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Comparative analysis of income trends and perceived value of squad of the highest turnover European football clubs (2010-2019)

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Abstract. The purpose was to analyse the income variation of the 13 top clubs of Deloitte Football Money League Report (2019) as well as the variation of the perceived value of their squad, obtained from the website www.transfermarkt.es during 9 seasons. Friedman's two-way analysis by ranges of selected samples and Wilcoxon W tests were used to measure the evolution and relation among the clubs' income and perceived value of players. The income of clubs was deflected according to inflation (CPI: 2016) and market value was adjusted to a 20 players squad. Market value and income have a significant positive variation from one year to the next (p = .000). We found differences between both variables only in the last 2 years on the period analysed (2011-2019). Market value has suffered an increase higher than expected. This fact should make football managers reflect on how to control constant inflation in the transfer market.

1. Introduction

In recent years there has been an increase in the income of the main European football clubs (Deloitte, 2019; Solberg, 2016), and also an increase in the market value of footballers, confirmed by the extensive bibliography that links both variables (Kuper and Szymanski, 2014; Rodríguez, 2012; Sánchez, Barajas, and Sánchez-Fernández, 2019). In the literature there are also multiple confirmations of the relationship between income and results (Hall, Szymanski, and Zimbalist, 2002; Pawlowski, Breuer, and Hovemann, 2010; Plumley, Ramchandani and Wilson, 2019). However, there are other factors, aside from the economic ones, that play a role when it comes to obtaining a highly valued team, among which is the capacity of its manager or its coaches (Pérez-González, 2017).

2. Literature review

Transfer Market

Sport is, in many ways, a perfect laboratory to try to obtain intuitions about the way in which humans make decisions (Palacios-Huerta, 2019). One of the biggest concerns of managers and coaches is to get the best possible staff for their club; but these are subject to numerous biases (Varela-Quintana and Del Corral, 2019) that can influence the decisions they make when putting together their teams. Bias such as projection bias or over inference can make you decide to buy a player for a price higher than its value. Another fundamental factor when making signings is the situation of "Dominance or distress" (Szymanski, 2019) in which the club is at that time. Clubs that have achieved their goals or that have been close to doing so have less pressure than those who did not. Losers are subjected to the double urgency of having to make changes and the knowledge that exists in the market of that situation, which usually leads inexorably to the assumption of cost overruns. Some types of player overvaluation have been described in the literature: for example, the overvaluation of players of some nationalities, the possible overvaluation of mature players, the overvaluation of players when they respond to some important need in any of the lines of a club or should replace a notorious exit (Kuper and Szymanski, 2014). In the sense of the latter bias, Palacios-Huerta (2019) highlights that the best players, those with some distinctive factor, are usually overrated.

Another important aspect in the transfer market movement is the taxation and salaries of the players (Palacios-Huerta, 2019). Some countries and certain clubs offer economic incentives that are very attractive to football players. Being the best offer from a sporting point of view is no longer a guarantee to attract talent. In the literature and in practice, different measures have been studied and applied to improve the competitive balance of competitions (Késenne, 2015, 2019): the salary gap - not used in Europe - or the reservation clause are some of these options to restrict the mobility of players.

Simmons and Berri (2019) mention that Szymanski (2015) argued that the transfer market should not exist, since it restricts workers' free mobility, enabling owners to withhold most of the capital gain. According to him, if big clubs exchange players with each other using large transfer fees, an uneven and uncompetitive Market will emerge. Other authors advocate the existence of the transfer market, since they believe that the payment of the transfer compensates for the loss of a valuable asset (Terviö, 2010).

The last factor that is affecting the football market is the club's academies management. Successful football clubs are increasingly placing value on their youth academies. In many cases, clubs own facilities that accommodate several youth teams, including those with children who are under 10 years old. Clubs in which many youth academy players make it to the first team save large amounts of money that they would otherwise invest in signing players. An illustrative example of this situation is Club Atlético de Madrid, which has managed to be in the Top 5 of the most valuable squads despite earning less than one third of the revenue of its direct competitors (Pérez-González, 2017).

