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Keywords

Football, Capital Gains, Player Transfers, Event Study Analysis, Value Relevance

Introduction

While European football clubs' financial numbers indicate that most of them are performing poorly, suffering high losses (Franck and Lang, 2013) and operating with high levels of debt (Franck, 2014) with a significant risk of insolvency (Szymanski and Weimar, 2019), recent research has highlighted the increasing relevance of football companies' financial performance. Financial goals influence many of football club's processes and operations, and there has therefore been a significant development of alternative business models in the professional football industry (Buck and Ifland, 2022). In particular, there seems to be a notable distinction between a business model focused on the logic of maximizing entertainment revenues through sports results and one which is based on generating profit through the development of football players and the sale of their registration rights (Regoliosi, 2016). The two models correspond to alternative aims, which subsequently shape the activity of different groups of clubs: either to win or to maximize profit. Clubs adopting the "players development" model tend to select young talents who may become top footballers, incurring low costs for acquiring their registration rights and paying their wages. They then focus on developing their talent and finally sell their registration rights without using their skills in search of higher sports results. Ultimately, the objective of the transaction is the achievement of a profit or – to use the accounting terminology – a capital gain. Capital gains is a well-known concept in Accounting studies (Smith, 1939); in the sports industry, the expression is used to refer to the positive difference between

the transfer value of the registration rights and the book value recorded in the accounts. The book value is null in the case of athletes trained within the club; it is equal to the purchase cost of the rights - net of any amortization and depreciation - in the case of players recruited as part of previous transfer operations. Because of its immediate intelligibility, referring to players' transfer or disposal, the term profit is more commonly used in the professional literature, as in the case of the reports produced by accountancy firms KPMG (2021) and Deloitte (2022), even if PWC-FIGC (2022) uses "capital gain". But even if capital gains are a relevant financial objective for the Clubs pursuing the strategy of developing new talents and deriving a profit from them, Clubs focused on sports results can achieve capital gains too, when transferring the registration rights of their players. This is especially true for top players, because of the excess of demand for superstars, as stated by Andreff (2018), while there is an oversupply for less talented players. Therefore, capital gains – or profits from players' trading – are positive components of income of growing importance in the club's economy. On average, professional clubs' primary revenue sources are the sale of broadcasting rights, sponsorship, commercial activities and ticket sales. This situation is depicted by the report prepared by Deloitte (2020), referring to the sporting year 2018/19, unaffected by the pandemic and the restrictions on public access to sporting events. However, the role of capital gains in the profit formula of European football companies appears particularly significant. The Italian Football Federation's report drawn up in cooperation with PWC (FIGC-PWC, 2020), shows that in 2014-2017 capital gains from players trading in Italian professional football (Serie A, B and C) rose from 15% to 22% of total revenue sources, with the subsequent stabilization at about 20% during the year 2018/2019, with a similar trend in its top league, Serie A.

Although the talent development business model points to the generation of significant capital gains as a positive component of income, the overall size of these profits is not always stable. For example, in the year 21/22 the English Football League clubs (second professional league) saw an overall increase in capital gains of 296 million pounds; however, the effect was largely driven by the high

transfer prices of a few players with no or low carrying value (Deloitte, 2023). Conversely, a marked stability characterizes the role of capital gains in Italian football, both with reference to Serie A and considering all three professional leagues (Serie A, B, C). In fact, the ratio between capital gains and total revenue fluctuates around one fifth throughout the period from 2016 to 2021, with the exception of the anomalous year 2020/21 because of the Covid-19 pandemic (FIGC-PWC, 2022). However, the relative predictability of capital gains on future profits of sports clubs should be underlined. Dimitroupolos and Koronios (2018) observe that accruals are less persistent than cash flows, due to the presence of discretionary components. In particular, the recognition of the capital gain from the difference between the transaction price and the book value involves the recognition of high accrual accounting values which are not always received, due to other arrangements, with potential estimation errors.

Since a relevant number of professional football clubs operate as listed companies on the stock market, it could be interesting to understand whether the achievement of capital gains in the context of player transfer operations positively affects the clubs' stock values. This relationship is not to be taken for granted: it's possible that investors could have a negative perception of the financial consequences of the sale of a player, since it could lead to an impoverishment of the technical level of the club's roster, which is a relevant driver for other sources of revenue. , It's possible, too, that investors could positively assess this operation, since the cash flows deriving from the sale of a player can be used to purchase the rights to the services of new talents, leading to an improved financial situation while maintaining the club's sporting competitiveness. Furthermore, it is important to understand if there are any specific personal characteristics of the athletes who are sold that influence the relationship between capital gains and the stock value. As the ability to generate capital gains can amplify the process of creating shareholder value, addressing this issue is also important from the point of view of the listed football clubs' managers. In fact, an analysis of the relationship between capital gains and stock performance can provide the management of the professional club with

valuable elements to set up the player transfer campaign, given the objective of increasing stock values.

This study therefore aims to fill a gap in the literature, which does not give relevance to the effects of capital gains resulting from players trading on stock value. The aims of this article are twofold. On one hand, we investigate the value creation process of players' transfers in order to understand whether the capital gains are only positive income components, or whether they represent substantial increases in value for football clubs [RQ1]. This issue takes on particular relevance in light of UEFA's concerns about the so-called "mirror" capital gains reported to put clubs' accounts in order. These gains occur (without or with limited financial movements) when two clubs exchange players with "inflated" valuations to put fake higher asset values (on their balance sheets) and the related positive non-existing income components (on their income statements). On the other hand, we aim to identify potential drivers for more valuable capital gains [RQ2]. Financial data show that they are an essential income component for European football clubs, so it is reasonable to think these operations are recurrent, and corporate executives continually search for more valuable transfers considering investors' rational and emotional attitudes.

