Valuation of football players in financial statements: the power of the crowd versus transfer fees

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Abstract: The aim of this paper is to analyze the convenience of reflecting football players' value as intangible assets in financial statements of football clubs from the amounts paid on the transfer rights, or through other techniques, such as the methodologies called "market value", *MV*, based on crowd-valuation. The research also incorporates an exhaustive and critical review and analysis of academic literature, and football accounting regulations. The paper is based on a model which included 227 observations of crowd valuation, *MV*, and 127 transfer value/fees, *TF*, for the best 76 footballers of the Spanish League, Premier League, and German League over 12 years. This paper analyzes the differences between both models to overcome the limitations of standard accounting and fair play FIFA to reflect all the human capital in financial statement of football clubs. This research provides evidence for accounting regulators, UEFA, and football club managers to understand the power and challenges of crowd valuation of football players comparatively to prices paid in the transactions of them. Finally, focusing on the necessity to provide fair football club reporting, more rational and sustainable to their activities, the article concludes that the criteria of IAS 38 does not allow this task due to the impossibility of reflecting correctly the human intangible capital of clubs. The standard accounting should incorporate a special treatment for the talent in football business through the adoption of a generic process based on data analytics to support the football players' valuation.

Keywords: Financial statements, International accounting standards, Intangible assets accounting, Football players´ registration rights.

1. Introduction

Human Resource Accounting (HRA) has grown in interest and importance in recent years (Akhlaque and Flouti, 2017; Egginton, 1990; Roslender and Fincham, 2004), because of companies that largely depend of their workforce and their skills are interested in recording these elements as assets to reflect their performance (Kolay, 1991; Lev and Schwartz, 1971; Mouritsen et al., 2001). Thus, HRA is defined as the combination of 'art' and 'science' whose primary mission is to measure human resources in monetary terms and how to transfer them to yearly annual statements, with the aim of accountability (Cooper and Johnston, 2012; Flamholtz, 2012; Roslender and Fincham, 2001) together with reporting this quantitative information to stakeholders (Brummet et al., 1968; Craft and Birnberg, 1976; Pandey, 2014).
In this sense, given that football players are vital for a team´s success, the case of football clubs can be considered optimum and ideal for accounting the value of human capital (Biagioni and Ogan, 1977; Michie and Verma, 1999a; Morrow and Stephen, 2014), as well as for validating the potential links between the generation of results and the use of human resources (Carlsson et al., 2016; Gumb and Desmoulins-Lebeault, 2010; Yang and Sonmez, 2005).

Moreover, Michie and Verma (1999b) argue that football players are the most important and expensive assets of football clubs because clubs pay large transfer fees**,** regularly, in the transfer market to acquire players. Thus, following Morrow (1995; 1996; 1999) and Rowbottom (2002) the football industry is the only sector in which HRA is applied most specifically for recording transfer fees for footballers' contracts as intangible assets.

From this perspective Oprean and Oprisor (2014), in their research on the economic impact of football as a business, analyse how the *players' registration rights* are placed in the field of HRA, because "at that time of the contract's registration to the governing body, the club acquires the federative rights and license to use him in competitions" (Oprean and Oprisor, 2014, p. 1.650). Likewise, the work of these authors focus on analysing how accounting regulations may influence clubs' financial representations, that International Accounting Standards (IAS/IFRS) apply to footballers´ contracts and, finally what accounting and evaluation technique better fits for presenting a "fair and true value" in the financial statements.

In this respect the ruling of UEFA Financial Fair Play Regulations (FFP), fully implemented in the 2013/14 season, aims to help football clubs to register their players as Intangible Assets in their Balance Sheet (UEFA, 2009; 2012; 2013) and can be used

as the benchmark to evaluate player contracts as Intangible assets, as well as subsequent recognition in the financial statements (Akhlaque and Flouti, 2017; Birkhäuser et al., 2017; Vernhet and Bernard, 2010; Wyatt, 2008). In this field, IAS 38 prescribes the recognition of paid transfer fees for football player contracts under intangible assets, if the fair-value can be measured reliably in such a way that the amount paid to acquire the player from another club must be activated or capitalized (Amir and Livne, 2005; IASB, 2004).

In the same vein, Morrow (2014), Preuss et al. (2014) and Storm (2012) state that this regulation (FPP) has as its main function for football clubs encouraging football clubs to implement a more sustainable and economically rational approach for developing their activities (UEFA, 2015). This is because, in spite of the increase in club revenues in recent decades (Domínguez, 2003), it is evident that many high prestige clubs are facing to increasingly expensive players and suicidal debts (Madden, 2012; Sass, 2016; Storm and Nielsen, 2012), leading to financial difficulties and, eventually, cases of bankruptcy meetings with creditors or insolvency proceedings.

In fact, according to Gazzola and Amelio, (2016, p. 107), “the importance of the football player registration in the total assets treatment of player registrations has become an important accounting issue”. Despite this, for Michie and Verma (1999b), the accounting for and management of football clubs has long standing problems. Thus, from our literature review we can see that there are several uncertainties regarding the existing efficacy of present accounting standards and whether they offer or not a fair and true value of the human resources of football clubs. In this way, there is still a long way to go before financial statements clearly reflect the fair value of players (Akhlaque and Flouti, 2017; Amir and Livne, 2005; Morrow, 2013; Putra and Wasistha, 2018) and for the quality and scope of the information to valuate an intangible asset connected to intellectual capital, contained in financial statements become adequate, true and rigorous (Lozano and Gallego,an 2011; Shareef and Davey, 2005).

In brief, there is a great controversy about whether the methodology of the price paid for the transfer rights is the most appropriate way to capture the value of football players (Oprean and Oprisor, 2014; Putra and Wasistha 2018) because it really tends to overvalue the players (Risaliti and Verona 2012) based on the negotiations of big clubs that getting big amounts from advertising, can pay astronomical figures generating inflationary spirals that, in the end, can damage the financial health of the rest of clubs.

The aim of this work is to analyze the convenience of reflecting the “fair value of the players” in financial reports of the football clubs, from the amounts paid on the transfer rights, or otherwise, through other techniques, such as methodology called “market value”. Specifically, we propose the use of regression analysis on data from the most famous association of football called transfermarket.com, based on crowd valuations. The analysis allows us to identify the significant variables for explaining ‘transfer fees’ and ‘market value’ in order to determine which methodology is most convenient. To accomplish our task we also made a critical study of intangible standards accounting and their application in football clubs, as well as of other works related to this topic. We stress the necessity to reform accounting standards in a more convenient way to capture the sporting human capital in football business.

This paper is organized as follows: after this Introduction, in the second section, we review the previous literature on football players’ values and the limitations of transfer fees and standard accounting. Subsequently, we propose the hypothesis to contrast. In the third section, we discuss a model based on different characteristics and circumstances of football players for market value and transfer fees. In the fourth section, we describe the data and variables used together with the results obtained from the estimation of the proposed model. The article ends with the discussion and final conclusions.

2. Theoretical framework and hypothesis

2.1. Indicators for football players’ values

Literature points out that the drivers for players’ values are the wages and players’ registration rights (Kulikova and Goshunova, 2014; Oprean and Oprisor, 2014; Pavlović et al., 2014). In fact, the UEFA Club Licensing System permits football clubs to adopt either the capitalisation or expenses policy, before the adoption of IAS 38, broadcast in 1998 (UEFA, 2002). More specifically, for the particular case of the United Kingdom, the introduction of national accounting standard FRS 10 ‘Intangible assets and goodwill’ in 1997, significantly changed the further accounting practice of English football clubs.