Finally, sometimes it is very difficult to know the real market value of a player or his real

transfer fee. Therefore we must highlight the role of The Transfermarkt website (www.transfermarkt.de). Transfermarkt is a German-Based website and the leading website on the football transfer market. The site offers, within other general football-related data, the estimations of market value at the individual and team levels for most professional football leagues, based on the judgement of fans (Müller, Simons and Weinmann, 2017). This source has also been used in recent scientific studies (Peeters, 2018) as providing reliable game performance indicators and has been described as a good predictor of real market values (Herm, Callsen-Bracker, and Kreis, 2014). However, there are some controversial aspects that could affect directly to the perceived (and real) market value of players. On the one hand, the main issue is the lack of knowledge and experience, as well as the impulsive behaviour of some registered users (Lorenz et al., 2011), and on the other hand, possible attempts at manipulation by agents in lower categories such second division.

Football Clubs' Income Sources

The income of football clubs can be divided into 3 main channels, following the classification proposed by Deloitte: Commercial, Broadcasting and Match Day.

Below we show the evolution that the different types of income have had over the last 10 seasons for the first 13 teams in total revenues of the 2019 Deloitte Football Money League Report.
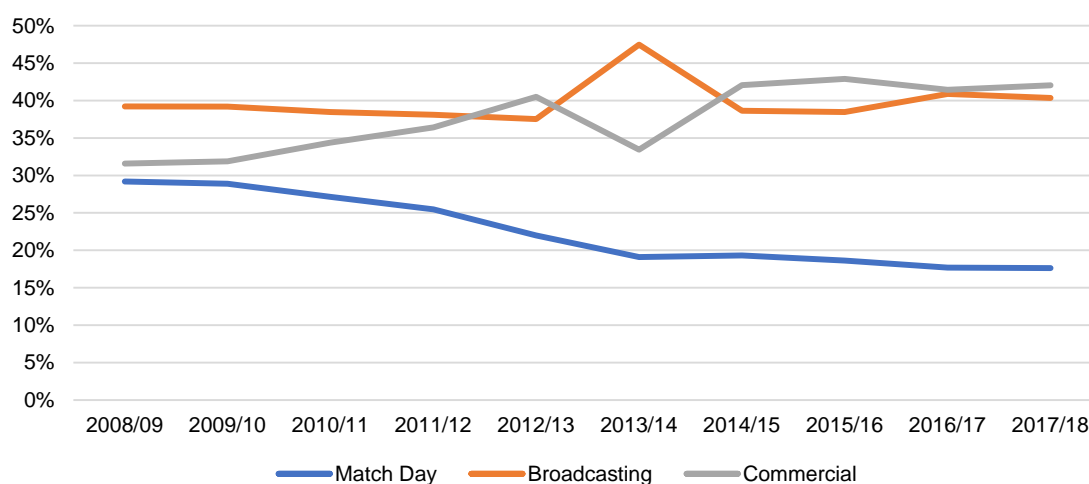
Figure 1. 10-year evolution of the percentage of income of the 13 clubs with the highest profits in the Deloitte Football Money League 2019. Source: Own elaboration, Deloitte data (2010-2019).

Only a couple of decades ago, more than 80% of revenues came from Match Day, mainly ticketing revenues, since the exploitation of stadiums for other uses was very residual. For this reason, Santiago Bernabéu decided to build a stadium with 100,000 spectators (Sánchez et al., 2019). Today, ticketing has ceased to be the main entrance of funds in the main clubs, but the German stadiums for the 2006 World Cup or the inauguration of the Emirates Stadium of Arsenal in that same year, served as an example for many clubs to make significant investments in both construction and remodeling. These clubs have also agreed to obtain

income through the Naming Rights or the exploitation of their facilities both in Match Day and in other uses: catering, congresses, shopping centers, hotels, etc. The Wanda Metropolitano of the Atlético de Madrid, released in 2017, or the expensive remodeling projects of the Santiago Bernabéu (Real Madrid CF) and Nou Camp (FC Barcelona) stadiums are good examples of this.