To answer these two research questions, we have considered the capital gains from player transfers of all the Italian- and Portuguese-listed football companies between 2012 and 2020. Only the data relating to these two professional leagues are used: no other European leagues are considered, since the Italian Serie A and the Portuguese Primeira Liga are the only two leagues for which the net book value of each player sold is indicated in the annual reports of the listed clubs. We have used an econometric technique (Event Study Analysis) to calculate the expected and abnormal returns of the football companies' stocks for adequate event windows close to the players' transfer dates.

Literature review

This paper deals with the effects of capital gains, obtained by football clubs in transfer player transactions, on their market value. To the authors' best knowledge, this topic has not been previously researched. Finance literature has mainly analyzed the effect of sports results on clubs' stock returns, through event study methodology, as in the case of Duque and Ferreira (2005), Berument et al. (2006), Saraç and Zeren (2013). One of the conclusions Aglietta et al. (2008) reached is that stock value is closely linked to sports results throughout the season. Benkraiem et al. (2009) identified the significant effect exerted by sports results, particularly in the case of defeats and draws, which cause a major fall in market prices; the effect is more robust in the case of defeats at home matches; their observation is explained based on the allegiance bias. These findings are similar to the results presented by Bernile and Lyandres (2011), who examined European football clubs' market values, and by Brown and Hartzell (2001), who considered a single franchise in the American NBA, noticing differences when comparing regular season and playoffs defeats. Finally, Galloppo and Boido (2020), examining a database of nearly 12,000 matches, observed a clear relationship between the outcome of football events and stock returns: wins lead to positive stock returns and defeats to a negative average, while the markets usually consider draws as a defeat. The relationship is more intense when the results of European competition matches are considered.

Relatively closer to the topic of this paper are the contributions which study the relationship between players' transfer activities and stock value. Allouche and Soulez (2005) studied the effect of different kinds of variables on the stock values of football clubs, observing that the British stock market positively evaluates the sale of footballers with an average abnormal return both the day of the sale and for the three days preceding it. The authors comment that this is probably due to the specific weight of non-supporter investors who appreciate the reduction of the club's labor cost. Conversely, the purchase of football players is negatively linked to stock returns. We consider their interpretation to be reasonable since although it is widely known that investors who are emotionally bonded to the issuer – as in the case of football fans – show unusual investor behavior (Weimar and Fox, 2021), it

should not be taken for granted that their relative average presence is prevalent in the shareholding structure for each football club. Different results are proposed by Gimet and Montachaud (2016) and their econometric model, which analyzes the influence of several internal and external variables on stock returns and stock volatility: even if they do not consider the effect of single capital gains on stock returns, they show that purchases (amount paid by clubs), sales (amount received by clubs), and transfers (net differences between the amount received and paid), do not influence either stock returns or volatility; at the same time, they show that clubs' profits positively influence stock returns. From our perspective, it is important to emphasize that, since clubs' profits depend largely on capital gains recognized in football clubs' income statements, it can be argued that stock returns are expected to be influenced by transfer operations which lead to the achievement of capital gains. Other issues related to the determinants of football clubs' stock value have been considered by researchers, i.e. the impact of information leakage on stock prices observed by Fűrész and Gábor R. (2020), who also noticed that in the majority of cases, there is a reaction in the stock market to the announcement of player transfers.

Despite the lack of literature about the effect on stock values produced by capital gains generated with player transfers, the issue is closely connected to many topics extensively studied by sports management and sport economics scholars. We will consider the following topics:

1. The role of capital gains in football clubs' business models;
2. The book value of football players. Risks of manipulation and managerial errors;
3. The financial fair play system and the increased role of capital gains in the financial performance of football clubs.

1. The role of capital gains in football clubs' business models

There is not one singular business model in the European football industry. For example, the Italian business model is different from the English and German ones. This can be observed considering the ownership of stadiums: in Italy, stadiums are mainly owned by municipalities which use them as

multi-sport centers, while stadiums in the UK and Germany are directly owned by clubs in the Bundesliga and the Premier League (Nicolliello and Zampatti, 2016). One can also distinguish business models by looking at the role of transfer market operations. Regoliosi (2016) shows that the two main business models - one which focuses on maximizing entertainment revenues through sports results versus one focused on profit maximization through the development of footballers and their registration rights' sale - may coexist to a certain extent, even if clubs usually prefer to implement a single model.

The player development model is particularly relevant in the context of Italian football: Nicolliello and Zampatti (2016) confirm that some clubs adopt a business model which focuses on training young players. The case of Parma FC (Italian Serie A), for example, shows that capital gains arising from trading young players' rights play a significant role in facing club costs: it had a 111% impact on turnover during the 2011-2013 period. More generally, Italian Serie A clubs' financial sustainability is strongly dependent on player trading activities, as income from player trading is positively linked to Serie A clubs' profitability (Neri & Al., 2021). Regoliosi's (2018) observations demonstrate that the buy-and-sell activity of players is the primary determinant of positive financial performances for Italian football teams. However, the role of the sale of players is not a feature specific to Italian clubs. Feuillet et al. (2020) assert that player transactions are fundamental in the football economics of French professional leagues. Many clubs participating in Ligue 1 and Ligue 2 adopt a business model based on the trading of young players.

