

The power of the crowd versus transfer fees: a critical reflection on the financial information about football players' valuation

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Gracia Rubio Martín, Francisco José González Sánchez and
Ángel Rodríguez-López

*Department of Financial Administration and Accounting,
Complutense University of Madrid, Madrid, Spain*

Daniel Santín

*Department of Applied and Public Economics and Political Economy,
Complutense University of Madrid, Madrid, Spain, and*

Miguel Cabezón-Manchado

*Department of Applied Statistics, Complutense University of Madrid,
Madrid, Spain*

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Abstract

Purpose – The purpose of this research is to investigate whether crowd valuations have become a good estimator of public information for transfer fees (TF) in line with an active and efficient market.

Design/methodology/approach – To do this, we explain market values (MVs) and TF of football players from five major leagues over 5 years (2020–2024), including personal characteristics, performance and popularity variables and bargaining power when transferring football players.

Findings – The article shows that negotiation variables significantly influence the final transfer fee during the bargaining process and are also collected by crowd valuations after the transfer. We also found that MVs at the beginning of the year, in which a football player is transferred, are a better indicator of the TF finally paid than the previous TF.

Originality/value – This study marks a pioneering effort in presenting evidence on how crowd valuations capture the bargaining process of prices, aligning with the theory of market efficiency. These findings hold significant importance for accounting regulators, the Union of European Football Associations and football club managers. They shed light on the potential and challenges associated with utilizing football player crowd valuations as a complementary source of information in regular financial reports of football clubs regarding player transfer prices.

Keywords Financial reporting, Intangible assets, Crowd valuation, Football players' registration rights

Paper type Research article

1. Introduction

Football clubs largely depend on their workforce's skills, and they are, therefore, highly interested in recording these items as assets to reflect the club's true value. Michie and Verma (1999) argue that players are football clubs' most important and expensive assets because of

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the large transfer market fees paid out to acquire players. According to [Morrow \(2013\)](#), the football industry is the only sector in which it is possible to record transfer fees (TF) for employee contracts as intangible assets.

The Union of European Football Associations (UEFA) Financial Sustainability Regulations ([UEFA, 2022](#)) aim to ensure the long-term viability of professional football by preventing clubs from spending more than they earn. Academic literature, such as the meta-analysis by [Calahorra-López and Ratkai \(2024\)](#), identifies these regulations as a major turning point in European football finance, pushing the industry towards responsible financial practices and linking financial stability to on-field success [\[1\]](#).

Under this framework, UEFA prescribes that the value of a player's registration rights must be derived from their acquisition costs. This mandates the recognition of TF as intangible assets on the balance sheet, provided the cost can be measured reliably ([International Accounting Standard \(IAS\) 38, IASB, 2004](#)). While UEFA sets these rigorous requirements for licensing, it allows clubs the leeway to apply their specific accounting policies, subject to the International Financial Reporting Standards (IFRS) or domestic standards, such as the Spanish *Plan General de Contabilidad* (PGC) adapted for Sports Corporations ([Orden EHA/77/2010, 2010](#)).

On one hand, there is great controversy in the academic literature about whether the price paid for the transfer rights is the best methodology for capturing the value of football players ([Oprean and Oprisor, 2014](#); [Putra and Wasistha, 2018](#)). This methodology actually tends to overvalue players ([Risaliti and Verona, 2012](#)), as it is based on negotiations where the big clubs, which raise huge amounts of money from advertising, can afford to pay stratospheric figures.

On the other hand, authors like [Kulikova and Goshunova \(2014\)](#) and [Putra and Wasistha \(2018\)](#) argue that other factors that might be considered human capital, such as training costs, team building and the measurement of internal football player values or free agents, cannot be capitalized in accordance with current accounting practices, and internally generated players' registration rights are not reflected on the balance sheet.

In this regard, the research question addressed in this paper discusses whether the amounts paid for transfer rights [\[2\]](#) are the best information about the fair players' value or other valuation techniques, such as the so-called crowd valuation methodology, could update and complement these values. Our objective is not to propose a formal change to financial reporting standards. This study explores Transfermarkt.de as a pseudo-active market for internal decision-making and external transparency, ultimately proposing its integration into intellectual capital reporting as detailed in our conclusions.

Unlike previous authors, we analyze the dynamic nature of Transfermarkt's evaluations, which can occur at various stages before and after a footballer is transferred, covering the periods from 2020 to 2024. Results show that after a player is sold, crowd valuations also incorporate all public information, including bargaining components derived from price negotiations between clubs, in line with the efficient market theory. In this form, the study makes a unique contribution to existing literature. Finally, we conduct a critical analysis of intangible asset accounting standards and explore the possibilities related to this topic.

This paper is organized as follows. [Section 2](#) discusses the previous literature on football player values and the limitations of TF and accounting standards, stating the hypothesis that we aim to test. [Section 3](#) discusses a model based on different football player characteristics and circumstances used to fit market value (MV) sourced from transfermarkt.de. [Section 4](#) describes the data and variables used together with the results from the estimation of the proposed model. This research ends with the discussion of findings and final conclusions in [Section 5](#) and with the limitations and future lines of research in [Section 6](#).

2. Theoretical framework and hypothesis development

2.1 Accounting framework and UEFA financial sustainability regulations (FSR)

Under the UEFA Regulations (UEFA, 2022), the value of a player's registration rights is derived directly from their acquisition costs. While UEFA sets these rigorous financial requirements for licensing, it allows clubs the flexibility to apply their specific accounting policies, provided they comply with the relevant International Financial Reporting Standards (IFRS) or domestic frameworks (such as the Spanish PGC) applicable in each jurisdiction.

The accounting regulatory framework in the sports industry depends on the club's legal structure and its listing status: the local standard or the International Financial Reporting Standards (IFRS). The latter is mandatory for clubs listed on a stock exchange or those that are part of a multinational group presenting consolidated financial statements. In this context, most Spanish clubs follow the PGC adapted for sports corporations (Orden EHA/77/2010, 2010). Both standards require the transfer fee of a player to be recognized as an intangible asset, which is then amortized over the duration of the contract. Accounting standards also mandate an impairment test should the player's value decline.

These frameworks share significant limitations in reflecting intangible assets: they do not allow for the revaluation of these assets at fair value (IAS 38, IASB, 2004) or the recognition of internal professional players developed within the club's youth ranks. This is because they do not have a "purchase price" or identifiable development costs. Consequently, home-grown players are only valued on the balance sheet when they are transferred or when the club is acquired by another entity (IFRS 3, IASB, 2004), where the acquirer must value all identifiable assets at their fair value on the acquisition date. Thus, a significant accounting paradox emerges: professional players from the youth academy, despite having high MVs and retention clauses, are not reflected in the balance sheet, unlike acquired players (Lozano and Gallego, 2011).

