the moderating impact of Financial Fair Play, the variables of player expenditures and Financial Fair Play are multiplied with each other. The standardized values of the variables Salaries&Transferfees and Financial Fair Play are used. In SPSS, the following new variable was computed to measure the moderating impact: FFP*Financial Fair Play$_{t-1}$.

Table 9 displays the moderating impact of Financial Fair Play. In line with the previous hypotheses, six models are conducted. Club dummies are included. As can be seen, Salaries&Transferfees*FFP is not significant in all the models. It is also tested if the moderator variable with multiplying the normal values instead of the standardized values of Financial Fair Play and player expenditures showed any impact. This was not the case for all models (tables not reported). In contrast with the moderating impact, the main impact of Financial Fair Play is also in all these models negative and significant. On the other hand, the control variables leverage and size show significant impact on financial distress measured by AltmansZ'' and Zmijewski.

So, the main results provide no evidence for a negative impact of Financial Fair Play on the relation between player expenditures and financial distress.

Table 8 – Hypothesis 2: Financial Fair Play on financial distress

	AltmansZ''						Zmijewski					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
FFP $_{t-1}$	-2.750***	-2.660***	-2.527***	-2.458***	-2.774***	-2.549***	-1.256***	-1.202***	-1.082***	-1.042***	-1.214***	-1.076***
	(-5.068)	(-5.145)	(-5.248)	(-5.363)	(-5.758)	(-5.315)	(-4.059)	(-4.104)	(-4.567)	(-4.729)	(-5.147)	(-4.664)
Size1		-4.098***		-3.639***		-3.150**		-2.473***		-2.110***		-1.925***
		(-3.355)		(-3.361)		(-2.401)		(-3.574)		(-4.053)		(-3.049)
Leverage1			8.452***	8.047***	7.885***	7.914***			6.602***	6.366***	6.298***	6.316***
			(5.323)	(5.313)	(5.023)	(5.165)			(8.447)	(8.742)	(8.196)	(8.566)
ECParticipation					-1.612**	-0.533					-0.861**	-0.202
					(-2.372)	(-0.665)					(-2.589)	(-0.523)
Constant	3.791***	71.205***	2.515***	62.446***	2.740***	54.463**	2.859***	43.538***	1.862***	36.608***	1.983***	33.587***
	(4.034)	(3.540)	(2.908)	(3.498)	(3.222)	(2.527)	(5.334)	(3.821)	(4.376)	(4.266)	(4.763)	(3.238)
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.311	0.377	0.462	0.513	0.486	0.510	0.431	0.492	0.669	0.714	0.687	0.712
N	110	110	110	110	110	110	110	110	110	110	110	110

*Notes: This table presents the results of the OLS regressions of Financial Fair Play and financial distress. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

Table 9 – Hypothesis 3: Moderating impact of Financial Fair Play

	AltmansZ''						Zmijewski					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Salaries&Transferfees $_{t-1}$	0.174	0.097	-0.068	1.080	0.885	0.806	-0.298	-0.281	-0.381	0.477	0.364	0.327
	(0.116)	(0.063)	(-0.047)	(0.793)	(0.682)	(0.542)	(-0.348)	(-0.321)	(-0.461)	(0.710)	(0.582)	(0.515)
FFP $_{t-1}$	-2.727***	-2.715***	-2.645***	-2.349***	-2.305***	-2.385***	-1.296***	-1.298***	-1.256***	-1.016***	-0.991***	-1.028***
	(-4.697)	(-4.643)	(-4.750)	(-4.524)	(-4.665)	(-4.499)	(-3.915)	(-3.893)	(-3.984)	(-3.967)	(-4.159)	(-4.024)
Salaries&Transferfees*FFP $_{t-1}$		-0.088	-0.096	-0.118	-0.124	-0.097		0.020	0.015	-0.003	-0.006	0.006
		(-0.287)	(-0.330)	(-0.440)	(-0.485)	(-0.366)		(0.118)	(0.094)	(-0.023)	(-0.052)	(0.050)
Size1			-4.101***		-3.605***	-3.277**			-2.483***		-2.096***	-1.941***
			-3.323		(-3.306)	(-2.448)			(-3.555)		(-3.987)	(-3.008)
Leverage1				8.666***	8.233***	8.122***				6.683***	6.431***	6.378***
				(5.374)	(5.346)	(5.178)				(8.401)	(8.663)	(8.436)
ECParticipation						-0.361						-0.170
						(-0.427)						(-0.418)
Constant	3.675***	1.950	72.501***	-1.210	60.966***	55.690**	3.057***	1.064	43.787***	-1.373**	34.777***	32.285***
	(2.679)	(1.391)	(3.408)	(-0.885)	(3.234)	(2.462)	(3.908)	(1.330)	(3.636)	(-2.036)	(3.827)	(2.961)
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.304	0.298	0.364	0.456	0.507	0.503	0.426	0.420	0.483	0.664	0.709	0.707
N	110	110	110	110	110	110	110	110	110	110	110	110

*Notes: This table presents the results of the OLS regressions of the moderating impact of Financial Fair Play. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

5.5 Robustness Tests

In this section, multiple robustness tests are performed to test if the results in the main analyses hold under different circumstances. In the first robustness tests, regressions are performed with different lagged variables. Second, the results are shown for a split sample size. Third, the regressions are conducted with alternative variables.