Regarding the first item, some authors justified the use of players’ wages as the indicator of the value of such players, since it was understood football clubs pay their players according to their ability and, therefore, players’ wages reflect their value (Szymanski and Smith, 1997). This accounting procedure of recognizing the transfer

cost by current expenses or operating expenditure was based on the application of the prudence principle, although for other authors this means a clear distortion of the income statement, which was harmful to the club image (Rowbottom, 1999).

2.1.1. Football player's transfer value/transfer fees

Regarding the second item, players' registration rights, a first reference is Morrow (1997) who analyzed football clubs in the United Kingdom registering services provided by their players as intangible assets on their balance sheet. Thus, once possible accounting treatments had been considered (FASB, FRS 10, 1997), it can be deduced from his study that at least in the short term the accounting criteria of historical acquisition costs is the most suitable method to valuate players' registration rights in the balance sheet of football clubs analyzed.

Nonetheless, the above-mentioned author warns about the risk of conceptualizing football players as commodities with a specific monetary value for being integrated into the *balance sheet* of their respective clubs. In this sense, he argues that in the case of the ability of clubs to obtain funds, financial entities (banks) are more concerned with the quality of their incomes than by the existence of a sure way to transfer lists of players on to their balance sheet.

In spite of the previous problem, in the case of European football, the approval of the UEFA Financial Fair Play (FFP), in 2010, allowed the adoption of the IAS 38 – Intangible Assets- which indicates the value of a player's registration rights is derived from the player's transfer value/fees, also requiring that a player's transfer value is capitalised as an intangible asset in the balance sheet (IASB, 2004).

Likewise, the IAS 38 specifies that an intangible asset is a non-monetary asset which is without physical substance and identifiable. According to IAS 38 (art. 21) an intangible asset shall be recognised if, and only if: (a) it is probable that the expected future economic benefits that are attributable to the asset will flow to the entity; and (b) the cost of the asset can be measured reliably. In this way, under the denomination of player's registration rights", there is recorded in the section of an intangible asset on the balance sheet, the amount accruing from the acquisition of the economic and federative rights of football players, when they met the requirements demanded for the purpose by IAS 38, since the football clubs have control over the players´ contracts whose value is recoverable from the players' performance and/or through transfer fees.

In this sense, the initial accounting valuation is made at historical acquisition costs, using the straight-line method throughout the period of duration of the federative

contract signed by the player to calculate the annual amortization (Gazzola and Amelio, 2016; Kulikova and Goshunova, 2014; UEFA, 2002). Furthermore, in the case of an extension in the initial contract signed with the player, this circumstance must be treated as a change in accounting estimation, applied prospectively and attributing its effect as income or expenditure in *profit and loss account* of the financial year. In this way, a new depreciation quota is calculated, bearing in mind the amount of the rights remaining for amortization at the time of renovation and the useful life up to the time when the contract ends (Maglio and Rey, 2017).

In spite of the above, Morrow (2006) develops a case study for intangible assets in the Italian football industry. His research concludes that Italian regulation published a decree –salva calcio decree- which allowed countries' football clubs to amortize p*layer's registration rights* in an arbitrary ten-year period, higher than the maximum duration of the players contracts, which meant a financial improvement and better financial returns received by the Italian clubs analyzed.

Moreover, and at least at the close of the financial year, by virtue of the prudence principle in accounting, football clubs must evaluate if there are suggestions that such an intangible fixed asset in football is deteriorating (annual impairment test, IAS 36, Impairment of Assets). In that case, the recoverable amount is estimated, carrying out and registering corrections in values due to wear and tear, when relevant, and reverting to income or expenses, respectively, in the profit and loss account (Gazzola and Amelio, 2016; UEFA, 2015; Wyatt, 2005).

Then, if it proceeds, there occurs a reversible and sporadic write down in the value as the difference between net book value- (historical acquisition costs minus accumulated depreciation) and the market value of the registration rights, when the latter is lower (Müller et al., 2012; UEFA, 2015). More specifically, the loss of value referred to is generated when carrying amount on the balance sheet is higher than recoverable amount. Adversely, write-ups are not recognized, in accordance with the prudence principle in accounting.

In this respect, Maglio and Rey (2017) state that the financial communications and reporting disclosed by football clubs about the impairment test procedure is poor and inadequate, due to the UEFA regulations having gaps that ought to be filled and that IFRS are not perfectly suitable for companies operating in specific business sectors such as the football industry. In synthesis, these authors suggest that UEFA, FIFA and local football associations should promote new regulations aimed to improve the accuracy of the financial disclosure of football clubs, for example introducing,

describing and limiting a relevant external indicator to perform the impairment, since this kind of failure has a negative impact on football clubs' revenues.

Finally, the elements of intangible fixed assets of a sporting nature are disposed of at the moment when it is sold or no more profits or economic benefits are expected from then (Maglio and Rey, 2017). In this sense, the difference between selling price and net accounting value of the elements at the time of the operation leads to the registering of profit and loss through disposal of fixed assets (UEFA, 2015; Wyatt, 2005).

2.1.2. Problems and limitations of player's transfer value/fees

A) *Overvaluation of assets:*

Albeit for authors as Gazzola and Amelio (2016, p. 107) this is a suitable method since "clubs pay agent fees to player's agents when a player is transferred or extends his contract. The club believed that the fees met the criteria for capitalisation as intangibles because they are directly attributable to the costs of a player's contract". However, other authors like Gumb and Desmoulins-Lebeault (2010), Oprean and Oprisor, (2014) and Putra and Wasistha (2018) state that player's transfer values are not a fair value of human capital, since such a valuation includes other elements of marketing and contracts (information asymmetry, negotiation, agents fees, synergies, etc.) distorting the ideal of fair value.

In this same line, authors as Risaliti and Verona (2012) understand present day football as a real business, focusing their research on the analysis of the valuation of players' registration rights in the financial statements of the main Italian football clubs during the period 1996-2009. From this study, we find an artificially overestimated value of players' registration rights which, along with a policy of lack of control of the high wages of the players, leads to situations of financial crisis for the clubs analyzed. However, their research shows the limit of examining the value of players' registration rights as a group, since it is not always possible to extrapolate from the financial statements the values attributed to individual players.

B) *Undervaluation of assets:*

Firstly, Gumb and Desmoulins-Lebeault (2010), Kulikova and Goshunova, (2014) and Putra and Wasistha (2018) argue that other factors which might be considered as genuine human capital, such as training costs, building teams, or others like the measurement of youth players or home-grown players cannot be activated in accordance with the current accounting standards since no active market for

comparable parameters -in order to supply a credible value-, so no value on current accounting standards (IASB, 2004, IAS 38).

In the same vein, Lozano and Gallego (2011) focusing on Spanish accounting standards-, develop a case study to provide the high hidden value which, in their opinion is found in the intangible assets of football clubs. According to these authors, these assets only are partially recognized as intangible fixed assets in accounting, since the internally generated players' registration rights are not reflected in the balance sheet, This is because only the acquired players' transfers fees are disclosed but at their historic acquisition cost. Finally, from all the above it is deduced that these deficits of the accounting standards often lead to net book values remarkably lower than those of the transfer market.