According to Gazzola and Amelio (2016), transfer value is a suitable method for player valuation since the fees meet the criteria for capitalization as intangibles because they are directly attributable to the costs of a player's contract. However, its main limitation is that the accounting standard does not recognize TF as an active market, thus prohibiting the updating of the value of players over their entire life cycle, a fundamental issue in their financial evolution (Majewski, 2016; Rubio-Martín et al., 2022). Finally, Maglio and Rey (2017), Oprean and Oprisor (2014) and Simmons (1997) show the problems from the application of the Bosman ruling for football transfer markets. This ruling gives players the right, as of six months before the end of their current contract, to be declared a free agent and negotiate a new contract with another club in their own right, in which case no transfer fee is applicable. Free agent contracts are not recorded as intangible assets since there is no credible ground for valuation (Maglio and Rey, 2017).

To prevent accounting malpractice, such as "inflated" swap deals, Article 77 of the UEFA (2022) empowers them to adjust transactions to their fair value, questioning prices that do not align with market reality. International Valuation Standards (IVS, 2022) propose three models for determining assets' fair value: cost, market and income approaches, prioritizing the inclusion of market expectation variables. Additionally, IFRS 13, IASB (2004) (§ 73, 74 and 75) states that the applied assets' valuation technique(s) should maximize the use of relevant observable inputs and minimize unobservable inputs for fair value measurement. Besides, IFRS 13, IASB (2004) establishes a three-level fair value hierarchy by inputs: Level 1 inputs are quoted prices in active markets for identical assets; Level 2 are other inputs than quoted prices included within Level 1 that are either directly or indirectly observable for the asset and Level 3 are unobservable inputs for the asset. These shall only be used to measure fair value insofar as relevant observable inputs are not available. Additionally, an active market is defined in Appendix A of IFRS 13, IASB (2004) as: "a market in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis".

2.2 Hypothesis proposal

Given the great controversy exposed, different sources try to update the MV of football players based on expert and fan evaluations, valuing players at any point of their life cycle independently of the transfer (Spanish journal Marca, Kicker.de, footballbenchmark.com or Transfermarkt.de). Nowadays, Transfermarkt.de is the most popular online platform that provides information on football players' performance and valuations.

[Simmons et al. \(2010\)](#), p. 2) propose four conditions for crowd wisdom: crowd members should be (1) knowledgeable, (2) motivated to be accurate, (3) independent and (4) diverse. On the one hand, independence and diversity are easily defended in this setting because the platform creates the MV by aggregating the individual estimations of millions of registered users of different conditions and geographical areas, ensuring independence and diversity in the process. Furthermore, there are a wide range of forums where users can talk about football and their opinions are moderated by other knowledgeable participants. On the other hand, expertise and motivation can also hold in this setting, because, firstly, the strong passions of participants engaged in football are potentially an important source of motivation and, secondly, there are other platform activities, based on competitions among members, known as "the managers' game", where managers negotiate purchases and sales to build the best team. These conditions and motivations suffice to ensure that valuations and decisions should be accurate.

Critics, and accounting standard, might argue that these users lack a literal "willingness to pay" with financial capital. Nevertheless, the platform's competitive structure imposes a reputational cost of opportunity. Within this ecosystem, managers must allocate finite virtual resources to acquire players, a process that may mimic the scarcity and trade-offs of a real-world market. Consequently, Transfermarkt could be categorized as a prediction market, where the incentive to be accurate (to win the competition and gain status) substitutes for direct financial exchange.

Furthermore, while a player is transferred once, twice or three times during its life cycle, Transfermarkt is continuously updating these values at least twice a year during the players' life cycle (12–14 years), reducing the volatility and increasing the explained capacity of these values over TF ([Müller et al., 2017](#); [Rubio-Martín et al., 2022](#)). In this way, the crowd performs a hedonic valuation, disaggregating a player's unique traits into comparable benchmarks (e.g. age and performance metrics). This collective process may transform heterogeneous assets into a standardized market consensus. In fact, different authors have efficiently explained the factors determining these market valuations using statistical and econometric models based on sports performance, personal and contract conditions ([Majewski, 2016](#); [Herberger and Wedlich, 2017](#); [Müller et al., 2017](#); [Peeters, 2018](#); [Rubio-Martín et al., 2022](#)). Therefore, building upon these previous works, our first hypothesis is:

- H1.* The wisdom of the crowd or the valuation of collective judgments collected from Transfermarkt, MV, includes personal, popularity and performance factors that help to create statistical market models capable of efficiently following up football players' life cycles.

However, recently, there is a great controversy regarding the efficiency of Transfermarkt values compared to paid prices ([Campa, 2022](#)). [Müller et al. \(2017\)](#) and [Coates and Parshakov \(2022\)](#) found crowd-sourced values to be underestimated when compared with transfers. Obviously, prices are the result of a complex bargaining process ([Carmichael and Thomas, 1993](#); [Gerrard and Dobson, 2000](#); [Garcia-del-Barrio and Pujol, 2007](#); [Gumb and Desmoulin-Lebeault, 2010](#); [Rubio Martín et al., 2023](#)), in which synergies, information asymmetries, negotiating power and marketing conditions and agent fees play a special role ([Oprean and Oprisor, 2014](#); [Putra and Wasistha, 2018](#)). In this sense, [Bell et al. \(2024\)](#) explain the overvaluation of English football players based on their position on the pitch, performance, market supply and demand dynamics but also as a consequence of market inefficiencies, as well as the role of speculation in players' valuation.

In this line, authors also developed income valuation models based on real options theory or using Monte Carlo simulation methods to capture the asymmetries of buyers and sellers clubs (Coluccia *et al.*, 2018; Tunaru *et al.*, 2005) or real option with game theory to introduce the bargaining process between clubs (Rubio Martín *et al.*, 2023) to explain TF. Therefore, we test the following hypothesis:

- H2. Prices in the players' transfers include components of the negotiation led by a football player's agent at the time of the transfer.