5.5.1 Lagged variables

This section performed robustness tests with different lagged variables. In comparison, Dimitropoulos & Scafarto (2021) performed regressions in their main analysis without lagged variables. However, their research checked for robustness with one and two year lagged variables. Overall, their main results remained unaffected by the robustness tests. In contrast to Dimitropoulos & Scafarto (2021), this study performed regressions with one year lagged independent and moderator variables in the main analysis. So, to check for robustness, in paragraph 5.5.1.1 no lagged variables are used. In paragraph 5.5.1.2, two year lagged variables of the independent and moderator variable are used. For robustness, AltmansZ'' is used as the dependent variable, because this variable has the highest correlation with AltmansZ' and Zmijewski. However, robustness tests performed with AltmansZ' and Zmijewski were comparable. Differences are discussed below (tables not reported).

5.5.1.1 No lagged variables

The results without lagged variables are displayed in table 10 (Appendix F). As can be seen, player expenditures have a significant impact on financial distress. For example, model 4 (β=8.265***, t=9.0.84) shows a strong positive impact at the 1% level, which is in line with the three other models. So, the results without lagged variables show even a stronger relation than in the main results. Furthermore, Financial Fair Play show in all the models a negative and significant impact on financial distress (e.g. model 8: β=-2.690***, t=-5.133). In line with the main results, the moderator variable showed no significant impact on AltmansZ''. However, one significant result (β=-0.266*, t=-1.664) of the moderator variable Salaries&Transferfees*FFP is found on the Zmijewski-score. This was in a model where dummies were included and only Size1 was used as control variable (table not reported). In the main results, no such impact was found.

5.5.1.2 Two year lagged variables

The results with two year lagged variables are displayed in table 11 (Appendix G). In contrast with the main results, the player expenditures showed no significant impact on AltmansZ''. The impact of Financial Fair Play on AltmansZ'' show in line with the main results a negative and significant impact for all three models at the 1% level (e.g. model 8: β=-2.793***, t=-5.738). Furthermore, in line with the main results, hypothesis 3 for a moderating impact of Financial Fair Play is rejected for AltmansZ'', but also for Zmijewski and AltmansZ' (tables not reported).

5.5.2 Split Sample

The results of the three hypothesis are tested with a sub sample of big and non-big clubs, which is in line with the research of Plumley et al. (2020). It is also more or less in line with Dimitropoulos & Scafarto (2021), which split the sample in UEFA qualifiers and non-qualifiers to check for robustness. In this research, a company falls into the classification big if the annual accounts meet at least 2 of the following characteristics for 2 consecutive years: More than 20 million assets, more than 40 million turnover, more than 250 employees (Kamer van Koophandel, 2021). Following these regulations, Ajax, AZ, FC Twente, PSV and Feyenoord are

considered as big clubs. These are the clubs that mostly took part in UEFA competitions, as can be seen in Appendix A and B. Therefore, these clubs are considered as the top-5 clubs in this sample. In paragraph 5.2.2.1, the results of a sample with only the top 5 clubs are presented. In paragraph 5.2.2.2, the results are shown with a sample of the other clubs: ADO Den Haag, Heracles Almelo, FC Groningen, FC Utrecht, SC Heerenveen and Vitesse.

5.5.2.1 Top 5 clubs

The results with a sample of top 5 clubs are displayed in table 12 (Appendix H). In line with the main results, there is a strong positive significant relation for all the models between Salaries&Transferfees and AltmansZ''. Furthermore, in line with the main results, there is a negative relation between Financial Fair Play and AltmansZ'' at the 1% level. In contrast with the main results, there is a significant negative impact of the moderator variable on AltmansZ'' for all three the models. For model 10, it is even significant at the 1% level (β=-0.982***, t=-2.756), while for the other two models it is significant at the 5% level. So, for top 5 clubs, there is a significant negative moderating impact of Financial Fair Play in line with hypothesis 3.

5.5.2.2 Without top 5 clubs

The results for a sample without top 5 clubs are displayed in table 13 (Appendix I). In contrast with the main results, Salaries&Transferfees show no significant positive impact on AltmansZ''. In line with the main results, there is a negative significant between Financial Fair Play and AltmansZ'' in all the models (e.g. model 7: β=-2.517***, t=-2.483). In line with the main results, but in contrast with a sample of the top 5 clubs, there is a non-significant negative relation between the moderator variable Salaries&Transferfees and AltmansZ''. This is also the case for the financial distress measurements of AltmansZ' and Zmijewski (tables not reported).

5.5.3 Alternative variables

Robustness tests are performed with alternative variables. Section 5.5.3.1 presents the robustness tests with alternative independent and control variables. Section 5.5.3.2 displays the results with alternative dependent variable measurements.

5.5.3.1 Alternative independent and control variables

The results with alternative independent and control variables are displayed in table 14 (Appendix J). Salaries are used as the independent variable, because Transferfees showed no correlation with financial distress. In three of the four models, a positive significant association between Salaries and AltmansZ' are reported (e.g. model 4: β=1.672**, t=2.188). Furthermore, Financial Fair Play show a negative association with AltmansZ' for all the models (e.g. model 8: β=-0.596***, t=-2.996). Lastly, there is an insignificant relation between Salaries*FFP and AltmansZ', which is also the case for AltmansZ'' and Zmijewski (tables not reported). Therefore, the tests with alternative independent and control variables are in line with the main results.