The chances of raising capital gains could also potentially be linked to acquiring talented players at a low cost. Gerrard (2005) developed a Resource Utilization Model in which professional sport clubs optimize the stock of athletic resources; one of his most important results is that team athletic resources endowments are lower for listed teams (*ceteris paribus*); as athletic resources are measured by wage costs, this is reasonable because listed clubs have a higher capability in acquiring playing talent at lower costs. Achieving capital gains is also possible for clubs not only through a clever player

development strategy, but also because the book value of footballers is usually undervalued or even non-existent. The players' registration (or exploitation) rights are partially recognized by accounting standards (Lozano and Carrasco Gallego, 2011). In the case of players whose rights have been acquired, the causes are their recognition at the historical cost and the amortization process. In the case of young players trained within the club, the book value is simply not available. This is because UEFA regulations do not allow for the capitalization of costs incurred to prepare young players (Dello Strologo and Celenza, 2019). A partly different situation may be generated by the adoption of IFRS in the case of listed clubs because of the need for impairment tests. The increase in capital gains is also possibly driven by the rise of player market values by about 100% from the 2005/2006 to 2014/2015 season identified by Birkhauser et al. (2017).

Differences in clubs' strategies may depend on the inclusion in different strategic groups, according to segmentation based on economic criteria like income and payroll. Clubs belonging to the group with the lowest income may try to reduce their financial risk through cooperation agreements based on loaning young players who need to gain experience from a club of the top group, in order to recruit footballers without increasing fee transfers (Feuillet and Al, 2020). On the contrary, Premier League clubs are usually net spenders, as the transfer fees received are lower than the expenses for signing new footballers. Through an empirical model, Quansah et al. (2021) concluded that for every incremental British Pound of income there is an increase of 44 pence used for net transfer costs. The conclusion is in line with Hoey et al. (2021), who considered the role of transfer fees in redistributing revenues from large-market to medium- and small-market clubs: large-market clubs incur noticeable transfer losses without losing their financial advantage, while small-market clubs seldom get significant revenues from the transfer market. The primary beneficiaries are medium-market clubs. The Authors show that revenue inequality is not substantially affected by the transfer operations. Depken II and Globan (2021) collected and analyzed a sample of over five thousand player transfers – over a period of 14 years – and concluded that English clubs pay higher transfer fee premiums in

comparison with clubs in other major European leagues; moreover, they identified the signing of TV rights contracts as the trend's causal factor. Finally, capital gains are implicitly considered by research focused on analyzing the contribution of club managers to the performance of football teams, in particular in the case of Buzzacchi et al. (2021), who include the increase in players' market value among the variables explaining the role played by managers (indeed, the rise in market value sustains the financial viability of the clubs through the capital gains emerging from player transfer operations).

The relevance of the players selling activity, however, may not only vary on the business model adopted by football clubs, but also on the specific situation the club is experiencing at one given moment. Carlsson-Walle et al. (2016) examined the co-existence of different logics – sports and financial – in a Swedish football organization through 23 interviews. Their findings included the increased role of the pressure to sell players at a time of financial distress, when economic objectives may supersede sporting objectives. This can lead to the inclusion of young players in the starting formation to give them exposure: even if that means not playing with the best team possible, exposure can increase trade opportunities. Even if the paper does not analyze the specific role of capital gains in financial management, we consider it reasonable to state that an attempt to sell young players' registration rights aims to achieve capital gains, together with cash inflows. These observations are consistent with Regoliosi's statement (2016) that alternative business models may be adopted during different phases of a club's life. In any case, since the players' development logic aims to maximizing the financial results of the clubs, it is important to mention Di Simone and Zanardi's (2021) findings, which highlight the positive relationship between financial results and sports performance. What counts most for our research is that when the detection of this relationship is possible, it is positively linked to the profit maximization model (instead of the utility-maximization strategy).

It could be argued that specific national factors may influence the implementation of the player development model. Bullough and Coleman (2019) identify a gap in the number of players produced on average by teams in different European countries, with a relevant influence of national regulations.

In particular, the possibility of setting up a second or even a third team has an impact. However, since the publication of the paper, other European football federations have allowed the activation of second teams, reasonably closing the gap between countries in terms of the number of players produced.

As an alternative to the model of development of local talents, in countries where academies are not sufficiently developed, the phenomenon of migrant footballers becomes more important. In Greece, Dimitropoulos et Al. (2018) observe that migrant athletes are characterized by higher market valuations and that the annual positive changes in their market values are relatively higher than for native athletes. Therefore, we assume that this phenomenon could lead to the achievement of capital gains when transferring the registration rights of migrant players to other teams.

2. The book value of football players. Risks of manipulation and managerial errors

The effect on clubs' stock values of capital gains arising from market transfers is a topic that is also connected to research on the book value of players' rights and their possible managerial use. The capital gain is a profit earned on the sale of a footballer's rights when his market value is higher than his book value (despite its increase during the holding period).