Nevertheless, the controversy does not stop here because other authors such as Herberger and Wedlich (2017) highlighted that players' MVs also reflect the expectations of football industry stakeholders involved in transfers and have implications for future transfer prices. Peeters (2018, p. 18) highlights that "several club officials have revealed privately that player agents tend to refer to [transfermarkt.com](https://www.transfermarkt.com) valuations during player contract negotiations," indicating their increasing importance for the football player transfer market.

Filling a gap in existing research, this logic can be based on the semi-strong hypothesis of efficient markets, in which all public information is reflected in prices, according to the famous work of Fama (1976) about market efficiency. Unlike stock markets with continuous trading, the football market is characterized by discrete transactions and high information asymmetry (Rubio-Martín *et al.*, 2022). However, Transfermarkt acts as a centralized information hub where the "crowd" performs the role of financial analysts.

According to Fama's (1976) framework, in a semi-strong efficient market, prices adjust immediately to all publicly available information. In our context, a transfer fee, including its negotiation components, serves as a definitive market signal. Therefore, diverging from previous authors such as Coates and Parshakov (2022) or Campa (2022), when the crowd observes a transaction, it updates its internal models of the player's "fair value" by incorporating this new benchmark. Thus, efficiency is evaluated here by the speed and accuracy with which Transfermarkt values converge toward the actual TF, reflecting the new reality of the market negotiation. Hence:

- H3. The crowd valuation is updated after a player's transfer taking into account transfer information, including negotiation components as well.

3. Material and methods

Our data are collected from [transfermarkt.de](https://www.transfermarkt.de). This website provides a database about different football player characteristics: the player's current and previous clubs, position on the field and personal characteristics, such as nationality, age, height and weight, as well as performance in terms of a wide range of sporting variables, like appearances, goals, assists, passes, fouls, cards, substitutions and, finally, championship titles and cups.

Likewise, the website also updates each player's MV over different football seasons based on both the user valuation from posts since the last update and the TF when a football player is sold. MVs and transfer values and/or fees do not match: they do not measure the same thing at the same time. Our analysis is based on 4,264 MV observations, whereas there were only 1,440 club TFs paid for the same players over the same 5-year period: 2020–2024. In both cases, the observations correspond to the five major European leagues: the Spanish *La Liga*, the English *Premier League*, the German *Bundesliga*, the French *Ligue 1* and the Italian *Serie A*.

There are 38 professional football leagues, including more than 1,000 clubs in 31 countries across Europe (European Leagues, 2021). Our study focuses on analyzing the five major football leagues in Europe, commonly known as the "Big Five". According to Deloitte (2024), these leagues generated an aggregate revenue of €19.6bn in the 2022–2023 season, accounting for approximately 56% of the total European football market, which reached a record €35.3bn.

3.1 Data and variables

The data collection for the 2020–2024 period involved a comprehensive and labor-intensive integration of multiple platforms to capture the multifaceted nature of a player’s value. Data were harmonized from Transfermarkt, UEFA official reports and Instagram metrics. This process allowed for a more representative sample, including both elite and non-elite players. From Transfermarkt, football players were randomly selected from the most important leagues. Accordingly, we extracted the dependent variables, TF and MV in different moments in time, along with the independent variables listed below.

Table 1 describes the dependent and independent variables. We have classified the regressors into four groups: (1) In line with other researchers such as Wicker *et al.* (2013) and Majewski (2016), we consider *personal characteristics* of the players. (2) *Sporting performance* of the players, in line with authors such as Franck and Nüesch (2012), He *et al.* (2015), Majewski (2016) or Müller *et al.* (2017). We also included leagues because they have their own identity, influenced by the culture of the country, the style of play and historical rivalries between teams. However, the league could also capture bargaining variables; for example, in Spain, there is the release clause, which does not exist in the rest of the countries in the sample [3]. (3) *Popularity variables*, in line with Garcia-del-Barrio and Pujol (2007) or Müller *et al.* (2017), to capture the merchandising capacity of players and their ability to attract fans. Finally, we introduce *negotiation variables*, in line with

Table 1. Variable definitions for football players

Variable	Description
<i>Dependent variables</i>	
MV	Transfermarkt.de crowd valuation of market value in millions of euros
TF	Transfer values/fees in millions of euros paid by a club for the football player
<i>Personal characteristics</i>	
AGE	Age in years
FOOT	1. Left-footedness, 2. Right-footedness, 3. Two-footedness
HEIGHT	Player height in cm
PPI	Position on the playing field: 1. Midfielder, 2. Forward, 3. Defender
CLUBSCORE	UEFA championship points for player’s club (in thousands)
<i>Performance Variables</i>	
LEAGUE	1. German Bundesliga, 2. Spanish La Liga, 3. French Ligue 1, 4. English Premier League, 5. Italian Serie A
APPEAR	Number of appearances of each football player in a year
GOALS	Number of goals scored in a season
GOAIN	Number of own goals scored in a season
ASSIST	Number of first-level assists during the season
CARDS	Number of yellow and red cards during the season
SUBST	Number of times the player is taken off during a match during a season
CHANGE	Number of matches the player comes on as a substitute during a season
<i>Popularity variable</i>	
INSTAGR	Number of player’s Instagram followers (in millions)
<i>Negotiation variables</i>	
NEGO	Ratio between UEFA championship points of buyer club and seller club
AGENT	(1) Football player does not have an agent (2) Football player has a professional agent (3) Football is represented by a relative
<i>Time</i>	
YEAR	Level variable for years between 2020 and 2024

Carmichael and Thomas (1993), Carmichael *et al.* (1999), Oprean and Oprisor (2014), Putra and Wasistha (2018) or Rubio-Martín *et al.* (2022, 2023), to capture bargaining and distorting aspects to test H2 and H3.

3.2 Method

To know the degree of efficiency of football players' market valuations is a fundamental question and the main objective of this work. Firstly, we used the dependent variable *MV* provided by the Transfermarkt crowd valuation at the end of each year to test H1, where the model includes personal characteristics, performance and popularity variables.

$$\begin{aligned}
 MV = & \alpha + \beta_1 AGE + \beta_2 AGE^2 + \beta_3 FOOT_i + \beta_4 HEIGHT + \beta_5 PPI_i + \beta_6 LEAGUE_i \\
 & + \beta_7 APPEAR + \beta_8 GOALS + \beta_9 GOAIN + \beta_{10} CHANGE + \beta_{11} SUST + \beta_{12} ASSIST \\
 & + \beta_{13} CARDS + \beta_{14} CLUBSCORE + \beta_{15} INSTAGR + \beta_{16} Year_t + \varepsilon_i
 \end{aligned}
 \tag{1}$$

Following other previous studies, such as Franck and Nüesch (2012), Majewski (2016) or Wicker *et al.* (2013), we estimated the parameters of Equation (1) to explain *MV* by running a robust ordinary least squares regression, which accounts for potential heteroscedasticity. Besides, as observations (football players) are repeated over time, we clustered errors using the Stata variance-covariance matrix of the estimators command to avoid serial correlation (Hoechle, 2007).