5.5.3.2 Alternative dependent variables

The Altman's Z', AltmansZ'' and Zmijewski-scores are recoded in line with the method of Udin, Khan & Javid (2017), with a dummy variable of 1 if a club is in financial distress and 0 if not (see Appendix D for the club-year observations in this sample falling in the financial distressed zones). The results are displayed in table 15 (Appendix K). The results for all hypothesis remained unaffected with the alternative measurement of AltmansZ'' and Zmijewski (table of Zmijewski not reported). Only for hypothesis 1, no significant impact was found for the alternative measurement of AltmansZ', which is not in line with the main results (table not reported).

6. Conclusion

This chapter describes the conclusion of this research. First, the conclusion of the main findings are presented. Second, the limitations of this study are discussed, followed by recommendations for future research.

6.1 Main findings

The first research goal of this study was to explore the direct impact of Financial Fair Play on financial distress. The second research goal was to find out the role of Financial Fair Play in the relation between player expenditures and financial distress. Those research goals led to the following research question: *"What is the impact of the Financial Fair Play regulations on financial distress of Dutch professional football clubs?"* Three hypotheses are conducted to answer the research question. This research investigated data between 2008 and 2018 for 11 Dutch professional football clubs. A total of 110 club-year observations have been analysed with ordinary least squares regressions. Financial distress is chosen as the dependent variable, measured by Altman's Z', Altman's Z'' and the Zmijewski-score.

The first hypothesis stated a positive impact of player expenditures on financial distress. In the main analysis, player expenditures showed positive and significant results on financial distress. Most robustness tests also showed a positive significant impact. However, the robustness tests with two year lagged independent variables and without top five clubs showed positive but insignificant results. Although not all the robustness tests found significant results, there is enough evidence to accept the first hypothesis. Player expenditures positively impact financial distress of Dutch professional football clubs. This is in line with the overinvestment theory in professional football.

The second hypothesis stated a negative impact of Financial Fair Play on financial distress. In line with the first hypothesis, the main results presented a negative impact of Financial Fair Play on financial distress. Furthermore, all robustness tests provided strong evidence for the aforementioned relation. Concluded, the second hypothesis is accepted, because Financial Fair Play showed a strong negative impact on financial distress for all tests. So, the implementation of Financial Fair Play reduced financial distress of Dutch professional football clubs. Therefore, the goal of the UEFA to introduce Financial Fair Play is met. The financial situation of Dutch professional football clubs has improved due to the Financial Fair Play regulations.

The third hypothesis stated a negative impact of Financial Fair Play on the relation between player expenditures and financial distress. In contrast with the third hypothesis, the main results found no significant negative impact of Financial Fair Play on the relation between player expenditures and financial distress. However, the robustness tests for only the top 5 clubs found strong evidence for a negative impact of Financial Fair Play on the aforementioned relationship. Furthermore, also for the full sample without the use of lagged independent and moderator variables, a significant negative impact is found. Concluded, the third hypothesis is rejected, because no unambiguously evidence is found for a negative impact of Financial Fair Play on the relation between player expenditures and financial distress.

To answer the research question, there is strong evidence that Financial Fair Play reduced financial distress in Dutch professional football. Despite the evidence of a positive impact of player expenditures on financial distress, Financial Fair Play showed no unambiguously significant impact on the aforementioned relation of Dutch professional football clubs.

6.2 Limitations and future research

This section discusses the limitations of this research. Furthermore, recommendations for future research are provided.

Although this study showed some relevant results in the context of Financial Fair Play on financial distress, it is important to mention that there are some limitations. A limitation of this study is that it can not be generalized outside the Dutch professional football industry. This research only intended to draw conclusions for Dutch professional football clubs. Replicating this study in other countries may give different results. Furthermore, this research consists of 110 club-year observations. This is a relatively small sample size in comparison to other studies about financial distress, but in comparison with researches in the international football finance it is a normal sample size.

Another limitation of this study is that the Financial Fair Play regulations are measured with a variable for the years Financial Fair Play is active. Other year-effects are not taken into account, which is a limitation of this research. Furthermore, the recoding process of the Altman's Z'-score and the Altman Z''-score for the main analyses are not in line with prior researches, which may be a limitation of this study. Lastly, other financial distress measurements (e.g. Ohlson, 1980) are not used in this research.

A recommendation for future research is to include more years in the sample, especially before the introduction of Financial Fair Play. Furthermore, it is also valuable to test this research in other European countries. Another recommendation for future research is to use other statistical models than the OLS regression that is used in this model. Other appropriate models are the fixed effects or the two-stage least squares regression. Also, similar researches used independent samples t-tests (e.g. Plumley et al. 2020). Lastly, a recommendation for future research is to use different variable measurements of Financial Fair Play or financial distress.