But the Match Day, as important as it is, represents an increasingly lower percentage of club revenues, which are increasingly coming from broadcasting and commercial. Television broadcasting rights have grown dramatically in the last decade in all major football leagues. For their part, the big clubs are constantly looking for new markets and followers to improve their income through sponsors, merchandising, tours, etc. TV rights are centralized in the major European leagues, including the Spanish football league. This league chose the centralized option in 2015, in spite of the reluctance of Real Madrid and Barcelona, the two biggest Spanish clubs. Centralization has promoted revenue growth in all clubs, and it has also reduced the gap between the small and big football clubs, since small clubs can now access the transfer market with a larger budget.

To this end, Real Madrid has been working side by side with the American technology giant Microsoft, whose mission was from the beginning to undertake a "digital transformation", to place fans at the epicenter of all the club's activity, enabling them to participate in it. The objective is to generate income in this way. Real Madrid is not just a sports club. It is a gigantic means of communication, but not only sports, also entertainment, and a huge social platform.

The rise of annual revenue in the main European football leagues seems to indicate that this is a sector benefited by globalization, which has emerged as a result of new communications technology (García del Barrio and Tena Horrillo, 2019). The importance of media visibility and fan pressure in the purchase of players represent factors that promote price increases in the transfer market.

In spite of the weak competitiveness of European football leagues (causing strong imbalances), revenues have not stopped growing over the last years (Fort, 2019). Different studies show that European football clubs aim to maximize victories, not profits. Lago, Simmons and Szymanski (2006) and also García del Barrio and Szymanski (2009) showed that there was a clear quest for the maximization of victories in leagues such as the Spanish and the British league. More recently, Fort (2019) argues that the pressure to achieve victories is much higher in Europe than in the USA, in line with other cited studies. In addition, other researchers claim that the pressure to achieve wins is contrary to a management policy focusing on long-term performance (Buraimo et al., 2015). These facts explain the strong proclivity of European clubs to reinvest their profit in purchasing talented players, which affects prices. The law of diminishing returns shows that there is a threshold in which the marginal performance of each new unit of talent will not provide a new unit of utility. Media visibility is strongly correlated with the sporting talent of the club.

But not everything has been revenue growth. The expenses of the clubs have grown linearly and many of them have been in economic difficulties for various reasons such as

mismanagement, the dizzying increase in the wage bill, the cost of staff renewal or the purchase of certain football clubs for tycoons or states. For all these reasons, some international organizations, such as FIFA, have proposed account control mechanisms, seeking sustainable income and that comes exclusively from the football business (Mareque, Barajas, and López-Corrales, 2018; Sánchez et al., 2019).

Finally, the pyramidal system of promotions and relegations used in European leagues (Szymanski, 2019) is another strong impediment for the maximization of profit. On the other hand, the American league system, which does not rely on promotions and relegations, facilitate agreements between clubs to maximize their profits.

Thus, based on the growing and changing economic situation of European football clubs and the importance of the testing of crowds in the players' market value, this research aimed to analyse the income variation of the 13 top football clubs in the ranking of the last Deloitte Football Money League Report (2019) during the last 9 seasons, as well as the variation of the perceived value of their squad, during the same period, and if there is a relation between both factors.

3. Methodology

Design

Transfermarkt (www.transfermarkt.com) is the leading website of the football transfer market. The site offers, within other general football-related data, the estimations of market value at the individual and team levels for most professional football leagues (Müller, Simons, and Weinmann, 2017). The web, which establishes the market value of players based on registered users, has been used in other recent research (Peeters, 2018) as a reliable indicator related to game performance (Herm, Callsen-Bracker, and Kreis, 2014) and as a good predictor of the real value of players (Torgler and Schmidt, 2007). On the other hand, Deloitte Football Money League Report, published just eight months after the end of the 2017/18 season, is the most contemporary and reliable independent analysis of the clubs' relative financial performance (Deloitte, 2019) and its objective is to profile the highest revenue generating clubs in the world of football.