Additionally, Oprean and Oprisor, (2014, p. 1.651) affirm that "youth players cannot be reflected in the asset category because they do not meet the preconditions from IAS 38". This is due, according to these authors, because under age players cannot sign forms as professionals, and consequently they can gain nothing from this which in accounting terms is known as intangible assets in the financial statements. Moreover, the lack of contracts brings about an ausence of control over these potential assets -players- (a standard contract may be offered to a youngster who has reached legal age, but he is not forced to sign it). Finally, the claim is that juvenile players generate no future profits since there.

However, other authors like Kulikova and Goshunova, (2014, p. 47) strongly claim that "prohibition for capitalization of costs on home-grown players is fundamentally wrong, because the high quality system of training of football players is a guarantee of future success of football club". Thus, they argue that "investments in youth players represent an asset which is formed over the years in sports academies in the course of training sessions and education, and which is able to generate economic benefits as a part of a club's squad" (Kulikova and Goshunova, 2014, p. 48). In this same line, Maglio and Rey (2017, p. 3) affirm that "the costs incurred for the promotion ad organization of the youth academy can be generally compared with research and development costs because they have long-term rewards". So these authors point out that the possible recovery of these costs by the future use of these players suggests capitalizing them. Despite this, IAS/IFRS state that these costs must be recognized directly in the income statement.

Secondly, Maglio and Rey (2017), Oprean and Oprisor (2014) and Simmons (1997), also describe the problem stemming from applying the Bosman ruling for football

transfer markets which allows the player when the contract finishes -6 months before it ends up-, to be declared a free agent and bargain his own contract with another club without a transfer fee. This means that, “in the case of accounting the contract as an intangible asset, the residual value for the contract in accounting books must ultimately be null” (Oprean and Oprisor, 2014, p. 1.649), that means, the free agents’ contracts are not recognized as intangible assets due to the fact that there is no credible ground for valuation (Maglio and Rey, 2017), in absence of a transfer fee and an active market (UEFA, 2012).

For Oprean and Oprisor (2014) the argument highlighted above is explained because free agents have greater negotiation ability than transferred players because the transfer fee is no longer paid. Therefore, these authors propose as an alternative solution to value free agent through wage capitalization. This implies providing an expected value of the player’s contract connected to the initial investment, so the negotiated wage would be considered appropriate as valuation ground. However, the main inconvenience of this valuation methodology comes from the fact that “agents’ wages are greater than transfer-based player and the recognition of the value difference would lead to an artificial overvaluation of the assets” (Oprean and Oprisor, 2014, p. 1.652).

That is why, finally, Maglio and Rey (2017, p. 3) argue that “the free agent footballers are not registered as assets since there is no credible ground for a valuation so it is recommended to issue a free agent player among income statement rather than a cost capitalized in the balance sheet”.

2.1.3. Football player’s market value, IFRS 13 and active market

Rohde and Breuer (2017), in their analysis of the history and market situation of the ‘Big Five’ European leagues, declare that there is a growing research field of football club in various theoretical areas, such as the application of property rights theory to European football clubs. Likewise, authors as Lenciu and Lenciu (2017) also analyze the possibilities of recognizing players' registration rights in the financial statements of football clubs. In their opinion, the active market is the main determinant for recognizing the human capital in the financial statements of football clubs.

This result is highly related with some recommendations provided by (IAS/IFRS). Therefore, the IFRS 13 explains in paragraphs 73, 74 and 75 that a fair value measurement requires that the valuation technique(s) used should maximize the use of relevant observable inputs and minimize unobservable inputs. Moreover, the IFRS 13

establishes a fair value hierarchy categorised into three levels of inputs; level 1 inputs are quoted prices in active markets for identical assets, level 2 are inputs other than quoted prices included within Level 1 that are observable for the asset, either directly or indirectly. Level 3 inputs are unobservable inputs for the asset or liability, but these inputs shall be used to measure fair value to the extent that relevant observable inputs are not available.

In general, to have an active market for intangible assets is very uncommon. Some possible exceptions are, however, taxi and fishing licenses and production quotas (IASB, 2004). Moreover, IFRS 13 defines an active market, in the appendix A, 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”. The key here is if the transfer rights paid by clubs for the football players represent an active market because it would have the ability to send prices towards the equilibrium, obtaining the best score of the asset, or otherwise, expert valuations or other sources as crowd valuation could represent a better measure to capture the market value of football players.

Market values can be understood as estimates of transfer fees. In this way, many authors tried to explain the factors which determine market valuation by statistical and econometric models based on sports performance (Buraimo et al., 2015; Carmichael et al., 1999; Majewski, 2016; Wicker et al., 2013) or they had collected different aspects and sports points of data bases, as OPTA sportsdata, to transform them in value-money (Tunaru and Viney, 2010), or they have developed other income valuation models based on Real Option Theory or using Monte Carlo simulations methods (Coluccia et al., 2018; Kanyinda et al., 2012; Majewski and Majewska, 2017; Tunaru et al., 2005).

Many authors propose valuations made by experts as the best way to proxy for the implicit transfer fees (He et al., 2015). Nowadays, crowdsourcing has emerged also as a popular approach to estimating market value, as in the page web Transfermarket.com (Herberger and Wedlich, 2017; Herm et al., 2014; Majewski, 2016, Muller et al., 2017). This methodology is based on the one time a user has registered at Transfermarkt.de, he can propose personal valuations, and at the same time discuss their proposals with other community members. The final market values are then determined by aggregating the individual estimates.

In the context of German soccer, Herm et al., (2014, p. 484) affirm that supporters “have built a large online community that evaluates professional soccer players’ market values. The community has become the main source for reporting market values in the

media and has a strong impact on sports economy: it is used in real market transactions and wage negotiations, indicating the power of crowd wisdom in the sports management context". Moreover, these authors claim that, for the case they analyzed, the community's market-value estimates are excellent predictors of actual transfer fees and the community evaluations can largely be predicted using an econometric model that contains two blocks of determinants. These are on one hand the measures that are directly related to players' talent and on the other hand some variables that result from judgments by external sources.

Majewski and Majewska (2016) use the historical data of the market values from the web transfermarkt.de in order to identify the most important determinants of the market value of football players. In a subsequent article Majewski and Majewska (2017) connect these data from life cycles of football players, using real options method to determine the future hypothetical value of footballers' performance rights. The authors indicate that: "to make a proper analysis, we chose three kinds of players: in the phase of growth, in the phase of stabilization and the phase of dropping down in value. Such an assumption causes the necessity of choosing players with adequate features, for example: age, skills and the team played for, therefore, the length of the time series depends on the years and the performances of the footballer" (Majewski and Majewska, 2016, p. 117).

Furthermore, Herberger and Wedlich (2017), develop an analysis to measure players' market values from 915 players of the First and Second German Bundesliga, using estimates of market values by experts from the crowdsourced and international sport-database quoted further above (Transfermarkt.de). From their research we learn that players' market values reflect the expectations of stakeholders in the football industry involved in transfers and give implications for future transfer prices.

In this sense, Gerhards and Mutz (2017), demonstrate that success in national football championships is highly predictable and the market value of a team is by far the most important single predictor. However, for these authors "the market value of a team does not play the same role in all of the leagues. The lower degree of financial inequality in a league, the lower the impact of the market value on teams' performance" (Gerhards and Mutz, 2017, p. 223).