Looking at the financial statement recognition of the player's economic rights, besides the general rule of recognition at historical cost, different models are possible depending on the company's listing on the stock exchange (Neri et al. 2021). In the case of the Italian Serie A, the three professional football clubs which are listed companies must adopt IFRS and take the fixed-asset impairment tests, while other teams cannot apply it so that the book value of registration rights is anchored to the historical cost minus accumulated depreciation. Risaliti and Verona (2013) studied the influences produced by market practices and irregular accounting policies on the financial crises of Italian football from 1996 to 2009. Top Italian clubs followed window-dressing policies to hide significant operating losses, mainly through the overvaluation of players exchanged between clubs; this market practice aimed at achieving capital gains on the sale of footballers. The mechanism adopted by clubs to avoid losses in the income statement – and the need for recapitalization – also led to unfavorable

consequences, however, as the high book values of the player received in exchange involved a rapid increase of amortization costs, pushing the system close to bankruptcy. Empirical research conducted by Neri et al. (2021) concluded that Italian Serie A football clubs might have increasingly adopted earnings manipulation practices as a result of the trading of players' economic rights, especially since the introduction of FFP regulations. Indeed, income generated by the sale of fixed assets contains a discretionary component since the club can freely have some degree of discretion, such as the timing of the trading: this decision may consider the differences between book and market value. Finally, the magnitude of the transfer fees paid by a team does not cause a sunk cost fallacy, according to Hackinger (2019), who examined the relation between fees initially paid and the utilization of players by coaches.

3. The financial fair play system and the increased role of capital gains in the financial performance of football clubs

The UEFA Financial Fair Play (FFP) is also partly connected to our research topic. From the early 1990s, the tendency to raise player transfer fees and footballers' wages risked impairing the viability of professional football clubs in Europe. The worsening of the situation led to a global loss of €1.7 bn by top European clubs in 2011 (Franck, 2014), and in 2010 pushed UEFA to approve a set of regulations known as Financial Fair Play (FFP). FFP is primarily aimed at ensuring the financial sustainability of football clubs through rational management and the reduction of pressure on wages and transfer fees. The relationships between UEFA and professional football clubs, which from an economic standpoint can be regarded from a principal-agent perspective (Schubert, 2014), led UEFA to ask clubs to achieve a proper balance between specific incomes and expenditures. Since this paper focuses on the impact of transfer gains on stock prices, a relevant contribution is given by Peeters & Szymanski (2014), who observed that FFP is an important factor that pushes smaller clubs to put increasingly performing players on the market before the renewal of their contracts. Other lines of research on FFP concern the impact of this regulation on the competitive balance, on the profitability

of clubs and on the quality of accounting information. The impact of FFP on the competitiveness balance was both theoretically and empirically analyzed. Birkhauser et al. (2017) observed the performances of about 300 football clubs in the first and second football leagues of five different European countries (England, France, Germany, Italy, and Spain) from 2004 to 2015, concluding that FFP led to an increasing imbalance in competitiveness. Jakar and Gerretsen (2021) also concluded that the FFP seems to favor clubs with a tradition of sporting success, therefore decreasing competitiveness. On the contrary, Freestone and Manoli (2017) examined the effect that FFP had on competitive balance in the English Premier League, and did not find evidence that FFP regulations led to a decline in competitive balance in the EPL: they concluded, on the contrary, that the regulations may have had a positive effect. Similar results were found by Plumley et al. (2019), who studied the level of competitive balance in the "Big Five" European football leagues by measuring the six seasons post-implementation and the six seasons before the regulations were introduced. Franck (2018) confirms that the data attest to a growing polarization in European football, both in terms of annual revenues and sporting results. However, there is not necessarily a causal relationship between the introduction of the FFP and the increase in polarization. In fact, multiple factors, independent from the FFP, could explain the growth of economic and competitive inequalities among football clubs. Finally, Serrano and Acero (2023) analyzed the FFP impacts on competitions in 17 leagues, only identifying a minor effect in a few competitions.

According to Ahtiainen and Jarva (2020), the impact of FFP on football clubs' profitability appears to be limited, with some significant impact only in the case of the Spanish league. Recently Francois et Al. (2022) observed a positive impact of FFP regulations on clubs' profitability within the English Premier League and the French Ligue 1. Fernandez-Villarino and Dominguez-Gòmez (2022) noted a similar tendency within Spanish clubs after the introduction of the Economic Control Regulations, a model that goes even further than the FFP. Finally, Dimitroupolos and Scafarto (2021) identified the positive effects of FFP on the association between net transfer fees and sporting performance and the

association between net gains from player trading and clubs' financial performance. Mareque et Al. (2018) focus their attention on a specific cost item of the clubs, the audit fees; note their increase after the introduction of the FFP, although they assume that their rise may be compensated over time by the improved financial conditions of the clubs. Finally, Dimitroupolos et al. (2016) used a sample of 109 clubs observed over seven years to evaluate a different kind of impact of FFP, namely that of the quality of accounting of clubs' disclosure. They concluded that club managers tend to limit financial reporting transparency to meet the financial criteria issued by UEFA. Indeed, those intensively involved in aggressive Earning Management practices tend to select local auditors instead of one of the Big-4 auditing firms and are not prone to recognizing relevant losses. Taking into consideration the quoted literature, we consider this paper to be – as far as we know – a first contribution aimed at exploring the impact of capital gains obtained by sports clubs on their market value. This issue does not involve the longstanding debate on whether football clubs are more oriented towards the maximization of financial results or sports results because we study the reaction of investors to the generation of capital gains.

Data and methods

The analyses performed and described below aim to answer the two research questions introduced at the end of section 1. First, we investigated if professional football clubs' capital gains from player trading activities affect their value [RQ1]. For this purpose, we performed an event study analysis (Ball & Brown, 1968; Fama et al., 1969; MacKinlay, 1997), considering 111 capital gains due to the sales of as many football players by 6 European (Italian and Portuguese) listed companies operating in the football sector. We analyzed the major gains recognized by A.S. Roma, Juventus F.C., S.S. Lazio (Italy), and FC Porto, S.L. Benfica and Sporting CP (Portugal) between 2012 and 2020 (Table 1).