For our study, which analyses the income and the value of players of the last 9 seasons, we have consulted the Deloitte Football Money League Reports from 2011 to 2019. Otherwise, Transfermarkt holds information about the value of football players for the last 9 years.

Table 1. Total Data of Income and Perceived Market Value used in the study.

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total Data obtained
Total Data of Value Players obtained from Transfermarkt	307	316	314	298	305	295	296	296	313	3.812
Total Data of Income obtained from Deloitte	13	13	13	13	13	13	13	13	13	117

Statistical Analysis

The evolution of the income obtained from The Deloitte Football Money League Reports and the value of the squad (consulted on February 2019) of the 13 selected clubs was analysed, using Friedman's two-way analysis by ranges of selected samples. The income of clubs was deflected according to inflation (CPI: 2016). To study the relationship between the two types of variables, in the section of the 9 years of study, Wicolxon W was applied for related samples. For both tests, $p < 0.05$ was considered statistically significant.

4. Results

In table 2 we show the average value of the players, of each of the 13 teams analysed, throughout the 9 seasons object of our study. As indicated previously, these data have been obtained in Transfermarkt and are deflated to inflation (CPI: 2016).

Table 2. Average Value of Player by Club and Season (M€)[a].

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Real Madrid CF	22,3	24,6	25,2	23,8	29,9	36,8	37,7	49,1	41,3
FC Barcelona	26,8	29,8	24,6	25,6	27,0	28,4	34,7	48,9	49,5
Manchester United	14,7	15,1	17,9	19,8	17,1	17,1	20,4	30,8	30,3
Bayern München	13,5	16,4	17,8	22,6	25,0	26,0	29,5	36,4	30,4
Manchester City	15,5	18,9	19,9	20,9	20,7	21,9	23,0	41,6	45,9
Paris Saint-Germain	5,3	10,1	13,0	17,9	19,5	19,1	17,9	34,7	34,5
Liverpool FC	16,4	10,9	11,5	12,7	12,1	13,5	15,6	22,5	39,3
Chelsea FC	21,2	19,3	15,3	20,6	22,6	23,3	20,3	34,6	35,1
Arsenal FC	13,8	11,0	11,2	13,8	15,8	15,9	18,4	23,2	25,1
Tottenham Hotspur	11,5	11,3	12,8	12,2	11,8	11,4	16,2	30,8	34,0
Juventus	11,5	10,9	11,6	15,3	15,8	16,2	16,7	26,4	33,8
Borussia Dortmund	5,6	7,4	10,8	13,7	13,8	14,5	12,2	15,4	22,7
Atlético de Madrid	9,4	8,1	8,7	10,7	13,2	14,9	19,6	33,8	40,2

a: Deflected according to inflation (CPI: 2016).

On the other hand, in table 3 we show the income of each of the last 9 seasons of the 13 clubs. As indicated, the data have been obtained in the Deloitte Football Money League Reports of each season and are deflated to inflation (CPI: 2016).

Table 3. Income by Club and Season (M€)[a].