Finally, Peeters (2018, p. 18), in his research on the information obtained from transfermarket.com, revels that "several club officials have revealed privately that player agents tend to refer to Transfermarkt valuations during player contract

negotiations, indicating their increasing importance for the soccer player transfer market itself". Likewise, from his studio we learn that "forecasts of international soccer results based on the crowd's valuations are more accurate than those based on standard predictors, such as the FIFA ranking and the ELO rating" (Peeters, 2018, p. 28).

2.2. Hypothesis

There is a high controversy about whether the methodology of the price paid for the player's transfer rights resulting from different negotiations between football clubs, as is indicated in the IAS 38, is the most appropriate result to obtain the fair value in the financial statements of clubs. On the contrary, following previous studies (Majewski, 2016, Muller et al., 2017, Peeters, 2018) other measures, such as the market value provided by the *crowd's* valuations –such as that developed by the web Transfermarket.com-, are more objective and reliable estimates of market value, as a direct consequence of the participation in the process of many users.

Strong passions of participants engaged in football could imply emotional reactions resulting in over-valuations and under-valuations. Simmons et al. (2011, p. 2) propose four conditions for crowd wisdom: crowd members should be ''(1) knowledgeable, (2) motivated to be accurate, (3) independent, and (4) diverse''. Under these conditions, the predictions might approach an efficient market, and therefore an active market, which is indicated in the IFR13 as the best manner to measure the fair value.

So, our first hypothesis is:

> **H1:** *The wisdom of crowds or collective judgments valuation proceeding from transferrmarket, MV, incorporates enough factors, compared with transfer fee, TF, determining a high degree of objectivity and impartiality on its football player's valuation representing a good score of market value.*

Muller et al. (2017) found that crowd's valuations are slightly more accurate than a model based on transfer fees, especially for high-price players detecting disproportionate and unreasonable payments on the transfer market. A negotiation between two football clubs could also gather enough elements of decision, although these rights fees may well incorporate other negotiation elements (Gumb and Desmoulins-Lebeault, 2010; Oprean and Oprisor, 2014; and Putra and Wasistha, 2018), such as synergies, asymmetric information, negotiation power or different

economic conditions, especially between soccer leagues and players' clubs. In this way, we will check the following hypothesis:

H2: *Transfer values/fees incorporate negotiation elements while market values proceeding from the Transfer-market didn't do so. We suspect the following disturbing elements in Transfer value/fees:*

H2.1: *Negotiations between top selling clubs with lower ones could also lead to an increase in prices deriving from a loss in bargaining power by the smaller club against the larger club.*

H2.2: *In transfer values/ fees between clubs the player's agent has a relevant role, while in the market value this is not significant.*

H2.3: *The final price of the transfer value/fee might be influenced by the league where the footballer comes from, while this is not a differential aspect at the market value.*

Previous hypothesis could imply an inflationary process, authors such as Peeters (2018) indicate that several club officers have revealed privately that player agents tend to refer to transfer market valuations in contract negotiations but, obviously, the customers of transfer markets also take as reference the last transfer fee concerning a player, so both scores have to be correlated, then:

H3: *There is a contagious inflationary process in both: market values and prices of transfer values/fees, but this has been even higher in negotiated prices than in market values.*

3. Methodology and data collection

Our data collection is taken from Transfermarket.com. The site provides a database about different characteristics of the football players: the player's current and previous clubs, position on the field of play and personal characteristics; such as nationality, age, size and weight. Performance, in terms of a wide range of sporting variables like minutes played, goals, assists, passes, fouls, cards, changes, among others, and, finally, titles and cups.

Likewise, the internet site also updates the market value of each player throughout different football seasons based on the user valuation from posts since the last update and also the transfer fees when a football player is sold. Market values and transfer values/fees don't match: they are not the same and are not coincident in time either.

Our analysis is based on 227 observations of market values and 127 prices paid for player transfers as values/fees between clubs over 12 years. In both cases, the observations correspond to the three major European leagues: Spanish League 'La Liga', Premier League, and German League or 'Bundesliga'.

Following other previous studies such as Franck and Nüesch, (2012), Majewski (2016) or Wicker et al. (2013), we run a robust OLS regression for accounting the potential presence of heteroscedasticity. Moreover, as some observations (footballers) are repeated over time, for avoiding serial correlation we clustered errors using the VCE command in Stata (Hoechle, 2007).

3.1. Variables and model

Dependent variables

We have selected the 25 best footballers of the Spanish league, other 25 from the Premier league, and 26 from the German league. From their players' profile webpages we have extracted both, transfer values/fees (***TF)*** and market valuation (***MV)*** as dependent variables. The time period does not coincide for both, because there is no market value during 2003 and there is no transfer in 2004 for this set of players.

As a result of the information extracted, the observation period covers from 2004 to 2016 for market valuation, *MV*, and from 2003 to 2016 for transfer fees *TF*. To guarantee our conclusions and to solve this problem we analyze the observations, first separately, and after taking into account only when there are coincidental transfer rights and market valuations.

Independent variables

Firstly, to contrast **hypothesis I**, we use as dependent variable *MV* provided by the crowd's valuation of the transfer market. Obviously, we check the same variables for transfer fees, *TF*. We have classified regressors into three groups: 1- personal characteristics, 2- Player performance, and 3- Negotiation variables. Other characteristics such as the player's popularity distribute in the error term.

Personal characteristics

In line with previous works such as Wicker et al. (2013) and Majewski (2016), we consider: ***AGE***, of the player in years for each season. ***PPI*** that is the position on the pitch according to the following codification: 1- left midfielder, 2- central midfielder, 3- right midfielder, 4- central forward, 5- left forward, 6- right forward, 7- central defender, 8- left defender, 9- goalkeeper. As the impact of AGE in the model could change depending on the different positions we also introduce an interaction between AGE and PPI. ***SCORCLUB*** is the number of points given by the UEFA to the club in which the player plays as a proxy of the quality of this club.

Performance variables

The following *performance variables* have been previously tested by Franck et al. (2012), He et al. (2015), Majewski (2016), or Muller et al. (2018) as the main indicators for footballers: ***GOALS***, the number of goals scored in a period; ***GOAIN***, the number of goals scored in own goal; ***ASSIST***, the number of first level assists during the season; ***CARDS*****,** the number of yellow and red cards during the season, ***SUBST***, the number of times the player is substituted during a match throughout a season, ***CHANGE*****,** the number of matches when the player comes on the football pitch, as a consequence of a substitution. Lastly, Mourao (2016) found that teams with higher numbers of titles achieve more transfer-inflows, so we have introduced ***CUPS***, as the number of earning cups in the different competitions during a season. All information is provided by transfermarket. Considering that the value of the football player depends on the present but also the previous experience and performance, all these variables are measured as the average value of the current and the two previous years.

Negotiation variables

Furthermore, to contrast **hypothesis** and **sub-hypothesis II**, we have added, based on the ideas of Oprean and Oprisor, (2014) and Putra and Wasistha (2018) other necessary variables to capture *negotiation and distorting aspects*: ***NEGO***, we have created a new variable that captures the strength of negotiation between clubs, as the ratio between the UEFA points of the previous club and the incoming club. ***LEAGUE*** is a dummy variable coded as follows; 1- Premier league, 2- Spanish league, 3- German league. ***AGENT*** is a dummy variable that represents 0- the player has a professional agent, 1- the player does not have a professional agent or is represented by a relative. Lastly, ***YEAR***, is a set of year dummies. Equation (1) will be run for ***MV*** *and for* ***TF****.*

Table 1: Variable definitions for football players.