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Appendix A: End position of football clubs in the Eredivisie (2008-2013)

Position	2008/2009 (NO-FFP)			2009/2010 (NO-FFP)			2010/2011 (NO-FFP)			2011/2012 (FFP)			2012/2013 (FFP)		
1	AZ	80		FC Twente	86	EL	Ajax	73	CL	Ajax	76	CL	Ajax	76	CL
2	FC Twente	69	EL	Ajax	85	EL	FC Twente	71	CL	Feyenoord	70		PSV	69	EL
3	Ajax	68	EL	PSV	78	EL	PSV	69	EL	PSV	69	EL	Feyenoord	69	
4	PSV	65	CL	Feyenoord	63		AZ	69	EL	AZ	65	EL	Vitesse	64	
5	SC Heerenveen	60	EL	AZ	62	CL	FC Groningen	57		SC Heerenveen	64		FC Utrecht	63	
6	FC Groningen	56		Heracles Almelo	56		Roda JC	55		FC Twente	60	EL	FC Twente	62	EL
7	Feyenoord	45	EL	FC Utrecht	53		ADO Den Haag	54		Vitesse	53		FC Groningen	43	
8	NAC Breda	45		FC Groningen	49		Heracles Almelo	49		N.E.C.	45		SC Heerenveen	42	
9	FC Utrecht	44		Roda JC	47		FC Utrecht	47	EL	RKC Waalwijk	45		ADO Den Haag	40	
10	Vitesse	43		NAC Breda	46		Feyenoord	44		Roda JC	44		AZ	39	
11	N.E.C.	42		SC Heerenveen	37	EL	N.E.C.	43		FC Utrecht	43		PEC Zwolle	39	
12	Willem II	37		VVV-Venlo	35		SC Heerenveen	41		Heracles Almelo	40		Heracles Almelo	38	
13	Sparta	35		N.E.C.	33		NAC Breda	40		NAC Breda	38		NAC Breda	38	
14	ADO Den Haag	32		Vitesse	32		De Graafschap	38		FC Groningen	37		RKC Waalwijk	37	
15	Heracles Almelo	32		ADO Den Haag	30		Vitesse	35		ADO Den Haag	32		N.E.C.	37	
16	Roda JC	30		Sparta	26	R	Excelsior	35	R	VVV-Venlo	31		Roda JC	33	
17	De Graafschap	30	R	Willem II	23		VVV-Venlo	21		De Graafschap	24	R	VVV-Venlo	28	R
18	FC Volendam	29	R	RKC Waalwijk	15	R	Willem II	15	R	Excelsior	19	R	Willem II	23	R

Notes: Appendix A contains the end position of Eredivisie football clubs between 2008 and 2013. Green coloured clubs meet the sample requirements, while red coloured clubs are excluded. Furthermore, the Appendix shows when clubs that are relegated (R) or took part in the Europa League (EL) or the Champions League (CL).

	=	Meet the sample requirements
	=	Does not meet the sample requirements

Appendix B: End position of football clubs in the Eredivisie (2013-2018)

Position	2013/2014 (FFP)			2014/2015 (FFP)			2015/2016 (FFP)			2016/2017 (FFP)			2017/2018 (FFP)		
1	Ajax	71	CL	PSV	88	EL	PSV	84	CL	Feyenoord	82	EL	PSV	83	
2	Feyenoord	67		Ajax	71	CL	Ajax	82	EL	Ajax	81	EL	Ajax	79	
3	FC Twente	63		AZ	62		Feyenoord	63		PSV	76	CL	AZ	71	
4	PSV	59	EL	Feyenoord	59	EL	AZ	59	EL	FC Utrecht	62		Feyenoord	66	CL
5	SC Heerenveen	57		Vitesse	58		FC Utrecht	53		Vitesse	51		FC Utrecht	54	
6	Vitesse	55		PEC Zwolle	53		Heracles Almelo	51		AZ	49	EL	Vitesse	49	EL
7	FC Groningen	51		SC Heerenveen	50		FC Groningen	50	EL	FC Twente	45		ADO Den Haag	47	
8	AZ	47	EL	FC Groningen	46		PEC Zwolle	48		FC Groningen	43		SC Heerenveen	46	
9	ADO Den Haag	43		Willem II	46		Vitesse	46		SC Heerenveen	43		PEC Zwolle	44	
10	FC Utrecht	41		FC Twente	43		N.E.C.	46		Heracles Almelo	43		Heracles Almelo	42	
11	PEC Zwolle	40		FC Utrecht	41		ADO Den Haag	43		ADO Den Haag	38		Excelsior	40	
12	SC Cambuur	39		SC Cambuur	41		SC Heerenveen	42		Excelsior	37		FC Groningen	38	
13	Go Ahead Eagles	38		ADO Den Haag	37		FC Twente	40		Willem II	36		Willem II	37	
14	Heracles Almelo	37		Heracles Almelo	37		Roda JC	34		PEC Zwolle	35		NAC Breda	34	
15	NAC Breda	35		Excelsior	32		Excelsior	30		Sparta	34		VVV-Venlo	34	
16	RKC Waalwijk	32	R	NAC Breda	28	R	Willem II	29		N.E.C.	34	R	Roda JC	30	R
17	N.E.C.	30	R	Go Ahead Eagles	27	R	De Graafschap	23	R	Roda JC	33		Sparta	27	R
18	Roda JC	29	R	FC Dordrecht	20	R	SC Cambuur	18	R	Go Ahead Eagles	23	R	FC Twente	24	R

Notes: Appendix B contains the end position of Eredivisie football clubs between 2013 and 2018. Green coloured clubs meet the sample requirements, while red coloured clubs are excluded. Furthermore, the Appendix shows when clubs that are relegated (R) or took part in the Europa League (EL) or the Champions League (CL).