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Real Madrid CF	482,5	516,9	538,2	543,8	583,6	613,7	641,2	693,5	764,4
FC Barcelona	437,9	485,9	507,2	505,8	514,6	597,3	641,3	666,5	702,8
Manchester United	384,8	395,6	415,7	444,1	550,1	553,3	712,4	695,2	678,0
Bayern München	355,3	346,5	386,8	451,9	517,7	504,8	612,1	604,3	640,5
Manchester City	168,1	182,8	299,9	331,4	440,1	493,6	542,7	542,5	578,6
Paris Saint-Germain	90,2	107,8	231,5	417,9	503,6	512,1	538,6	499,8	551,5
Liverpool FC	247,8	219,2	244,9	252,1	324,9	417,3	417,5	436,1	522,9
Chelsea FC	281,5	269,3	338,7	318,0	411,9	447,3	462,6	440,0	514,8
Arsenal FC	301,5	270,7	304,8	297,9	381,6	463,8	484,4	501,3	447,1
Tottenham Hotspur	160,9	195,1	187,1	180,3	229,2	274,2	289,2	365,6	436,0
Juventus	225,5	165,9	205,2	285,5	296,7	345,0	352,7	417,1	402,0
Borussia Dortmund	115,7	149,3	198,6	268,5	277,7	298,8	293,6	341,9	322,9
Atlético de Madrid	137,0	107,8	113,3	125,8	180,4	199,3	236,4	280,1	309,9

a: Deflected according to inflation (CPI: 2016).

First, applying Friedman's two-way analysis by ranges of related samples confirms, as we assumed, that both market value and revenue have a significant positive variation from one year to the next (p = .000). Applying the W of Wicolxon for related samples (table 4), we verify that there are no differences in the average income and market value adjusted to 20 players in the first 7 years. However, in the last two years, there are significant differences, with a negative sign. That is, the workforce values are not related to income.

**Table 4.** Average Value and Wilcoxon test of Clubs' Revenue and Squad (20 players) Perceived Market Value.

	2010/11	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**
Average Revenue S/Deloitte (M€)[a]	259,2	261,1	303,8	338,3	398,7	437,5	476,1	496,3	519,2
Average Perceived Market value of the squad (M€)[a]	14,3	14,8	15,3	17,6	18,9	19,7	21,5	32,4	34,7
Z	-1,153[b]	-1,433[b]	-,035[b]	-1,083[b]	-,454[c]	-1,642[c]	-1,363[c]	-2,551[b]	-2,970[b]
p value	,249	,152	,972	,279	,650	,101	,173	**,011**[*]	**,003***

a: Deflected according to inflation (CPI: 2016).
b: Based on positive ranges.
c: Based on negative ranges.