<< Table 1 >>

Table 1: Football companies analyzed (Source: Authors own creation)

With reference to the data analyzed, it has to be said that, in many European countries, annual reports show only the overall amount of capital gains achieved during the year and do not highlight the capital gains related to each transfer operation. Italian and Portuguese accounting practices require this information, which is why this study's limited geographical scope. Despite this, companies from countries with the highest number of football clubs listed on their respective national financial markets have been selected. In particular, most (6 out of 11) European listed football clubs have been analyzed for a total market capitalization of approximately \$ 1.6 B.

We used the LexisNexis database (screening approximately 10,000 global news sources every day) to exclude the capital gains that occurred on the same dates of the following confounding events for the listed companies analyzed: the publication of periodic financial reports, the occurrence of unusual transactions like a merger or acquisition, earnings announcements, the appointment of a new chief executive officer or Chairman, and the application of outstanding fines or penalties (Aureli et al., 2020). The 111 gains analyzed refer to players aged between 18 to 35 (first quartile, median and third quartile equal to 23, 25 and 27.7, respectively). The number of strikers, midfielders, and defenders is very similar (32%, 33% and 31% of the total sample), while only 5 out of 111 are goalkeepers. Concerning the geographic provenance of the players transferred, most of the gains analyzed refer to European and South American footballers (61% and 31%, respectively), while only 6% relate to African players and less than 2% to Asian ones. More profoundly, in order to avoid confounding effects, we did not consider the capital gains generated by disposals made on the same date as other sales or purchases by the selling company.

Event study analysis is a well-known statistical technique frequently used in accounting, finance, and other management research fields. Given a specific occurrence, event study analysis aims to determine if it affected the returns of particular securities in a bordered period (called *event window*).

The seminal applications of this method were elementary from a technical point of view. For instance, in what is unanimously considered to be the first event study, Dolley (1933) examined the price effects of 95 stock splits (from 1921 to 1931) and found that the prices increased in 60% of cases. Over the years, the level of refinement of event study analysis has increased noticeably, leading to better quality and a more significant number of research articles using it. Event study analysis has often been used to investigate the impact of various types of events on the market value of listed firms regarding sport management in general (Lei et al., 2010; Schredelseker & Fidahic, 2011; Ge & Humphreys, 2021) and in particular professional football clubs (Martinez & Janney, 2015; Bouchet et al., 2017).

Event study analysis requires an accurate definition of the day when the event analyzed occurred and an adequate identification of a time period (including the event day) that the researcher uses to understand if the event affected securities prices. Event windows typically include some days before the event date analyzed (information leakage period) to capture any anticipated effects due to leaks. In event study analysis, the actual returns of analyzed companies over the event windows have to be compared with those obtained using a statistical or economic model. The *Abnormal Returns (ARs)* are the differences between actual returns and estimated (normal or expected) ones. For instance, for the generic firm i , event date τ and the conditioning information X_τ :

$$AR_{i\tau} = R_{i\tau} - E(R_{i\tau}|X_\tau) \quad (1)$$

In this study, the expected returns were calculated using the market model, a simple linear regression model assuming that the return on a generic i -th security at time t (R_{it} , *dependent variable*) depends on the return on the market portfolio at the same time (R_{mt} , *independent variable*).

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (2)$$

The market model is a so-called one-factor model and differs from other multifactor models including industry indexes in addition to the market (Sharpe, 1970). Using data for R_{it} and R_{mt} , the coefficients ($\hat{\alpha}$ and $\hat{\beta}$) and, subsequently, the regression model and the normal returns can be estimated:

$$\hat{R}_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \quad (3)$$

From which:

$$AR_{it} = R_{it} - E(R_{it}|X_t) = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad (4)$$

The market model is a classic retrospective analysis performing a posteriori, using the information on events that have taken place in the past, the *estimation window*, which is a quite long time period typically preceding the *event window*. The maximum leakage period used in this study is 1 trading day and the test period used in performing market model consists of 500 trading days ending 516 trading days before the date of the analyzed event. The length of the estimation window (L_1) is very important for the effectiveness and the strength of event studies. Abnormal returns are forecast errors presenting the following distributional parameters:

$$AR_{it} \sim N \left(0, \sigma_{\varepsilon_i}^2 + \frac{1}{L_1} \left(1 + \frac{(R_{mt} - \hat{\mu}_m)^2}{\hat{\sigma}_m^2} \right) \right) \quad (5)$$

The distributional parameters of abnormal returns and market model regression errors differ the variance, which is higher in forecast errors than in regression residuals. This difference decreases progressively when the test period increases to the point of being ignored when the test period length is big enough. That is why we selected a test period of 500 trading days.

Cumulative Abnormal Returns (CARs) are obtained for each security and each event window by adding the abnormal returns through the entire period of analysis considered. Consequently, the distributional parameters of the cumulative abnormal returns (as L_1 is high enough) are the following:

$$CAR_i(\tau_1, \tau_2) \sim N(0, (\tau_2 - \tau_1 + 1)\sigma_{\varepsilon_i}^2) \quad (6)$$

Finally, for each event window, the *Average Cumulative Abnormal Return* (\overline{CAR}) is the average of the *CARs* for all the securities analyzed.