Variable	Description
Dependent Variables	
MV	Market value. Crowd's valuation of transfermarket
TF	Transfer values/fees paid by a club for the footballer
Personal Characteristics	
AGE	Age in years
PPI	Position on the playing field: 1- left midfielder, 2- central midfielder, 3- right midfielder, 4- central forward, 5- left forward, 6- right forward, 7- central defender, 8- left defender, 9- goalkeeper.
SPORCLUB	Club's UEFA points where the player play
Performance Variables	
GOALS	Number of goals in a season
GOAIN	Number of goals in own goal
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 exits the football pitch during a match along a season
CHANGE	Number of matches the player comes on the football pitch consequence of a substitution
CUPS	Number of official cups won in the different competitions during a season
Negotiation variables	
NEGO	Ratio between the UEFA points of the previous club and the incoming club
LEAGUE	1- Premier league, 2- Spanish league, 3- German league
AGENT	0- the footballer has a professional agent, 1- the footballer does not have a professional agent or he is represented by a relative
Time	
YEAR	Dummy variables for years between 2004 and 2016

$$MV / TF = \alpha + \beta_1 Year_t + \beta_2 AGE_i + \beta_3 PPI_i + \beta_4 PPI_i * AGE + \beta_5 SCORCLUB_i + \beta_6 GOALS + \beta_7 GOAIN + \beta_8 ASSITS + \beta_9 CARDS + \beta_{10} SUBST + \beta_{11} CUPS + \beta_{12} NEGO + \beta_{13} LEAGUE + \beta_{14} AGENT + \varepsilon_i \quad (1)$$

Finally, to contrast **hypothesis III**, we have introduced as dependent variable ***TF***, and as the independent variable ***MV***, ***YEAR*** and the rest of negotiation variables: ***NEGO***, ***LEAGUE*** and ***AGENT***, as we show in equation (2).

$$TF = \alpha + \beta_1 Year_t + \beta_2 MV_i + \beta_3 CUPS + \beta_4 NEGO + \beta_5 LEAGUE + \beta_6 AGENT + \varepsilon_i \quad (2)$$

4. Findings

The results of the descriptive statistics and correlation matrix are shown in Tables 2–3, while table 4 shows the results of the proposed model in equation (1) and table 5 shows the results of equation (2). Finally, figure (1) shows the evolution of *TF* versus *MV* during the analyzed period.

4.1. Descriptive summary

With regard to the descriptive statistics (Tables 2–3), the *MV* mean value has increased from 5.75 (Mill eur) (2004-2007) until 30.4 (Mill eur) in 2013-2016, while the mean of *TF* goes up only from 16.88 until 31.78 (Mill eur) in the same periods. Furthermore we find two important aspects: Transfer Market is always superior to Market Value, and, nevertheless, only *TF* decreased in the last recession period (2008-2013) while *MV* maintained his growing trend.

Table 2. MV and TF dimensions and descriptive statistics and frequencies for independent variables

	Market Value						*Transfer Fee*					
Period	*2004-2007*		*2008-2012*		*2013-2016*		*2003-2007*		*2008-2012*		*2013-2016*	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
MV/TF	*5.75*	*10.74*	*7.95*	*10.30*	*30.40*	*20.12*	*16.88*	*13.88*	*13.00*	*15.66*	*31.74*	*19.98*
AGE	*19.20*	*1.26*	*21.38*	*2.17*	*25.43*	*3.04*	*19.75*	*1.39*	*21.86*	*2.19*	*24.76*	*2.80*
PPI	*5.13*	*2.39*	*4.49*	*2.29*	*4.14*	*2.13*	*5.50*	*1.31*	*4.19*	*2.26*	*3.62*	*1.86*
GOALS	*3.98*	*4.17*	*6.09*	*6.90*	*10.32*	*8.94*	*6.94*	*4.33*	*6.53*	*7.28*	*10.22*	*6.58*
GOAIN	*0.03*	*0.13*	*0.10*	*0.56*	*0.07*	*0.18*	*0.00*	*0.00*	*0.06*	*0.14*	*0.05*	*0.13*
ASSIST	*1.82*	*3.36*	*3.87*	*4.35*	*8.05*	*5.57*	*4.29*	*3.92*	*4.83*	*4.92*	*8.98*	*5.92*
CARDS	*4.87*	*3.49*	*6.12*	*7.28*	*6.31*	*5.39*	*5.13*	*3.11*	*6.84*	*8.29*	*5.58*	*3.10*
SUBST	*6.07*	*5.22*	*7.03*	*5.19*	*10.30*	*6.28*	*8.25*	*4.00*	*7.67*	*5.45*	*11.57*	*6.36*
CHANGE	*4.12*	*4.42*	*5.11*	*3.68*	*5.55*	*4.14*	*5.40*	*4.49*	*5.10*	*3.48*	*5.82*	*3.77*
CUPS	*0.23*	*0.38*	*0.44*	*0.55*	*1.13*	*0.86*	*0.38*	*0.42*	*0.48*	*0.57*	*0.78*	*0.68*
LEAGUE	*2.07*	*1.03*	*2.02*	*0.90*	*2.19*	*0.80*	*2.00*	*1.07*	*1.94*	*0.83*	*1.91*	*0.84*
AGENT	*1.13*	*0.35*	*1.20*	*0.40*	*1.13*	*0.34*	*1.38*	*0.52*	*1.13*	*0.33*	*1.11*	*0.31*
POINT	*7550*	*8950*	*7499*	*11039*	*9727*	*12513*	*6940*	*7456*	*8062*	*11536*	*15020*	*12460*
SCORCLUB	*9875*	*10854*	*11995*	*12764*	*21369*	*13074*	*8750*	*8865*	*13038*	*12518*	*20532*	*12544*
NEGO	*1.31*	*1.00*	*1.41*	*2.39*	*1.02*	*1.92*	*1.26*	*1.22*	*0.95*	*1.24*	*1.32*	*2.00*
N	*15*	*15*	*99*	*99*	*113*	*113*	*8*	*8*	*64*	*64*	*55*	*55*

Values	Freq.	LEAGUE (%)	Freq.	LEAGUE (%)
1. Premier	73	32.16	50	39.37
2. Spanish	57	25.11	36	28.35
3. German	97	42.73	41	32.28
Total	227	100	127	100

Values	Freq.	AGENT (%)
Yes	110	86.61
No	17	13.39
	127	100

Regarding the independent variables, mean AGE rose from 19.20 during the period 2004-2007 until 25.43 years for 2013-2016 in market valuation, while in Transfer fees this amount rose from 19.75 to 24.76 in the same period. Most of variables are stable over time although we observe that variables as GOALS, ASSIST, SUBST and COUPS increase in both, Transfer Fees and Market Values. Finally, analyzing the relationships with the AGENT in the transfer fees example, an 86.61% of transfer operations are carried out with the intermediation of an agent, while only the 13.31% did not. Regarding the football leagues the largest number of transfers were in Premier league, as well the largest number of valuation comes from the German league.