After analyzing previous results, we also included *NEGO* and *AGENT* in Equation (1) to disentangle the role of negotiation variables (H2 and H3) in the player transfer year with respect to *TF* and *MV* before and after the transfer.

Depending on the estimated regression model, *Y* represents different dependent variables to capture the dynamic impact of the negotiation process on prices. The ex-ante *MVs* are in two different moments on time: first at the beginning of the year preceding the player's transfer, MV_{n-1} , and second, at the beginning of the year when the transfer took place ($MV_{ex-ante}$). Sequentially, we introduce the *TF* and, finally, the ex-post *MV* calculated at the end of the same year, after the transfer occurred ($MV_{ex-post}$). Accordingly, the *MV* and *TF* reported in Table 7 were drawn from 1,440 comparable observations, while in Table 6 there were only 792, as some data points were lost due to the time-lagged nature of the observations.

4. Results

4.1 Descriptive summary

For each year and football player, Table 2, in the left-hand column, reports the descriptive statistics of 4,264 crowd valuations, named *MV*, at the end of each year from 2020 to 2024, regardless of whether a transfer occurs or not. The right section (transfers – *TF*, $MV_{ex-post}$ and $MV_{ex-ante}$) isolates the specific subset of 1,440 observations where an actual transfer took place. It includes the data points for *TF* and the market valuations recorded immediately before and after the transaction ($MV_{ex-ante}$ and $MV_{ex-post}$).

In the left section of Table 2, *MV* is greater than *TF*, reflecting that, across the longitudinal data, the players' evolving *MV* often exceeds the fixed historical *TF* paid at the time of signing. Nevertheless, in the right section, when the observation of *MV* and *TF* is coincident, $MV_{ext-ante}$ is less than *TF* and $MV_{ext-post}$ is greater than *TF*.

The *MV* data include 4,264 observations for 1,261 players, representing an average of 3.4 observations per player. This indicates a high frequency compared to the 1,440 transfers recorded for the same group. Consequently, there are only 1.14 transfer fee observations per the same players over the period, implying a low repetition rate.

Table 2. Descriptive statistics for market value (*MV*) and transfer fee (*TF*) samples

Market value: <i>MV</i>						Transfer fees: <i>TF</i> , <i>MV_{ex-ante}</i> and <i>MV_{ex-post}</i>				
Variable	Obs	Mean	Std. dev	Min	Max	Obs	Mean	Std. dev	Min	Max
<i>MV_{ex-post}</i> (€M)						1,440	15.03	16.84	0.20	180.00
<i>MV_{ex-ante}</i> (€M)						1,440	12.62	15.21	0.10	150.00
<i>MV/TF</i> (€M)	4,264	15.79	17.85	0.00	200.00	1,440	13.81	16.66	0.07	121.00
<i>AGE</i> (years)	4,264	24.72	3.53	16.00	37.00	1,440	24.29	3.44	16.00	36.00
<i>HEIGHT</i> (cm)	4,264	182.73	6.45	166.00	206.00	1,440	182.95	6.47	166.00	206.00
<i>APPEAR</i>	4,264	28.89	12.05	0.00	64.00	1,440	29.53	11.37	1.00	61.00
<i>GOALS</i>	4,264	3.53	5.08	0.00	52.00	1,440	3.44	4.97	0.00	52.00
<i>GOAIN</i>	4,264	0.07	0.28	0.00	3.00	1,440	0.07	0.28	0.00	2.00
<i>CHANGE</i>	4,264	7.90	6.30	0.00	35.00	1,440	8.92	6.81	0.00	33.00
<i>SUBST</i>	4,264	9.04	6.89	0.00	41.00	1,440	9.38	7.02	0.00	37.00
<i>ASSIST</i>	4,264	2.59	3.02	0.00	25.00	1,440	2.51	2.88	0.00	24.00
<i>CARDS</i>	4,264	4.17	3.24	0.00	23.00	1,440	4.06	3.11	0.00	19.00
<i>INSTAGR</i>	4,264	1.40	3.64	0.10	41.72	1,440	1.21	3.27	0.10	41.72
<i>CLUBSCORE</i> (thousands)	4,264	30.14	33.84	1.58	145.00	–	–	–	–	–
<i>NEGO</i>	–	–	–	–	–	1,440	10.80	24.86	0.01	14.00
Note(s): This table presents summary statistics for two distinct datasets used in the study. The <i>MV</i> column (<i>N</i> = 4,264) represents the full balanced panel of players across the analyzed period. The <i>TF</i> column (<i>N</i> = 1,440) is a specific subsample of players who underwent a permanent transfer, allowing for the observation of <i>MV_{ex-ante}</i> (beginning of year), <i>TF</i> (transfer fee) and <i>MV_{ex-post}</i> (end of year)										

Regarding the independent variables, the mean AGE is 25 years with a maximum age of 37, whereas, for TF, the maximum age was 36. The mean and maximum values for the same football players are stable across both examples.

The *NEGO* coefficient defined as the ratio of buyer club points to seller club points yields a mean value of 10.80. The data suggest a general upward trajectory in football players' careers across the sample but also that elite clubs (with high scores) purchase players from clubs with very low coefficients, creating high ratios.

Figure 1 represents the three dependent variables that are used in Section 4. The *MV_{ex-ante}* means value increased from 11.6 (m EUR) in 2020 to 12.9 (m EUR) in 2024; the mean *TF* rose from 13.3 to 14 (m EUR) and the *MV_{ex-post}* climbed from 14.2 to 15.1 between 2020 and 2024. Furthermore, we should draw attention to one important aspect: TFs are always greater than *MV_{ex-ante}* and lower than *MV_{ex-post}*.

Table 3 summarizes the categorical variables, indicating that around 68% of football players are right footed, whereas 29% are left footed, and only 2% are two footed.