	=	Meet the sample requirements
	=	Does not meet the sample requirements

Appendix C: Sample size club-year observations

Football Club	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
ADO den Haag										
Ajax										
AZ										
FC Groningen										
FC Twente										
FC Utrecht										
Feyenoord										
Heracles Almelo										
PSV										
SC Heerenveen										
Vitesse										
Total	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**

Notes: Appendix C contains the full sample size of this study. The green coloured club-year data is available, while red coloured club-year data is not available. As can be seen, all club-year data is available for the sample size of this study. The sample size of this research consists of 11 clubs with a total of 110 club-year observations.

	=	Club-year data available
	=	Club-year data not available

ap

Appendix D: Sample size club-year observations in financial distress

Football season	AltmansZ'		AltmansZ''		Zmijewski	
	In financial distress		In financial distress		In financial distress	
	Yes	No	Yes	No	Yes	No
2008/2009	8	3	8	3	6	5
2009/2010	10	1	11	0	9	2
2010/2011	9	2	10	1	8	3
2011/2012	5	6	8	3	5	6
2012/2013	5	6	7	4	6	5
2013/2014	6	5	7	4	4	7
2014/2015	5	6	7	4	4	7
2015/2016	4	7	5	6	3	8
2016/2017	6	5	5	6	3	8
2017/2018	6	5	4	7	3	8
Total	**64**	**46**	**72**	**38**	**51**	**59**
Total sample	**110**		**110**		**110**	

Club	AltmansZ'		AltmansZ''		Zmijewski	
	In financial distress		In financial distress		In financial distress	
	Yes	No	Yes	No	Yes	No
ADO Den Haag	6	4	10	0	9	1
Ajax	3	7	3	7	0	10
AZ Alkmaar	6	4	6	4	3	7
FC Groningen	5	5	8	2	5	5
FC Twente	10	0	10	0	10	0
FC Utrecht	9	1	9	1	8	2
Feyenoord	3	7	5	5	5	5
Heracles Almelo	4	6	3	7	3	7
PSV	9	1	8	2	2	8
SC Heerenveen	4	6	4	6	1	9
Vitesse	5	5	6	4	5	5
Total	**64**	**46**	**72**	**38**	**51**	**59**
Total sample	**110**		**110**		**110**	

Notes: Appendix D contains an overview of the football seasons and clubs of the sample that fall in or outside the financial distress zone. In line with the research of Udin et al. (2017), club-year observations are considered as financially distressed if they fall in the distressed zone, while the grey and safe zone are considered as non-distressed. This study follows table 3 in paragraph 3.3.1 for the classification of financially distressed or non-financially distressed for the measurements of AltmansZ', AltmansZ'' and Zmijewski.