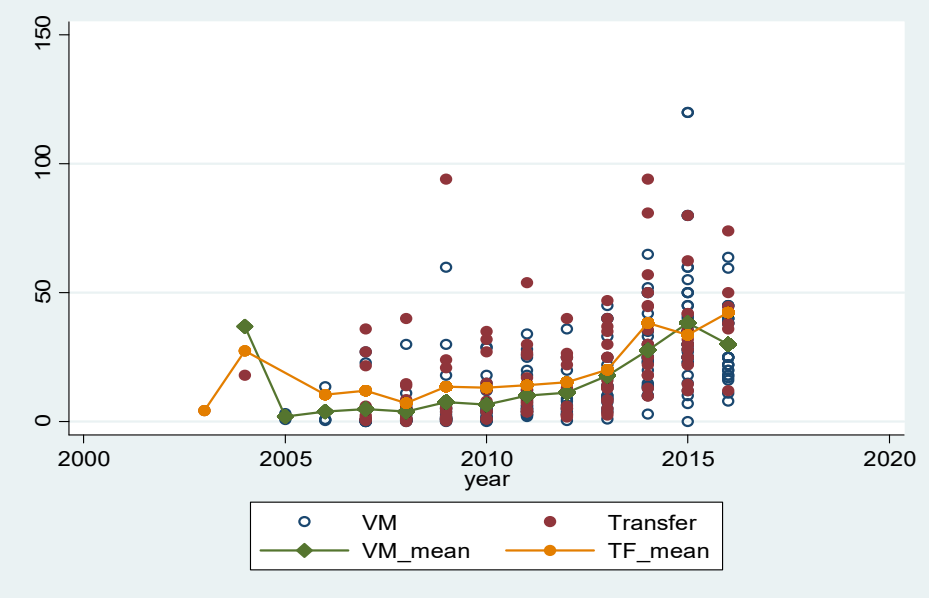
Table 3 indicates that most of considered footballers playas central midfielder or central forward followed by right defenders. Right and left midfielders together with goalkeepers are the positions with less number of players.

Table 3. Number of players by position on the field.

Values	Freq.	PPI (%)	Freq.	PPI (%)
1. Right midfielder	3	1.32	2	1.57
2. Central midfielder	76	33.48	48	37.8
3. Left midfielder	3	1.32	3	2.36
4. Central forward	58	25.55	32	25.2
5- Left forward	17	7.49	11	8.66
6- Right forward	9	3.96	6	4.72
7. Right defender	41	18.06	18	14.17
8. Left defender	12	5.29	4	3.15
9- Goalkeeper	8	3.52	3	2.36
Total	227	100	127	100

In figure 1, we can appreciate, in line with table 2, two remarkable facts for the analyzed period: 1- A steady rise in the mean prices of transfer rights with a decline in 2015, in parallel with the correspondent increase in market valuations. 2- In general, transfer rights are higher than Market valuation over the considered period

Figure 1. Evolution of Transfer Rights versus Market Values.



Before running the regression analysis we calculated Pearson´s correlation coefficients and Variance Inflator Factors (VIF) for testing the presence of the multicollinearity problem in the data set. Our results confirm the lack of this problem with VIF values being less than 2.5, and tolerance indexes being over 0.40 for all variables.

4.2. Regression analysis

Table 4 shows the results obtained from the regression model. We can observe, regarding personal characteristics, that the same interaction between age and PPI is relevant for the explanation of *MV* and *TF*, disclosing that age has a significant and positive impact depending on the player position. For example, in *TF* model more is paid for older central midfielder, left and right forward and goalkeeper, while in *MV* we can appreciate a similar behavior in left forward and goalkeeper. So obviously, AGE collects in positive players' experience for the most strategic positions on the pitch, but, at the same time AGE is negatively correlated with prices because also includes player' potential, at least in *TF* where AGE has a negative significant impact not present in the *MV* model, perhaps because in the database the maximum age is only 32 years old. The SCORECLUB presents a positive impact in both models, so for value a football

player is important, in addition to other personal characteristics, the club's ranking where the footballer plays.

On the other hand, results show that in *MV* the introduction of performance variables: GOALS, ASSIT and CUPS have a significant positive effect on *MV*. For example a GOAL implied a mean rise of 1.2 million in the football player's market value, an assistance to goal (ASSIT) implied one half million, and a new Cup, three millions more on average. Nevertheless, SUBST and GOAIN have a negative impact on *MV*: for each substitution during a match the *MV* fell 370.000 €, while an own goal penalized the player's cache in 3 million €. However in *TF* only ASSIST and GOALS had a positive impact in the transfer fee, very similar to the previous description.

Table 4. Market value (MV) and Transfer fee (TF) regression model. Equation (1)

			MARKET VALUE. VM		TRANSFER FEE. TF	
Variables	Hypotheses	Expected directions	Values	Robust Std. Err.	Values	Robust Std. Err.
PPI: 2. Central midfielder	Hypothesis 1	-------	0.44	38.91	-201.51 ***	98.54
3. Left midfielder	" "	-------	43.08	43.80	-138.19	97.84
4. Central forward	" "	-------	9.58	69.79	-170.29	105.23
5- Left forward	" "	-------	-14.35	37.40	-181.00 **	93.85
6- Right forward	" "	-------	69.56	37.61	-266.91 ***	102.17
7. Right defender	" "	-------	17.40	35.03	-140.19	101.90
8. Left defender	" "	-------	22.14	0.00	-127.15	93.03
9- Goalkeeper	" "	-------	-20.27	0.00	-239.65 ***	88.95
PPI*AGE: 2. AGE*Central midfielder	Hypothesis 1	-------	7.43	5.03	8.70 ***	4.12
3. AGE*Left midfielder	" "	-------	7.40	4.73	6.03	4.15
4. AGE*Central forward	" "	-------	5.73	4.71	6.78	4.48
5- AGE*Left forward	" "	-------	6.54 **	4.67	8.01 **	3.91
6- AGE*Right forward	" "	-------	8.07	4.56	12.43 ***	4.37
7. AGE*Right defender	" "	-------	4.92	5.54	6.32	4.25
8. AGE*Left defender	" "	-------	6.77	4.85	5.41	3.88
9- AGE*Goalkeeper	" "	-------	6.37 ***	4.19	10.95 ***	3.77
AGE	Hypothesis 1	-	-0.14	0.10	-7.76 **	4.07
SCORE CLUB	Hypothesis 1	+	0.01 **	0.00	0.01 ***	0.00
GOAL	Hypothesis 1	+	1.20 ***	0.27	1.27 ***	0.51
GOAIN	Hypothesis 1	-	-3.94 ***	1.61	-3.37	11.44
ASSIT	Hypothesis 1	+	0.53 **	0.26	0.58 **	0.51
CARDS	Hypothesis 1	-	0.12	0.17	0.36	0.40
SUBST	Hypothesis 1	-	-0.37 ***	0.22	-0.43	0.37
CHANGE	Hypothesis 1	+	-0.12	4.73	0.58	0.51
COUPS	Hypothesis 1	+	3.01 ***	1.56	-0.52	2.67
LEAGUE: 2. Spanish	Hypothesis 2	+ or -	2.53	2.78	-0.87	4.35
LEAGUE: 3. German	Hypothesis 2	+ or -	-2.24	2.75	-7.79 ***	3.67
AGENT	Hypothesis 2	+ or -	0.04	2.53	-8.02 **	4.63
NEGO	Hypothesis 2	+	0.24	0.31	2.05 **	1.24
Time fixed effects			Yes		Yes	
Intercept			-53.15	66.38	185.04 ***	98.94
Prob<= 0.01 ***						
Prob <= 0.05 **			Nº Observ= 227	R2=0.78	Nº Observ= 127	R^2=0.70
Prob<= 0.10 *			F(37,75) = .		F(34,62) = .	