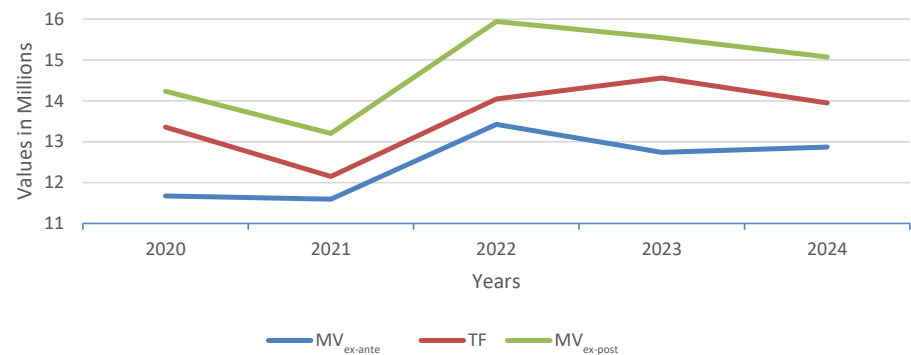


Figure 1. Evolution of transfer fees versus market values

Table 3. Distribution of categorical variables across *MV* and *TF* samples

	<i>MV</i> Freq	%	<i>TF, MV_{ex-post}, MV_{ex-ante}</i> Freq	%
<i>FOOT</i>				
1. Left-footedness	1,248	29.27	428	29.72
2. Right-footedness	2,915	68.36	974	67.64
3. Two-footedness	101	2.37	38	2.64
Total	4,264	100	1,440	100
<i>POSITION</i>				
1. Midfielder	1,278	29.97	428	29.72
2. Forward	1,430	33.54	497	34.51
3. Defender	1,556	36.49	515	35.76
Total	4,264	100	1,440	100
<i>LEAGUE</i>				
1. Bundesliga	723	16.96	232	16.11
2. LaLiga	675	15.83	216	15
3. Ligue 1	842	19.75	279	19.38
4. Premier League	1,028	24.11	362	25.14
5. Serie A	996	23.36	351	24.38
Total	4,264	100	1,440	100
<i>AGENT</i>				
1. Without agent	978	22.94	329	22.85
2. Professional agent	3,250	76.22	1,098	76.25
3. Relative agent	36	0.84	13	0.9
Total	4,264	100	1,440	100

Note(s): Frequency and percentage distribution for qualitative predictors. The *MV* column ($N = 4,264$) represents the full dataset, while the *TF* column ($N = 1,440$) corresponds to the transfer subsample

Regarding position on the pitch, most football players are defenders and forwards, followed by midfielders. Regarding football leagues, the largest number of transfers took place in the *premier league*, although the league composition in the database is very similar. Analyzing the AGENT relationships, Table 3 shows that a high proportion (76%) of transferred football players were represented by an external professional agent, whereas only 24% were not.

Before running the regression analysis, we calculated Pearson's correlation coefficients in Table 4 to test for dataset multicollinearity. Results confirm that collinearity does not pose a problem as variance inflation factor (VIF) values are less than 2.5, and tolerance indexes are over 0.40 for all variables. The correlation between the two dependent variables, *TF* and $MV_{ex-ante}$, is 85%. After the transfer, however, the correlation between *TF* and $MV_{ex-post}$ rises to 91%. This near-perfect alignment could indicate that Transfermarkt valuations are updated to effectively "mirror" the transaction price, a relationship we analyze further in the following sections.

4.2 Regression analysis explaining *MV*

Table 5 shows the results for three *MV* specifications: (1) it is including personal characteristics only; (2) regressing performance variables only and (3) including, both, personal and performance variables. Regarding personal characteristics, AGE accounts for player experience, which is positively correlated with the most strategic positions on the pitch in models *MV* (I) and *MV* (III), whereas the AGE squared variable (AGE^2) is negatively correlated with *MV*, because it also accounts for decreasing player potential over the player's life cycle.

Table 4. Pearson's correlation coefficients for key variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
MV _{ex-post}	1.00	1.00															
MV _{ex-ante}	0.92	1.00															
TF	0.91	0.85	1.00														
AGE	−0.09	0.03	−0.11	1.00													
HEIGHT	0.00	−0.02	0.00	0.00	1.00												
APPEAR	0.41	0.36	0.33	0.16	−0.05	1.00											
GOALS	0.44	0.38	0.32	0.09	0.03	0.46	1.00										
GOAIN	0.02	0.00	0.03	0.01	0.12	0.09	−0.08	1.00									
CHANGE	0.02	0.07	0.09	−0.10	−0.13	0.21	0.09	−0.15	1.00								
SUBST	0.28	0.24	0.22	0.07	−0.23	0.60	0.52	−0.11	0.18	1.00							
ASSIST	0.41	0.35	0.30	0.06	−0.19	0.56	0.52	−0.04	0.03	0.55	1.00						
CARDS	0.15	0.11	0.10	0.17	0.07	0.49	0.07	0.14	−0.21	0.17	0.17	1.00					
INSTAGR	0.46	0.46	0.41	0.07	−0.05	0.20	0.29	−0.02	0.00	0.14	0.25	0.14	1.00				
CLUBSCORE	0.25	0.26	0.24	0.03	0.00	0.12	0.09	−0.03	0.10	0.06	0.09	0.01	0.14	1.00			
BUYSORE	0.56	0.54	0.53	−0.03	−0.02	0.21	0.20	−0.02	0.18	0.11	0.23	−0.01	0.29	0.45	1.00		
SELSCORE	0.26	0.30	0.24	0.06	−0.04	0.18	0.15	−0.02	−0.02	0.13	0.15	0.09	0.26	0.12	0.19	1.00	
NEGO	0.21	0.19	0.22	−0.06	−0.05	0.06	0.05	−0.02	0.16	0.02	0.09	−0.06	0.07	0.23	0.60	−0.25	1.00

Note(s): $MV_{ex-post}$, $MV_{ex-ante}$ and *TF* show high mutual correlation. Other variables, including performance metrics (*APPEAR*, *GOALS* and *ASSIST*), social media (*INSTAGR*) and the negotiation ratio (*NEGO*), show low to moderate correlations, suggesting no immediate concerns for multicollinearity in the regression models