Appendix E: Tests of normality and linearity

Figure 2: P-Plot of Altman's Z''-score

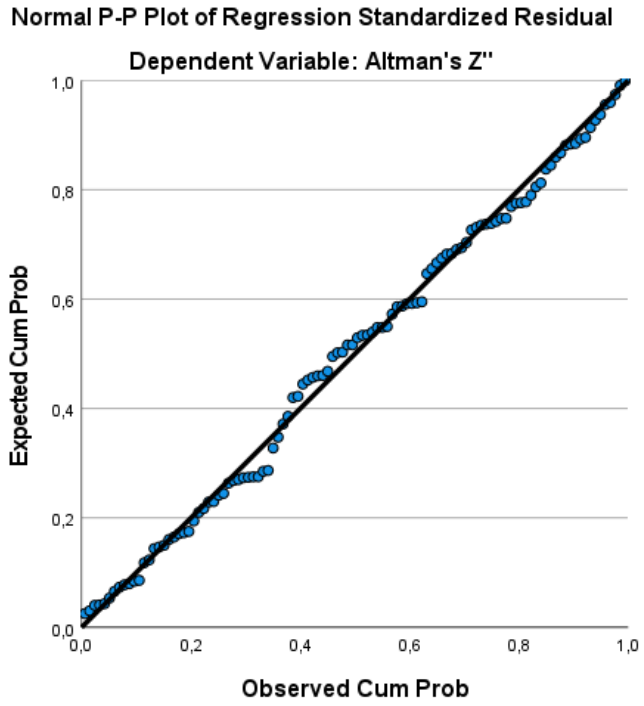

Figure 3: Scatter plot of Altman's Z''-score

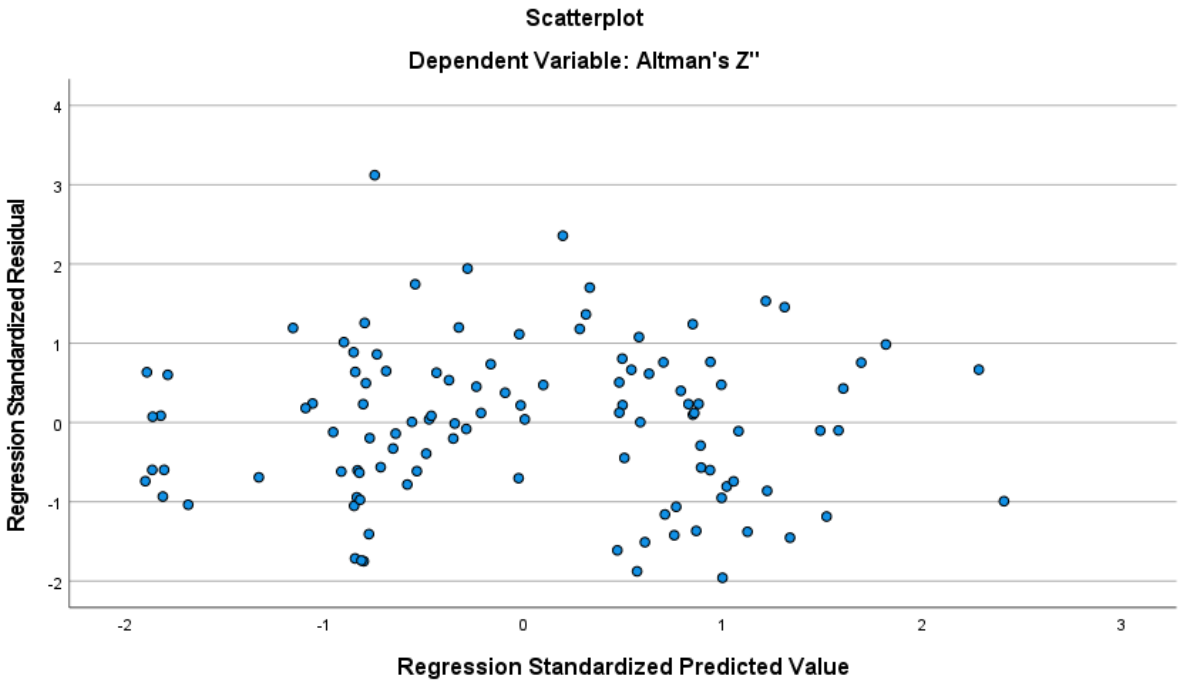

Figure 4: Shapiro Wilk-test of normality for Altman's Z''

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Altman's Z"	,042	110	,200*	,982	110	,140

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Figure 5: VIF values of main analysis

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Salaries&Transferfees t-1	,797	1,255
	FFP t-1	,847	1,180
	ECPart	,457	2,189
	Size1	,447	2,236
	Lev1	,992	1,008

a. Dependent Variable: Altman's Z"

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Salaries&Transferfees t-1	,791	1,265
	FFP t-1	,829	1,206
	ECPart	,437	2,289
	Size1	,421	2,378
	Lev1	,981	1,020
	FFP*Salaries&Transferfees t-1	,911	1,098

a. Dependent Variable: Altman's Z"

Appendix F: Robustness test without lagged variables

Table 10 – All hypothesis without lagged independent and moderator variables

	AltmansZ''											
	Hypothesis 1				Hypothesis 2				Hypothesis 3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Salaries&Transferfees	8.903***	8.727***	8.289***	8.265***					8.169***	7.636***	7.208***	7.183***
	(8.580)	(9.660)	(9.183)	(9.084)					(7.231)	(6.834)	(7.418)	(7.343)
FFP					-2.842***	-2.681***	-2.563***	-2.690***	-1.293**	-1.005*	-0.934*	-0.996*
					(-5.128)	(-5.178)	(-5.162)	(-5.133)	(-2.470)	(-1.842)	(-1.975)	(-1.987)
Salaries&Transferfees*FFP										-0.386	-0.269	-0.261
										-1.523	(-1.216)	-1.173
Size1	-2.462**		-2.155**	-2.347**	-3.898***		-3.478***	-2.891**		-2.560**	-2.245**	-2.010*
	(-2.317)		(-2.343)	(-2.137)	(-3.182)		(-3.179)	(-2.166)		(-2.493)	(-2.516)	(-1.859)
Leverage1		7.535***	7.365***	7.411***		8.218***	7.854***	7.683***			7.018***	6.955***
		(5.837)	(5.827)	(5.800)		(5.145)	(5.128)	(4.955)			(5.691)	(5.568)
ECParticipation				0.208				-0.629				-0.254
				(0.324)				(-0.772)				(-0.387)
Constant	37.618**	-6.625***	30.717*	33.904*	68.304***	2.907***	60.131***	50.576***	-1.544	40.610**	34.684**	30.895*
	(2.042)	(-7.679)	(15.959)	(18.805)	(3.389)	(3.235)	(3.337)	(2.310)	(-1.380)	(2.379)	(2.338)	(1.733
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.549	0.648	0.663	0.660	0.376	0.458	0.505	0.503	0.552	0.579	0.684	0.681
N	110	110	110	110	110	110	110	110	110	110	110	110

*Notes: This table presents the results of the OLS regressions of all hypothesis without lagged independent and moderator variables. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

Appendix G: Robustness test with two years lagged variables

Table 11 – All hypothesis with two years lagged independent and moderator variables