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^N CAR_i(\tau_1, \tau_2) \quad (7)$$

Its distributional parameters, asymptotic for L_1 and N (the number of events analyzed), are the following:

$$\overline{CAR}(\tau_1, \tau_2) \sim N\left(0, \frac{1}{N^2} \sum_{i=1}^N \sigma_i^2(\tau_1, \tau_2)\right) \quad (8)$$

The distributional parameters for *Ars*, *CARs* and \overline{CARs} allow testing the evidence against the null hypothesis that the given event has no impact on the behavior of the security returns.

The data used to perform the event study analysis were drawn from the REFINITIV™ Eikon Datastream financial time series database. We used the Dow Jones STOXX Football Index as the covariate for performing the market models, including 33 companies listed for trading on European stock exchanges. The calculations and the statistical analyses were performed using the software R (R Core Team, 2021; Rstudio Team, 2021; Fox and Bouchet-Valat, 2020).

In order to answer our second research question to identify (if any) the potential drivers for more valuable capital gains [RQ2], we tried to find out which factors affect investors' reactions more. We used a focus group involving practitioners operating in the football industry and colleagues interested in the field to gather opinions on what could concretely affect financial markets' answers when capital gains from player trading activities occur. More profoundly, we approached four sports directors, two legal experts, three professional chartered accountants and two auditors operating in professional football teams, and three colleagues, experts in the field of sport management. The focus group consisted of a structured interview, and each respondent was asked to list the top five factors affecting abnormal returns related to capital gains, rank them, and indicate how they affect the explained variable. As a result of this, we identified the following potential factors: the overvaluation/undervaluation of the footballer compared to the market value, the quality of the players transferred, the possibility that the selling club is in financial difficulty, the potential competitive reduction due to the strengthening of a direct competitor, and the age of the footballers sold. Subsequently, we tried to identify as many variables related to these factors. We performed a multiple linear regression model using them as explaining variables, while the dependent variable is the scaled abnormal return of the 111 observations in the most extended event windows analyzed for the selling company, $EW(0;2)$.

Empirical evidence

Intending to capture the (potential) positive impact of gains produced by the sales of the players on the security returns, we considered three event windows, including the date of the transfers, of one, two and three days, respectively (Figure 1). Although previous literature highlights information leakage in football players' trading (Fűrész & Rappai, 2020), we decided to focus on the period after the sales to capture only the reactions actually related to the events analyzed.

<<Figure 1>>

Figure 1: Analyzed event windows size (Source: Authors own creation)

The CARs were calculated for the 111 gains analyzed in all the event windows in Figure 1. Figure 2 shows, by way of example, all the CARs for the event window consisting of only the day of the gains.

<<Figure 2>>

Figure 2: CARs for the event window [0;2] (Source: Authors own creation)

Finally, \overline{CARs} were calculated for all the event windows analyzed and were tested against the null hypothesis that the gains produced by the footballers' transfers had no (or negative) impact on the behavior of the security returns (Table 2).

<<Table 2>>

Table 2: Average Cumulative Abnormal Returns for the analyzed event windows (Source: Authors own creation)

All the \overline{CARs} in the event windows analyzed are consistent and significant at a 5% level from a statistical viewpoint.

After proving that the gains from soccer players' transfers are accounting profits and significant from a financial value perspective, we aim to explain the drivers affecting the investors' reactions. Based on suggestions and insights provided by some professionals working in the football world and colleagues interested in the field, we hypothesized that abnormal returns could be affected by at least

five factors: the *convenience* of the transfer for the selling team, the *quality* of the footballer sold, the (potential) *state of need* of the selling team, the competitive reduction due to the strengthening of a direct competitor, and the bond of the fans to the players transferred. In this regard, for each transaction analyzed, we collected the following variables:

- *Over*: the ratio between the selling price and the valuation of the player sold at the time of transfer, provided by a well-known and reputable website (transfermarkt, a German-based website with footballing information, such as scores, results, statistics, transfer news and fixtures). It could be seen as a measure of the *overvaluation* of the footballer by the acquiring team. The higher this ratio, the higher the gain generated by the sale.
- *Price*: the consideration paid by the purchasing companies, which could be naturally considered the best proxy for footballers' value/sport skill.
- *SummerWindow*: a dummy variable which is 1 when the player was transferred in the break between two seasons and 0 if the sale happened during the middle of a season. In the first case, the transaction can represent an element of the broader renewal process of a football team. In the second case, the sale can be seen as a pathological conclusion of a working relationship between the player and the selling team for several reasons (technical incompatibility, discontent, dissatisfaction, failure to comply with the objectives set out, and the like).
- *SameLeague*: a dummy variable having a value of 1 when the player is transferred to a team of the same league and 0 otherwise. It has a twofold purpose. On the one hand, it allows for strengthening a direct competitor. On the other, it aims to capture the fan-investors' emotional reactions and behavioral biases. In fact, it is no secret that team supporters tend to be upset when their favorite players are sold to teams playing in the same national league.