Table 5. Determinants of player market value (MV): OLS regression results

MV/TF	MV (I) Coef	Std. err	MV (II) Coef	Std. err	MV (III) Coef	Std. err
AGE^2	−0.195***	0.0212			−0.157***	0.0181
AGE	9.537***	1.106			7.030***	0.898
FOOT						
2	−0.776	1.207			−0.857	0.727
3	−1.664	3.419			−3.019	1.893
POSITION						
2	1.144	1.368			−1.983**	0.93
3	−4.432***	1.232			−2.150***	0.685
HEIGHT	0.125	0.0917			0.0877**	0.0443
LEAGUE						
2			−0.603	1	−0.203	0.878
3			−2.213***	0.769	−1.910***	0.701
4			12.26***	0.981	11.17***	0.933
5			−0.924	0.78	−0.0639	0.722
APPEAR			0.326***	0.0471	0.346***	0.0427
GOALS			1.026***	0.233	0.808***	0.274
GOAIN			0.807	0.84	0.839	0.678
CHANGE			−0.197***	0.0476	−0.251***	0.0424
SUBST			−0.354***	0.0773	−0.286***	0.0646
ASSIST			1.248***	0.193	0.927***	0.163
CARDS			0.184	0.135	−0.0218	0.102
CLUBSCORE			0.0899***	0.0113	0.0755***	0.0102
INSTAGR					1.412***	0.252
CONS	−119.9***	21.66	−2.382**	0.931	−93.55***	14.94
YEAR	Yes	***	Yes	***	Yes	***
Observations	4,264		4,264		4,264	
R-squared	0.056		0.446		0.553	

Note(s): This table presents the coefficients from Equation (1) for three model specifications. The dependent variable is the market value at the end of each year. Model (1) focuses on physical and demographic traits; Model (2) incorporates on-field performance metrics; Model (3) adds social media influence (*INSTAGR*). Categorical variables include foot, position and league. Year-fixed effects are included in all specifications. Robust and clustered standard errors are reported in parentheses. Statistical significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

On the other hand, regarding position, defenders are less valuable than midfielders and forwards, although this effect is diluted to some extent in *MV(III)* when performance variables are introduced. *FOOT* variable is not significant in models *MV(I)* and *MV(III)*, while the results show that performance variables have greater explanatory power ($R^2 = 0.44$) than personal variables ($R^2 = 0.05$). The signs and the significance of performance variables are similar across models *MV(II)* and *MV(III)*.

APPEAR, *GOALS* and *ASSIST* have a significant positive effect on *MV(I)* and *MV(III)*. In *MV(III)*, for example, *APPEAR* ups a football player's value by 0.35m EUR, a *GOAL* leads to a mean increase of 0.8m EUR and a goal assist (*ASSIST*) raises a player's worth by 0.93m EUR. On the other hand, *SUBST* and *CHANGE* have a negative impact on *MV(II)* and *(III)*: the *MV* fell by 0.35m EUR for each change during a match, whereas own goal (*GOAIN*) does not penalize a football player's cache.

The results also show the importance of playing in a specific league. The coefficients of the leagues show important differences between them, due to differences in football culture, style of play or even economic conditions, such as the presence of a termination clause in the country's legislation, as in the case of Spain. The *CLUBSCORE*, that is, the football players club, has a positive impact in both models in Table 5. Finally, *INSTGR* measured in millions of

Table 6. Determinants of ex-ante market value (MV_{t-1}): OLS regression with negotiation variables

	MV_{t-1} (<i>ex ante</i>) Coef	Std. Err
AGE^2_{t-1}	-0.149***	0.0223
AGE_{t-1}	7.654***	1.162
$FOOT_{t-1}$		
2	0.751	0.992
3	-4.361**	2.134
$POSITION_{t-1}$		
2	-1.462	1.154
3	-1.804*	1.084
$HEIGHT_{t-1}$	-0.0163	0.0753
$LEAGUE_{t-1}$	-1.043	1.432
2	-1.043	1.432
3	-0.152	1.287
4	7.882***	1.519
5	0.586	1.222
$APPEAR_{t-1}$	0.162*	0.0852
$GOALS_{t-1}$	0.364*	0.216
$GOAIN_{t-1}$	-0.508	1.464
$CHANGE_{t-1}$	0.0873	0.0867
$SUST_{t-1}$	-0.218*	0.113
$ASSIST_{t-1}$	0.721*	0.428
$CARDS_{t-1}$	-0.0812	0.193
$INSTAGR_{t-1}$	1.565***	0.262
$AGENT_{t-1}$		
2	1.652	1.006
3	12.46**	6.027
NEGO	-0.0217	0.0152
CONS	-90.58***	19.86
YEAR	Yes	***
Observations	792	
R-squared	0.433	

Note(s): The dependent variable is the player's market value one year prior to the transfer $MV_{ex-ante(t-1)}$. All independent variables (performance, physical traits and social media) are lagged by one period ($t-1$), while *NEGO* represents the negotiation variable at the time of transfer. Categorical variables are league, position, foot and agent. Year-fixed effects are included. Robust and clustered standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$

followers, shows a highly significant coefficient of 1.412. These findings underscore that digital popularity and media reach represent critical determinants of valuation, functioning as significant predictors alongside traditional sporting performance metrics. We find that MV (III) in Table 5 includes enough information to value the talent of the major football players of each analyzed league based on performance, personal and popularity variables. Therefore, the ability of the crowd to accurately approximate an implicit price over time is demonstrated by the example of 4,264 values (H1).

4.3 The role of negotiation variables in ex-ante MV_{t-1} ex-ante MV , TF and ex-post MV
 Tables 6 and 7 display MVs only when TF are present. To analyze the evolution of Transfermarkt values in relation to a negotiated transfer price, we can observe the regression model for different points on time: one year before the transfer (Table 6), MV_{t-1} , within the same year (Table 7) ($MV_{ex-ante}$) and after the transfer ($MV_{ex-post}$).