Nevertheless, we would like to stress that variables about negotiation capacity were only significant in the *TF* model, in line with H.II. In fact, the results show the importance of belonging to the LEAGUE for *TF*: German league, that is the league least important in sports results and, therefore, implies a minor revenue and money capacity, presents a negative adjustment in prices while it did not in the market value, confirming H.II.I.

Another important factor in the negotiation of transfer fees is the *AGENT*, the negative impact of this dichotomous variable means that when the player did not have a professional agent or he had a family member the price paid was lower, confirming H.II.II. Finally, the bargaining power between clubs also appears as a decisive factor in the generation of prices paid by footballers. If the ratio of points between the seller club and the buyer club increases by one unit the transfer fee could increase two millions, stressing the importance of the result of the negotiations between different clubs on prices, H.II.III.

In our model, *MV* presents enough information to value the talent of the major football players of each analyzed league and, moreover, it incorporates a higher goodness of fit than the *TF* model. So, its capacity to approach an active market is demonstrated, even better than transfer fees due to the lack of other negotiation variables.

Despite in table 4 the dates for *MV* and *TF* have been taken from the same football players for each league, there are different moments in time for each one and they do not always match. So, we have taken matched dates for both examples and the results are coincident in table 5 with table 4. In fact, we found in this table that the observations about *TF* had a strong relationship with *MV*, but also with the rest of negotiation variables. *MV*, plus negotiations variables explain 86% of *TF*. To sum up, we can find the following results, in line with hypothesis III:

- On average, the transfer fee is higher than the market value, the coefficient is 1.16, so when the market value increases by one million, the transfer is 1.16 mill on average.

- According with table 2 and figure 1, we have noticed an inflationary process, in both transfer fee and market value, but table 5 also showed that the prices paid was stressing higher than market valuations.

- As we have seen previously, there are other conditions that increase or reduce transfer value versus market value: 1. Economic constraints are specific to each league; the cheapest transfer is negotiated in the German league 2. Intermediaries, depending on whether the type of agent is family or the agent is not defined, then, is

paid, as in table 8, 4.10 million € less over the intercept. 3. Finally, this table also confirms that negotiation between buyers and sellers depends on the points of the seller-buyer clubs, for each point that the value of the seller increases with respect to the buyer, the transfer fee has been increased by 930,000 €.

Table 5. Transfer fee (TF) regression model. Equation (2)

Variables	Hypotheses	Expected directions	Values	Robust Std. Err.
2006	Hypothesis 3	+	1.06	2.07
2007	" "	+	12.83 ***	4.19
2008	" "	+	10.03 ***	3.17
2009	" "	+	11.96 ***	4.38
2010	" "	+	9.00 ***	2.66
2011	" "	+	7.47 ***	2.96
2012	" "	+	8.32 ***	2.67
2013	" "	+	6.58 ***	2.30
2014	" "	+	10.33 ***	2.59
2015	" "	+	8.04 ***	3.03
2016	" "	+	20.02 ***	6.83
MV	Hypothesis 3	+	1.17 ***	0.09
LEAGUE: 2. Spanish	Hypothesis 3	+ or -	-2.72	2.02
LEAGUE: 3. German	Hypothesis 3	+ or -	-3.71 ***	1.72
AGENT	Hypothesis 3	+ or -	-3.81 *	2.31
NEGO	Hypothesis 3	+	0.93 ***	0.40
Intercept			-7.31 ***	3.22
Prob<= 0.01 ***				
Prob <= 0.05 **			Nº Observ= 127	R^2=0.86
Prob<= 0.10 *			F(37,75) = .	

5. Discussion

Firstly, transfermarket's market values have provided the source for several previous studies of the football players' valuation (Franck and Nüesch, 2012; He et al., 2015; Majewski, 2016; Muller et al., 2017; Peeters, 2018). In this way, regarding our results, market values (*MV*), provided by transfermarket, results were very useful, not only to know the valuation resulting from crowd judgement for each player -incorporating the preferences of general public-, but also because, in line with Muller et al., (2017), the analytical study incorporates the necessary personal and performance elements (AGE, POSITION, SCORECLUB, GOALS, ASSIT, CUPS, SUBST and GOAIN), to assign an implicit market value for each football player. Nowadays, transfer fees (*TF*) have a

tremendous impact on a club's chances, so the existence of a fair value proceeding from a synthetic but efficient market would be very important for practitioners, especially for managers of football clubs.

Despite authors such as Michie and Verma (1999b) have considered that for players acquired by football clubs the transfer fee paid is a fairly independent value for a player and represents an active transfer market, others like Amir and Livne (2005) argued that association with transfer fees implies a high degree of uncertainty, so it is not clear that this treatment is consistent with the asset capitalization criteria. In practice, IAS 38 only allows register for transfer fees paid for each footballer and, in our opinion, this represents serious drawbacks and limitations, requiring extra attention: 1- we show that *TF* incorporates other negotiation elements that may bias prices and players' valuations: economic conditions of the league, the agent, and the bargaining capacity between clubs (tables 4 and 5). 2- Otherwise, a credible value from data analytics based on comparable parameters could be implemented also for other players -following IAS 38 and IFRS 13- which have not been acquired, such as the *home-grown players or youth players*, and others like the players considered *free agents*. The latter, with the Bosman ruling, can bargain with others clubs and leave the club without any transfer fee.

In line with the above paragraph, despite IAS 38 not allowing, at the moment, the recognition of these assets because the club does not have control over them, authors like Lozano and Gallego (2011) or Kulikova and Goshunova, (2014) also stress the necessity of activating them due to the hidden value or wrong reflex of football clubs' balance sheet. Together with this, Michie and Verma (1999b), as well as Maglio and Rey (2017) compared the costs incurred for the youth academy with research and development costs because both imply long rewards and, obviously, future football club's success depends on them. In the same way, another argument in favor of assessing all human capital is given by Wang, Wang and Liao (2014), focused on free agency. They determine that expected payoffs of players and sports teams are both not influenced by free agency or transfer right, keeping the same correlation with the club's earning model.

In fact, Forker (2005) proposes the assessing of *home-grown players* giving an amortization pattern of Low-High-Low, matching the small net benefit obtained for the beginning of the football player. This could be increased in middle years and otherwise decreases for the last years. In our results of equation (1), we have discovered that age has a significant and positive impact depending on the player position in both, *TF* and

MV, implying the implementation of a non generic linearity amortization model by age. Therefore, the amortization, in sum, depends on the football players' capacity to obtain profits depending on each position in the team.

Secondly, In line with Tunaru et al., (2005, 2010) and Gulbrandsen (2011) we have found in tables 4 and 5 that *MV* and *TF* varies from club to club, depending on the total number of sporting points generated by each one. However, in the case of *TF*, the clubs must negotiate the corresponding transfer fee and, obviously, these negotiations have to be often influenced by the bargaining positions of buying clubs (Carmichael and Thomas, 1993; Gulbrandsen and Gulbrandsen, 2011; Swanepoel and Swanepoel, 2016). Taking into account this asymmetric vision of clubs in each football player, the biggest clubs try to attract better players to obtain through them an increase in the team's winning chances, and therefore club revenues, profitability and club performance (Ricci et al., 2015) increasing also their value (Amir and Livne, 2005; Forker, 2005).