The variable listed above could help understand the drivers of the abnormal returns forming in correspondence with a football player's transfer. For that purpose, we estimated a multiple regression

model where the explained variable is the *scaled cumulated abnormal return* registered in the most extended event windows analyzed for the selling company, $EW(0;2)$, and the covariates are the four variables listed above.

$$sCAR_i = \beta_0 + \beta_1 Over_i + \beta_2 \ln(Price_i) + \beta_3 SummerWindow_i + \beta_4 SameLeague_i + \beta_5 Age_i + \beta_6 Age_i^2 + \varepsilon_i \quad (9)$$

$$\widehat{sCAR}_i = \widehat{\beta}_0 + \widehat{\beta}_1 Over_i + \widehat{\beta}_2 \ln(Price_i) + \widehat{\beta}_3 SummerWindow_i + \widehat{\beta}_4 SameLeague_i + \widehat{\beta}_5 Age_i + \widehat{\beta}_6 Age_i^2 \quad (10)$$

We can expect that the higher the overvaluation of the transfer is for the selling team, the higher the scaled cumulated abnormal return is. Concerning the quality of the players transferred, it can be assumed that the lower their worth is, the higher the unexpected gain obtained is. Thus, we expect that the higher the value of the natural logarithm of the *Price* is, the lower the scaled cumulated abnormal return. In addition, it is justified to expect that investors prefer transfers in the break between seasons ($SummerWindow = 1$) to those during the middle of them ($SummerWindow = 0$). Finally, the variables *SameLeague*, if its value is 1, it communicates a wrong signal to the market, and we can believe that it negatively affects the scaled cumulated abnormal returns. These considerations, shared by the authors, emerged from the focus group conducted to identify the explanatory variables. The respondents' opinions, however, did not agree on the effect produced by the age of the player sold on the response variable. Taking all this into account, we expect that $\widehat{\beta}_1$ and $\widehat{\beta}_3$ are positive, $\widehat{\beta}_2$ and $\widehat{\beta}_4$ have a negative sign, while we cannot say anything about $\widehat{\beta}_5$ and $\widehat{\beta}_6$. Given the above, we performed one-sided hypothesis tests concerning the regression coefficients, except for those related to the age variable for which conflicting views had emerged from the focus group, and

a different and more conservative assessment was needed (two-sided hypothesis tests). To assess the model's quality, we performed a graphical residuals analysis to diagnose problems related to model misspecification: errors' non-normality, heteroskedasticity, and autocorrelation. The output obtained in the graphical tests, together with the significance and consistency of the coefficient estimates, support the proposed model for the purposes of our work. Table 3 shows the results.

<<Table 3>>

Table 3: Factors affecting Cumulative Abnormal Returns (Source: Authors own creation)

As is evident from Table 3, all the coefficients are consistent and statistically significant at a 5% or 10% level.

Conclusions

Research implications

Firstly, this study shows that, on average, the capital gains produced by selling the players' registration rights obtain the consensus of investors of listed professional football clubs. It means they are not mere income components but contribute to increasing the market value of sports companies. Therefore, player trading activity is to be considered an objective means of value creation for football clubs and, as such, should be safeguarded, first and foremost, in the interests of the smallest companies.

Secondly, this study highlights some elements ascribable to the footballers sold, which could be considered effective value creation drivers or, from the opposite side, limiting factors in the value creation process. More precisely, with an adequate level of trust, it can be stated that, *ceteris paribus*, the estimated value created by the capital gains is positively related to the economic convenience of the transfer and negatively related to the quality of the player sold. Moreover, based on a logical and

rational course, investors prefer sales occurring in a physiological context of team reconstruction, in the break between two seasons, to those occurring during the championship. Likewise, lower estimated financial returns are associated with transfers between teams belonging to the same national league. The interpretation of this result is twofold. On the one hand, it meets the rational need not to strengthen a direct competitor. On the other hand, it could be related to an emotional rather than rational attitude of investors and, at the same time, supporters of the football team who might have been upset about the transfer of one of their idols. Finally, the age of the transferred player appears to play an essential role in determining the size of the cumulative abnormal return related to this transaction. Financial markets seem to prefer the disposal of younger players, with an effect that decreases as age increases. This is the meaning of the combined effect of the signs of the coefficients for the variable age and its quadratic term.

Managerial Implications

To the best of our knowledge, this is the first study exploring the effects of capital gains from player trading activities on professional football clubs' stock value. The results obtained are even more relevant if one considers the importance these income components have in the profit formula of professional football clubs nowadays, also because of the negative repercussions caused by the COVID-19 pandemic, which did not spare the world of football. National governments reacted differently, with restrictive measures at different speeds, intending to limit the spread of the virus. An initial suspension of sporting events was followed by a gradual reopening of stadiums with limited capacity, hoping to return soon to normality. The events have dramatically affected clubs' income and they have not experienced all the effects yet, resulting in the decline of the companies' market value. In such a context, for most football clubs the capital gains from player trading activities have become a critical income component, very often the most important. It follows that there are many practical implications of this research. First, the consciousness of the value relevance of the capital gains from player trading activities should give further impetus to this kind of operation, creating cascade effects

on several activities that generate value for football clubs (youth sector management, player scouting, technical improvement of the players).

From a different point of view, the result obtained could be a significant problem regarding what, in section 1, was referred to as "mirror" capital gains. It is clear that, in the interests of investors and the proper functioning of the capital market, there is a strong need for a quick regulation of this case. Furthermore, it is demanded that insiders, academics and professionals clearly define precise guidelines for evaluating players' multi-year contracts as soon as possible.

Considering that capital gains from player sales are a critical income element for most football clubs, it is reasonable to think that football club managers choose the players to sell as well as possible. Based on our results concerning the value creation drivers of the capital gains from player trading activities, this choice could be taken considering both sports technical aspects and financial ones.