In figures 2 and 3, we can observe the evolution of clubs' revenue and perceived market value respectively, and how there is a clear growing trend in all clubs, highlighting the scenario of PSG and Manchester City in terms of revenue, and Atlético de Madrid on perceived value of players.
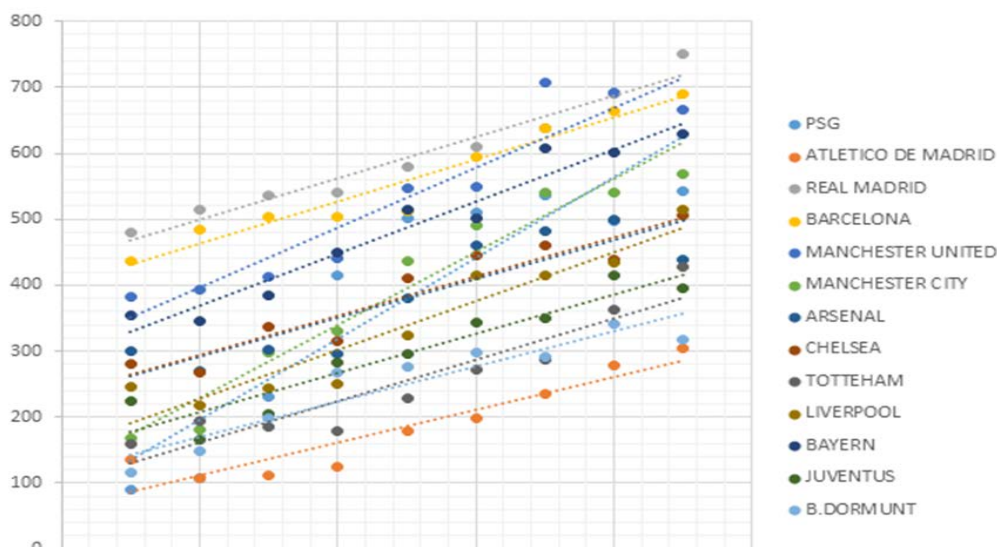
Figure 2. Evolution of club's revenue during 9 seasons (2011-2019) (M€).
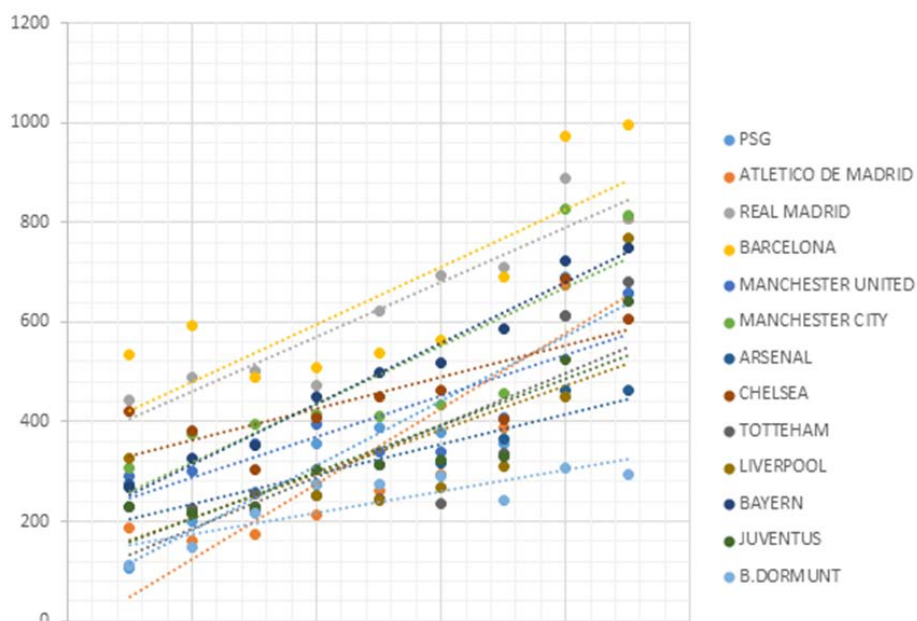
Figure 3. Evolution of perceived market value during 9 seasons (2011-2019) (M€).

5. Conclusions

There has been a statistically significant increase, both in club revenues - they have grown 100.3% in constant € in 9 years - and in the market value of players - the average value of players has grown 97, 1% in this period.

For a few years, revenue growth and staff valuation had a statistical relationship, as expected. However, in the last two seasons we did not find a statistical relationship between income and staff value, something that could be explained by the large price escalation in the market, with cases as significant as the PSG signings, for €222 and 188 million of Neymar and Mbappé, in the summer of 2017, which has caused an anchoring effect on the price of the costs of the players from that moment. It has also contributed to this lack of relationship between income and value of players the significant revaluation of the Atlético de Madrid squad, well above the growth of their income, being in the last 5 years the Club with greater efficiency (Pérez-González, 2017) of European football. However, Sánchez, Barajas and Sánchez Fernández (2019) showed a clear increase in the percentage of expenditure in salaries over the club's turnover, especially at France Ligue 1, up to 2017 season. This authors also argued about the real and efficient application of the Financial Fair Play, consisted on the regulation that controls the economic wealth, salaries and transfers in FIFA and its governing bodies. Nevertheless, there is a clear association between players' salaries and transfers fees (Kuper and Szymanski, 2014). Thus, to our knowledge, this is the first study that makes a relation between perceived market value and top clubs' income for a long timeframe.

Our results suggest that it is becoming necessary that the leaders and decision-makers in the clubs take into account the assessment biases to avoid incurring them, being especially to find the optimal moment to make buying and selling decisions in the market; and think about the

improvement of their academies. However, more analysis about transfer market values and club's income are needed in the coming years to check in the future that the differences identified in this study period remain in time. This paper shows a very incipient analysis, and only provides initial evidence of a possible pattern in future football.

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