	AltmansZ''											
	Hypothesis 1				Hypothesis 2				Hypothesis 3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Salaries&Transferfees $_{t-2}$	0.307	1.259	1.159	1.206					-2.566	-2.508	-2.113*	-2.115*
	(0.188)	(0.803)	(0.766)	(0.794)					(-1.643)	(-1.630)	(-1.689)	(-1.678)
FFP $_{t-2}$					-2.804***	-2.811***	-2.759***	-2.793***	-3.191***	-3.132***	-2.018***	-2.023***
					(-5.306)	(-5.675)	(-5.820)	(-5.738)	(-5.490)	(-5.600)	(-4.172)	(-3.988)
Salaries&Transferfees*FFP $_{t-2}$										-0.062	-0.216	-0.214
										(-0.207)	(-0.872)	(-0.837)
Size1	-3.948***		-3.580***	-4.293**	-3.702***		-3.367***	-3.083**		-3.722***	-1.595	-1.572
	(-2.747)		(-2.709)	(-2.633)	(-2.966)		(-3.002)	(-2.198)		(-2.994)	(-1.507)	(-1.230)
Leverage1		8.433***	8.078***	8.298***		7.995***	7.681***	7.595***			7.283***	7.275***
		(4.178)	4.137	(4.192)		(4.668)	(4.679)	(4.550)			(6.667)	(6.470)
ECParticipation				0.761				-0.301				-0.027
				(0.750)				(-0.341)				(-0.033)
Constant	69.347***	-4.194***	61.745**	70.499**	64.606***	2.522***	58.007***	53.349**	3.427**	67.458***	24.325	23.956
	(2.619)	(-3.468)	(2.534)	(2.546)	(3.141)	(2.818)	(3.135)	(2.312)	(2.301)	(3.147)	(1.310)	(1.099)
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.202	0.278	0.328	0.325	0.399	0.471	0.516	0.511	0.357	0.405	0.608	0.603
N	110	110	110	110	110	110	110	110	110	110	110	110

*Notes: This table presents the results of the OLS regressions of all hypothesis with lagging two years for the independent and moderator variables. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

Appendix H: Robustness test with only top 5 clubs

Table 12 – All hypothesis with only top-5 clubs

	AltmansZ''											
	Hypothesis 1				Hypothesis 2				Hypothesis 3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Salaries&Transferfees $_{t-1}$	5.727***	5.088***	5.319***	5.311***					2.307	2.351	2.501	2.141
	(3.499)	(2.977)	(3.430)	(3.395)					(1.207)	(1.506)	(1.593)	(1.323)
FFP $_{t-1}$					-2.933***	-2.700***	-2.627***	-3.027***	-2.796***	-2.030***	-1.886***	-2.226***
					(-4.858)	(-3.992)	(-4.243)	(-4.470)	(-3.646)	(-3.177)	(-2.871)	(-2.965)
Salaries&Transferfees*FFP $_{t-1}$										-0.982***	-0.848**	-0.834**
										(-2.756)	(-2.212)	(-2.170)
Size1	-5.776***		-4.599***	-5.037***	-4.825***		-4.151***	-2.886*		-4.864***	-4.508***	-3.649**
	(-4.029)		(-3.219)	(-2.995)	(-3.660)		(-3.070)	(-1.782)		(-4.040)	(-3.574)	(-2.342)
Leverage1		10.094***	7.142**	7.139***		7.198**	4.668***	4.152			2.663	2.331
		(3.432)	(2.534)	(2.510)		(2.481)	(1.681)	(1.497)			(-0.960)	(0.832)
ECParticipation				0.430				-1.206				-0.795
				(0.506)				(-1.384)				-0.940
Constant	100.680***	-5.712***	78.805***	86.471***	87.434***	-1.668	72.382***	51.146*	1.398	86.202***	78.187***	64.172**
	(3.823)	(-5.431)	(2.999)	(2.832)	(3.618)	(-0.826)	(2.992)	(1.815)	(0.916)	(4.115)	(3.464)	(2.370)
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.488	0.446	0.545	0.537	0.575	0.513	0.593	0.601	0.461	0.649	0.649	0.648
N	50	50	50	50	50	50	50	50	50	50	50	50

*Notes: This table presents the results of the OLS regressions of all hypothesis with only a sample of top 5 clubs. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

Appendix I: Robustness test without top 5 clubs

Table 13 – All hypothesis without top 5 clubs

	AltmansZ''											
	Hypothesis 1				Hypothesis 2				Hypothesis 3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Salaries&Transferfees $_{t-1}$	0.307	1.520	1.150	1.528					-1.821	-2.331	-0.477	-0.331
	(0.188)	(0.706)	(0.541)	(0.703)					(-0.805)	(-1.030)	(-0.241)	(-0.161)
FFP $_{t-1}$					-2.381***	-2.467***	-2.517***	-2.483***	-2.493***	-2.437***	-2.436***	-2.400***
					(-2.935)	(-3.477)	(-3.660)	(-3.552)	(-2.952)	(-2.782)	(-3.250)	(-3.133)
Salaries&Transferfees*FFP $_{t-1}$										-0.233	-0.198	-0.191
										(-0.539)	(-0.536)	(-0.513)
Size1	-3.036		-3.365*	-4.584*	-3.153***		-3.696**	-4.173***		-3.488	-3.801**	-4.181*
	(-1.351)		(-1.701)	(-1.891)	(-1.523)		(-2.103)	(-1.916)		(-1.657)	(-2.109)	(-1.884)
Leverage1		8.894***	9.052***	9.522***		8.819***	9.094***	9.237***			8.977***	9.129***
		(3.888)	(4.025)	(4.109)		(4.365)	(4.636)	(4.586)			(4.398)	(4.303)
ECParticipation				1.557				0.595				0.496
				0.874				(0.376)				(0.299)
Constant	48.281	-1.715	53.626	73.022*	51.142	0.794	61.304**	68.985***	4.698**	57.991*	63.254**	69.271*
	(1.329)	(-0.851)	(1.645)	(1.849)	(1.535)	(0.673)	(2.129)	(1.944)	(2.598)	(1.702)	(2.128)	(1.918)
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.110	0.286	0.312	0.308	0.235	0.416	0.452	0.442	0.211	0.225	0.433	0.422
N	60	60	60	60	60	60	60	60	60	60	60	60