Table 7. Determinants of market value (ex-ante/ex-post) and transfer fees

MV/TF	<i>MV ex ante</i>		<i>TF</i>		<i>MV ex-post</i>	
	Coef	Std. err	Coef	Std. err	Coef	Std. err
<i>AGE</i> ²	−0.157***	0.0179	−0.111***	0.0193	−0.137***	0.0202
<i>AGE</i>	7.910***	0.921	4.926***	0.988	6.204***	1.018
<i>FOOT</i>						
2	−0.369	0.707	0.0761	0.709	−0.159	0.685
3	−4.558***	1.53	−4.811***	1.565	−3.688**	1.6
<i>POSITION</i>						
2	−1.883*	1.079	0.875	0.962	−2.292**	1.092
3	−2.004***	0.772	−1.047	0.879	−1.770**	0.783
<i>HEIGHT</i>	0.0772	0.0518	0.150***	0.0558	0.127***	0.0487
<i>LEAGUE</i>						
2	−0.620	1.136	−0.364	1.047	−0.824	1.215
3	−0.505	0.93	0.794	0.921	−0.956	0.927
4	10.16***	1.105	15.15***	1.127	12.15***	1.081
5	0.219	0.872	1.287	0.806	−0.0739	0.846
<i>APPEAR</i>	0.243***	0.0541	0.301***	0.0568	0.319***	0.0566
<i>GOALS</i>	0.518**	0.24	0.338***	0.131	0.767***	0.238
<i>GOAIN</i>	−0.735	1.001	0.258	1.059	−0.428	1.017
<i>CHANGE</i>	0.00977	0.0553	0.00101	0.0636	−0.141***	0.0538
<i>SUBST</i>	−0.147**	0.0747	−0.0766	0.0807	−0.142*	0.0815
<i>ASSIST</i>	0.564***	0.194	0.396**	0.192	0.805***	0.197
<i>CARDS</i>	−0.325**	0.138	−0.186	0.157	−0.187	0.144
<i>INSTAGR</i>	1.672***	0.252	1.621***	0.226	1.670***	0.243
<i>AGENT</i>						
2	0.628	0.745	−0.0299	0.822	0.213	0.737
3	9.587**	4.028	9.630*	5.116	5.975*	3.4
<i>NEGO</i>	0.0872***	0.0139	0.116***	0.0199	0.109***	0.0153
<i>CONS</i>	−112.5***	15	−84.30***	16.58	−93.05***	15.86
<i>YEAR</i>	Yes	***	Yes	***	Yes	***
<i>Observations</i>	1,440		1,440		1,440	
<i>R-squared</i>	0.469		0.48		0.559	

Note(s): $MV_{ex-ante}$ is measured at the beginning of the transfer year, while $MV_{ex-post}$ is measured at the end of the same year, following the transaction. *TF* represents the actual transfer fee. Independent variables reflect contemporaneous data. All models include year, league, position, foot and agent-fixed effects. Robust and clustered standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$

In Table 6, the estimation of MV_{t-1} underscores a similar behavior than in previous tables. However, we introduce *NEGO*, and crucially, the coefficient (−0.0217) is statistically insignificant in the year prior to the transfer. This suggests that the relative competitive strength between the buyer and seller clubs does not, *ex ante*, determine a player's valuation, which is instead driven by individual performance, relative representation (up to €12.46m) and specific *league* effects.

Table 7 shows significant similarities between the *TF* model, and the *MV* models, as most personal and athletic performance variables are shared in all models. *ASSIST*, *GOALS* and *INSTAGR* are also the primary individual determinants for *TF*, while *SUBST*, *CHANGE* and *CARDS* are only significant at different points in time for *MV*. Furthermore, age and age squared maintain a highly significant non-linear impact across all models. *FOOT* is significant in all models, and the *premier league* is also positive and significant in all. Finally, the consistently positive and significant sign of *INSTAGR* in all three models underscores the importance of a player's commercial reach and its weight in “crowd valuation.”

Regarding the negotiation components, unlike [Table 6](#), *NEGO* arises as a highly significant predictor for both transaction and *MV* models. Specifically, the coefficient of 0.0872 for the *MV_{ex-ante}* increases to 0.116 for the actual *TF*, before settling at 0.109 for the *MV_{ex-post}*. This progression confirms that bargaining power, defined by the ratio of buyer-to-seller UEFA points, is a decisive factor in the final transaction price. These results suggest that Transfermarkt values are partially able to discount a player's pre-transfer price, which may be influenced months in advance by specific intermediary dynamics or strategic market positioning. Nevertheless, the fact that the *NEGO* coefficient is highest for the transfer fee (0.116) also suggests that the competitive gap between clubs has its most pronounced impact at the moment of the deal, which is then reflected and solidified in the subsequent market valuation (0.109).

Representation by a relative (Agent 3) exerts a significant positive influence on player valuation, demonstrating a more pronounced statistical impact than representation by a professional agent (Agent 2). The associated coefficient remains elevated throughout the pre-transfer and transfer stages, subsequently diminishing during the post-transfer period. This evolutionary progression highlights the model's increasing explanatory power; as transfer-specific information is incorporated, the value rises from 0.43 to 0.56.

In sum, the results underline that the three parties (seller club, buyer club and the agent) collectively shape the negotiation components ([H2](#)). The intensification of these coefficients in the model demonstrates a "contagion effect" from *TF* to Transfermarkt values ([H3](#)), validating *MV* as a periodically updated reflection of actual market transactions.

5. Discussion and conclusions

Our results, in line with previous authors ([Franck and Nüesch, 2012](#); [He et al., 2015](#); [Majewski, 2016](#); [Müller et al., 2017](#); [Peeters, 2018](#); [Rubio-Martín et al., 2022](#)) find that *MVs* provided by *transfermarkt.de* are very useful for ascertaining valuations throughout a player's life cycle, accounting for public preferences. The analytical study in [Table 5](#) includes personal, popularity and performance items required to assign an implicit *MV* for each player, based on a temporal comparison of these variables between players and clubs ([H1](#)).

Best players at major clubs can generate substantial revenue from advertising and merchandising or increase the team's winning chances and, thus, club revenues, profitability and value ([Amir and Livne, 2005](#); [Forker, 2005](#)). The negotiations to capture these monopolistic rents create an upward spiral that is only curtailed if prices rise to a level where even the biggest clubs lose interest because the deals make no business sense ([Speight and Thomas, 1997](#)). These negotiations are also influenced by the bargaining positions of the selling and buying clubs ([Carmichael and Thomas, 1993](#); [Gulbrandsen and Gulbrandsen, 2011](#); [Swanepoel and Swanepoel, 2016](#)). [Table 7](#) highlights the importance of popularity alongside other negotiated elements of each transfer fee ([H2](#)).

Furthermore, in line with [Amir and Livne \(2005\)](#), in [Tables 6 and 7](#), when values are only recorded during a transfer, the explanatory capacity of the models decreases and is less predictable and volatile. Obviously, player values can change noticeably, upwards or downwards, over just a few years. Thus, it would be more efficient to use *MV*, which is continuously updated, than historical prices to predict future *TF*.