This involves a fight for the talent among clubs. This fight will raise talent's prices, especially in the negotiation of smaller clubs with bigger ones, due to an inferiority position in the negotiation process -as we show in tables 4 and 5- creating an inflationary trend. In our study, in 85% of the cases the transfer fees were bigger than market valuation. Obviously, this process can damage the financial health of small football clubs, producing debts and deficits in most clubs (Dimitropoulos et al., 2016; Dimitropoulos and Koumanakos, 2015).

Furthermore, other previous research about the correlation of this inflationary process and the negotiations between clubs, can be found in Speight and Thomas (1997), where the differences between negotiated and arbitrated settlements in the footballers transfer market shows that arbitrated settlements deflate transfer fees compared with negotiated transfers. This trend would stop only when prices rise up to a level that the biggest clubs would not be interested in them as a consequence of a lack of business. Nevertheless, the sport talent implies a large dose of popularity creating superstars (Franck and Nüesch, 2012): press quotations, and a better sponsorship. This allows the big clubs and players to capture incredible numbers of revenues for advertising and merchandising.

Thirdly, Gerrard and Dobson (2000) stress the correlation between monopoly rents and transfer fees. Pinnuck and Potter (2006) found a positive correlation between the on-field football success of clubs and their level of off-field financial performance. Mnzava (2013) concluded that intangible assets investments affect both sporting

and financial performance, because it allows football clubs to achieve a sustainable competitive advantage and also a superior financial performance. Regoliosi (2016) found strong association between registration rights of worthy players and operating performance; and, lastly, Scafarto and Dimitropoulos (2018) go deeply into the relationship between human capital investments, especially the decision on spending on playing talent and financial performance.

Therefore, following Oprean and Oprisor (2014), International Accounting Standards (IAS) do not provide the stakeholders with enough information to take economic decisions, because in football business, the main value driver, i.e. the human capital, cannot be reflected. So, according with Morrow (2013), a new model has to be developed for football in a social and organizational context to achieve broader approaches in their financial reporting for stakeholders, in which the acknowledgment of the value drivers, as the investment in football players should have an important role. In line with Michie and Verma (1999b), these assets should not be excluded from the financial statements just because they are difficult to value.

Finally, according with previous ideas, on the basis that the active market is the main determinant of human capital recognition (Lenciu and Lenciu, 2017), we propose enough changes in International Standard Accounting, IAS 38, to allow the proposed task. Another possibility would be the elaboration of an intangible capital report, parallel to the balance sheet. In any case it is very necessary to collect the fair players' value of the football clubs, *MV*, from an analytical and statistic model with enough sporting variables to capture the feeling and trend of the market, for all football players in a club, thus, also for internally developed and free agency –free agent players-.

To solve the requirements of IAS 38 with respect to prices paid by intangibles represents the best measure of them, in the specific case of a player that passes from a transfer fees, the difference between *TF* and *MV* could be registered as good-will, an intangible whose value is fluctuating over time because it is collecting only synergies or the different vision of a particular concrete football club for a football player respect the market, as well as other negotiation factors. Each year good-will will be subject to a review of the football player' performance, and therefore: 1- If the player's market value increased, the player´s value in the balance sheet would go up, and the counterpart, the good-will would descend, even disappear. Otherwise, 2- If during the contract life, the market value would descend less than the transfer fee paid, the corresponding impairment test would collect the loss, first with goodwill going down until it disappear, and after the own value of the player.

6. Conclusions, limitations and suggestions for future research

Firstly, based on our research, the *MV* process behind crowd judgments provided by the transfermarket.com is efficient to calculate the fair value of football players. In general, the *MV* model presents more accuracy than the *TF* model, and variables about sport performance are more significant (H.I). However, with regard to personal variables, despite SCORECLUB being significant in both models, the rest of personal variables (AGE, POSITION, AGE*POSITION) are only partially significant, with better strength in *TF* than in *MV*.

However, variables about negotiation capacity only being significant in *TF* with the consequent lack of impartiality (H.II): The German league presents a negative adjustment in prices (H.II.I), AGENT also implies the price paid was lower when the player did not have a professional agent or he was a family member, (H.II.II). Furthermore, the ratio of points between the seller club and the buyer club is significant, stressing the importance on prices of the negotiations between different clubs (H.II.III). We also have detected a dangerous inflationary process of *TF* with respect to *MV*, damaging smaller clubs, due to an inferior negotiation position (H.III).

Secondly, despite the large percentages of our models' significance in explaining *MV* and *TF*, in futures researches we can incorporate other relevant dimensions for some football player's positions, as defenders or goalkeeper. Given the increasing availability of data about football players' performance, like Opta (www.optasports.com) which collects amounts of detailed performance data, such as the clearances, blocks, and interceptions saves to shots ratio of the goalkeeper; number of times the ball was caught by the goalkeeper, etc.

Thirdly, important consequences can be derived from our work for practitioners and researches. In this sense IAS 38 only allows registering of the transfer values/ fees paid for each football player involving overvalued transfer rights with respect to the corresponding market value, and, otherwise, the undervalued price of the rest of sporting talent: internal developing and free agencies. This situation involves an inadequate reflex of investment capital in financial statement of football clubs, leading to a wrong structure of liability and equity. For example, clubs with many transfer fees could have an excess of debt, while other clubs, based on developing internal talent, could have an opposite situation: fewer liabilities than they need to perform an integral development and growth.

In this line, we recommend that accounting regulators implement important changes in IAS 38 incorporating an especial treatment for the talent in football business to allow football clubs to disclose in the balance sheet their human capital, incorporating the valuations of all football players, based on the adoption of data analytics to support them.

European football governing body -UEFA– is introducing Financial Fair Play (FFP) regulations to encourage clubs to adopt a more economically rational and sustainable approach to their activities. So, another possibility is that UEFA will develop a generic process based on data analytics to accomplish the IAS and IFRS 13 requirements, at least in an intellectual capital inform, parallel to balance sheet, capturing all the structural and social factors that stakeholders requires, specially referring to all human sport capital in football business.

The current accounting system leads to a lack of competition in football clubs: smaller clubs are at a disadvantage because larger ones can pay big amounts by transfer rights, reflected in their balance sheet, and obtain credits to finance them, feeds themselves more and more, helping to create an oligopolistic situation. Obviously, big clubs do not have any incentive to change this model. Therefore, regulators, such as UEFA, have the responsibility and the power to balance this situation allowing football clubs, in a more rational process, the recognition of all their sporting human capital.

Following these ideas a future research line can assess the hidden value of the intangible capital of football clubs, as the difference between *MV*, based on crowd valuation, and the values in balance sheets, as well as the correlation between this intangible capital and their economic variables, such as income, profit level, cash flow, growth, leverage, etc.

Finally, we have stressed the differences between market values, *MV* and transfer fees, *TF* these findings can help clubs in a buying and selling process to take into account the most appropriate factors in their negotiation strategies, and also to research for developing other models based on business modelling, incorporating a combination of real options and game theory to recover other negotiation variables in the calculation of a final price.

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