*Notes: This table presents the results of the OLS regressions of all hypothesis without top 5 clubs. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

Appendix J: Robustness test with alternative independent and control variables

Table 14 – All hypothesis with alternative independent and control variables for the full sample

	AltmansZ'											
	Hypothesis 1				Hypothesis 2				Hypothesis 3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Salaries $_{t-1}$	0.957	1.691**	1.593**	1.672**					0.616	0.460	1.235	1.294*
	(1.092)	(2.136)	(2.097)	(2.188)					(0.739)	(0.544)	1.617	(1.708)
FFP $_{t-1}$					-0.748***	-0.442**	-0.502**	-0.596***	-0.664***	-0.726***	-0.428**	-0.524**
					(-3.639)	(-2.198)	(-2.619)	(-2.996)	(-3.268)	(-3.453)	(-2.195)	(-2.604)
Salaries*FFP $_{t-1}$										-0.067	-0.086	-0.087
										(-0.569)	(-0.827)	(0.844)
Size2	0.084		0.752***	0.783***	0.323		0.831***	0.896***		0.314	0.824***	0.891***
	(0.333)		(3.080)	(3.178)	(1.328)		(3.433)	(3.679)		(1.259)	(3.408)	(3.672)
Leverage2		1.925***	2.523***	2.491***		1.474***	2.104***	1.984***			2.252***	2.133***
		(4.912)	(5.965)	(5.870)		(3.608)	(4.906)	(4.594)			(5.182)	(4.891)
ECParticipation				-0.254				-0.430				-0.452*
				(-0.964)				(-1.602)				(-1.695)
Constant	-3.806	-4.042***	-16.888***	-17.411***	-5.726	-2.242***	-16.147***	-17.003***	-0.994	-5.901	-17.054***	-17.984***
	(-0.945)	(-5.305)	(-4.124)	(-4.213)	(-1.475)	(-3.981)	(-3.953)	(-4.160)	(-1.534)	(-1.502)	(-4.165)	(-4.395)
Club dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.119	0.293	0.350	0.350	0.215	0.295	0.366	0.376	0.205	0.203	0.374	0.386
N	110	110	110	110	110	110	110	110	110	110	110	110

*Notes: This table presents the results of the OLS regressions of all hypothesis with alternative variables. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*

Appendix K: Robustness test with alternative recoded dependent variables

Table 15 – All hypothesis with dummy variable measurement of AltmansZ'' for the full sample

	AltmansZ''											
	Hypothesis 1				Hypothesis 2				Hypothesis 3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Salaries&Transferfees t-1	0.357*	0.464**	0.436**	0.448**					0.122	0.110	0.209	0.209
	(1.730)	(2.330)	(2.244)	(2.303)					(0.573)	(0.521)	(1.035)	(1.019)
FFP t-1					-0.300***	-0.288***	-0.280***	-0.283***	-0.294***	-0.287***	-0.252***	-0.252***
					(-4.001)	(-3.927)	(-3.920)	(-3.785)	(-3.565)	(-3.560)	(-3.284)	(-3.060)
Salaries&Transferfees*FFP t-1										0.007	0.004	0.004
										(0.169)	(0.107)	(0.104)
Size1	-0.502***		-0.442**	-0.559***	-0.481***		-0.435**	-0.416**		-0.478***	-0.427**	-0.426**
	(-2.666)		(-2.494)	(-2.670)	(-2.716)		(-2.580)	(-2.033)		(-2.672)	(-2.518)	(-2.047)
Leverage1		1.006***	0.951***	0.979***		0.864***	0.816***	0.811***			0.851***	0.850***
		(3.969)	(3.835)	(3.929)		(3.576)	(3.461)	(3.393)			(3.554)	(3.485)
ECParticipation				0.132				-0.020				-0.001
				(1.050)				(-0.164)				(-0.005)
Constant	9.019***	0.053	7.675**	9.606***	9.103***	1.056***	8.215***	7.908**	1.105***	8.931***	7.739**	7.729**
	(2.776)	(0.278)	(2.507)	(2.691)	(3.120)	(8.022)	(2.958)	(2.352)	(5.664)	(2.896)	(2.641)	(2.197)
Club	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.267	0.323	0.358	0.358	0.351	0.383)	0.417	0.411	0.304	0.339	0.412	0.405
N	110	110	110	110	110	110	110	110	110	110	110	110

*Notes: This table presents the results of the OLS regressions of all hypothesis with alternative recoded dependent variables. Unstandardized coefficients are reported. The figures in parentheses represent the t-statistics. * Indicates significance is at the 10% level, ** Indicates significance at the 5% level, *** Indicates significance at the 1% level.*