This article goes further by examining the bargaining factor between clubs and the contagious effect on crowd valuations. Consistent with these findings, [Table 6](#) shows that bargaining power (*NEGO*) was not significant one year prior to the transfer. However, it becomes significant during the immediate pre-transfer stage ([Table 7](#)), although its impact peaks during the actual transaction and remains high in the post-transfer valuation. This suggests that the *ex-ante* *MV* already captures rumors and expectations regarding a potential transfer before the formal agreement is reached. The positive *NEGO* coefficient indicates that,

on average, players progress through transfers between clubs, with the acquiring club paying a premium that reflects both the player's potential and the intensity of the negotiations. In our study, TF are higher than prior market valuations $MV_{ex-ante}$. However, this article demonstrates for the first time how crowd valuation updates all public information, including negotiation elements (H3); after the transfer, the evolution of Transfermarkt values aligns with or even surpasses the prices paid $MV_{ex-post}$.

This study provides a new vision of the relationship between prices and crowd valuations, capturing the latest public information from TF within an active and semi-strong efficient “pseudo-market” (Fama, 1976). Previous articles overlook the dynamic nature of Transfermarkt's evaluations (Campa, 2022; Coates and Parshakov, 2022); however, the timing of the crowd valuation relative to the transfer is a crucial factor.

Regoliosi (2016) and Scafarto and Dimitropoulos (2018) concluded that investments in intangible assets affect sporting, operational and financial performance, helping clubs achieve a sustainable competitive advantage. Nevertheless, if a resource cannot be measured, it cannot be managed. According to Oprean and Oprisor (2014), IAS does not provide stakeholders with enough information to make sound financial decisions because the main value driver in the football business, human capital, cannot be recorded. According to Michie and Verma (1999), these assets should not be excluded from financial statements simply because they are difficult to value. Therefore, as Morrow (2013) notes, football requires a new corporate and organizational model to achieve broader approaches to financial reporting for stakeholders.

Although this article highlights Transfermarkt's ability to capture negotiation data and players' value evolution, since it is not an organized market (a formal trading environment with strict institutional rules), IAS 38 prohibits increasing player values to their implicit MVs on the balance sheet. Nevertheless, an intellectual capital report could include two primary components:

- (1) Historical cost and amortization: TF as outlined in the balance sheets, strictly aligning with IAS 38. This ensures reliability and adherence to the principle of prudence, reflecting the unamortized investment in registration rights.
- (2) Market-based insights: Valuations from Transfermarkt to complement this approach, following IFRS 13, IASB (2004) and International Valuation Standards (IVS, 2022) without contravening IAS 38. This study suggests that these valuations can be categorized as Level 2 inputs under IFRS 13, IASB (2004). Transfermarkt's methodology synthesizes sufficient observable data, including personal, performance metrics, popularity and recent transaction trends for comparable peers. Consequently, they provide a sophisticated proxy for fair value that reflects the current market reality, offering stakeholders a transparent view of the hidden value (intellectual capital) that traditional accounting fails to capture.

Furthermore, Transfermarkt values can serve as a reliable input for impairment testing under IAS 36, IASB (2004) when MVs fall below historical costs. To ensure comprehensive insights, these valuations should meticulously capture and explain different metrics: personal, sports and popularity analytics, providing a nuanced explanation of the dynamic evolution of player variables throughout their professional life cycles (which also could be contrasted with other sources like, for example, the points system given to players by Opta-Sport). Finally, UEFA could encourage clubs to adopt these reporting mechanisms by developing standardized processes to cater to the diverse needs of stakeholders within the football ecosystem.

6. Limitations and future lines of research

Transfermarkt does not currently hold official quality certifications issued by external bodies, such as International Organization for Standardization (ISO) or financial audit certifications.

Unlike other sports data companies (e.g. Opta or Nielsen), which rely on industrial measurement processes, Transfermarkt operates under a “collective intelligence” or crowdsourcing model. Its “quality seal” is essentially its reputation and the widespread adoption of its data by clubs, agents and media outlets. Nevertheless, integrating ethical principles and process control is pivotal for valuation integrity (Detzen and Löhlein, 2024). Future research should compare Transfermarkt’s efficiency with professional platforms subject to formal certifications like ISO 25012 on Data Quality (International Organization for Standardization, 2008) and ISO 27001 on Information Security (International Organization for Standardization, 2013).

A key limitation regarding the generalizability of these results is the sample’s focus. Although this study covers the “Big Five” European leagues, including both elite and lower-profile players, these results reflect the most financially powerful ecosystem in football. Therefore, they may not be automatically applicable to emerging markets or lower divisions with less liquidity and transparency. To address this, future studies should test these models in different geographical tiers and levels, to verify if “collective intelligence” maintains its predictive power across diverse environments.

Although our study verifies that both magnitudes, TF and MMV , are strongly related, this relationship evolves over time. While MV explains part of the price before a transfer, TF appears to drive the evolution of MV after the transaction. Future research could delve deeper into this dynamic relationship by performing a vector autoregression (VAR) analysis to determine which of the two variables leads or lags the other.

Further research could also incorporate other club-specific variables, such as salaries, squad depth or the distinction between top players and non-top players, as well as home-grown players and external signings. Additionally, investigating how UEFA’s Financial Fair Play (FFP) and salary caps influence final transfer prices and MVs would be highly valuable. Finally, researchers might assess a club’s “hidden value” by comparing its crowd-based MV against its balance sheet book value, linking this intangible capital to economic metrics like cash flow and leverage.

The valuation of intangible assets remains a challenging and enduring accounting issue, a limitation of this research is the difficulty of generalizing these findings to other industries, given the unique accounting regulations and the specific institutional setting of the professional football sector.

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Notes

1. Some of the most significant FFP sanctions imposed in recent years include: Manchester City (Court of Arbitration for Sport, 2020): Fined €30 million for overstating sponsorship income. AC Milan (Court of Arbitration for Sport, 2019): Excluded from European competition for failure to comply with FFP regulations. Paris Saint-Germain (Union of European Football Associations, 2022): Fined €65 million for breach of the break-even rule.
2. Financial compensations paid by an interested club to the club that owns the football player’s exclusive contracted playing rights.
3. In Spain, the legal buyout clause is determined by Royal Decree 1,006/1985, of June 26, 1985, regulating the special employment relationship of professional athletes and depending on the free negotiation between players and clubs. The clause is not mandatory but, in the absence of an agreement, the club economical compensation shall be determined by the labor jurisdiction based on the circumstances of the sporting order, the damage caused to the entity, the reasons for the termination and other elements. In countries that do not apply a release clause, player contracts often include other agreements on the duration and transfer conditions. This means that the dynamics of player transfers

in these countries can differ significantly from those in leagues that use the release clause as a standard part of player contracts.

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Corresponding author

Gracia Rubio Martín can be contacted at: graciarubiomartin@ccee.ucm.es