It is also possible to argue that Football clubs management should carefully analyze the national contexts where there could be opportunities to generate profits from players' trading, possibly the development of partnerships. In fact, Deloitte (2023) shows that in the 21/22 football year Championship League clubs saw profits from the sale of players fall from £330m to £126m. The cause can be identified in an increased tendency for Premier League clubs to recruit new players from overseas rather than from the UK's minor leagues. The financial risk associated with the reduction of capital gains from transfers to clubs in the main championship of one's own country could make it appropriate to develop relationships with clubs in other countries.

Finally, considering that higher capital gains emerge from the sale of the youngest players (often developed within the club and with null book values), our paper highlights the youth teams can exert a positive influence on the financial situation of football companies (assuming on average the capital gains produced by the transfers and the contributions to first teams remain higher than the costs generated by youth sectors). Otherwise, in the case of listed clubs, the influence would be positive on the stock's value due to the financial market's response to the capital gains identified in this paper.

Limitations

The most significant limitation of this study is that it considers only Italian and Portuguese football-listed companies, as this was the only sample for which it was possible to trace the net book value of the single footballers sold in those clubs' public financial disclosure. However, it is worth noting that there are not many other European-listed football companies (our sample covers more than 54% of the population). One can only hope that in the future all national football federations will take action to remove the factors that hinder a general and shared principle of transparency in financial reporting. A relevant example is the accounting recommendation No. 1 for football clubs issued by the Italian Football Federation (FIGC, 2009), which regulates the multi-year rights to player performances. It stipulates that the notes to the financial statements should indicate the book value, depreciation, and any capital gains and losses realized for each player on the team.

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Table 1

Team	No. of gains
A.S. Roma	17
Juventus F.C.	22
S.S. Lazio	12
FC Porto	20
S.L. Benfica	20
Sporting CP	20
Total	111

Table 2

	\overline{CARs}	p -value	
EW(0)	3.257626718	0.00056174	***
EW(0;1)	2.588189003	0.00482410	**
EW(0;2)	2.028052072	0.02127747	*

Signif. Codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1

Table 3

Coefficient	Variable	Estimate	(Std. error)	p-value	
β_0	Intercept	10.4107	4.7070	0.0292	*
β_1	Over	0.4430	0.2232	0.0249	*
β_2	ln(Price)	-0.1414	0.0884	0.0563	.
β_3	SummerWindow	0.4430	0.2232	0.0249	*
β_4	SameLeague	-0.5035	0.2352	0.0173	*
β_5	Age	-0.6342	0.3599	0.0810	.
β_6	Age ²	0.0116	0.0069	0.0964	.

Signif. Codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1
 F-statistic: 3.211 on 6 and 104 DF, p-value: 0.006218
 N=111

EW(0)	0		
EW(0;1)	0	1	
EW(0;2)	0	1	2

Figure 1

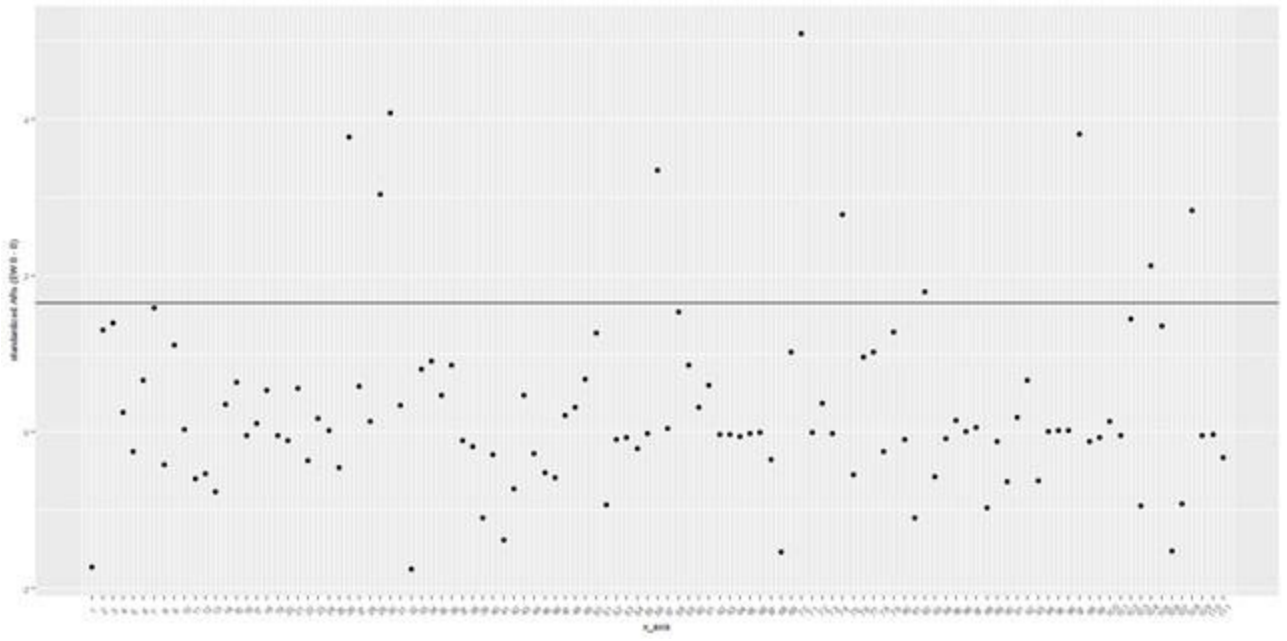


Figure 2