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The International Competition Effect on the Player Transfer Market:

A Special view on the Big5 vs Rest of the World Leagues

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Abstract

This paper tries to examine the degree to which CEOs are influenced by cognitive biases applied to the context of the international football industry. To do so, the research will concentrate on whether transfers based on player performance after international competitions like the World Cup are overvalued. A set of behavioural and non-behavioural phenomena are covered to provide background to the investigation. A sample was collected covering data on the last three international competitions and preceding domestic competitions and a mathematical analysis was conducted to draw the key conclusions of the paper. It was found that clubs behave in a manner that is compatible with rational expectations. This paper facilitates a financial study on the rationale behind the decisions of football clubs in the market for footballers.

Keywords

International Football, Behavioral biases, Transfer Market

Introduction

The literature on behavioural economics and finance relates to Roll (1986) and Heaton's (2002) first papers. These investigated the degree to which corporate investment decisions were affected by common types of managerial biases like optimism, overconfidence or a winner's curse. Heaton (2002) found that optimism could result in an inefficient capital allocation policy, either in the form of under or overinvestment. More recent studies have shown that overconfident CEOs appear to select higher leverage ratios for their firms or prefer internal financing in the form of earnings rather than debt financing (Malmendier and al, 2007). According to conventional theorists of corporate finance, these cognitive processes pinpoint towards irrational or non-optimal investment decisions. Therefore, the psychological evidence motivated the literature to clarify whether decision-makers are systematically vulnerable to personal attributes, leading to distortions in the choice of invested capital.

In this context, the football industry seems the perfect landscape to study the phenomenon since it has become a huge business in the past two decades, involving large investments with directly observed consequences. Professional football teams are no longer just clubs, but rather profitable businesses with shareholders, administrators, high-volume revenues, and clients. In reality, many of the top tier club's shares have outperformed the broader stock market, backed by sales from the player transfer market, sponsorships, commercial deals, and broadcasting rights. All things considered, management tables are continually under pressure to obtain results, being assessed by the relation between quality investments and realized performance.

One way to tackle this is to consider transfers following short international competitions like the World Cup or the Euro Championship, that are highly visible and salient to audiences but involve relatively few games compared to clubs' domestic competitions. These have been the biggest shopping window for football's talent, but just how much information can they disclose about the potential of a player?

Anecdotal evidence suggests that clubs get carried away and make mistakes. For example, Alex Stewart, who penned *Football Manager meets Moneyball* argued that “The issue with signing players after international tournaments is that they are usually over-valued by their clubs if they do well, or feel they should command a higher wage, based on the exposure a good World Cup brings. The issue with that is it’s a tiny sample size under conditions that don’t match league football. In addition, it’s with a group of players and quite probably in a system that’s not going to be replicated at club level. So, you end up paying over the odds for the guy who scored one amazing goal in a tiny set of games, with other players around him and in another formation, and then are shocked when it doesn’t work out. World Cup goals stick in the mind, which means you pay – unwisely – more attention to them than a league performance over a season. It’ll happen, but it’s not good business”. Thus, this paper studies whether transfers based on an international competition performance are overvalued, through an empirical approach.

One challenge of the proposed study is that performance does reveal information about player quality, even if involves few games, so a good performer would be expected to gain in value even if decisions are purely rational. To test this, a distinction between the leagues from which players originate is made. The division was made between big5 leagues (France, Italy, Spain, England, Germany) versus rest of the world leagues. If information is the dominant channel, then the effects should be driven by players coming from weaker leagues, as these players have few opportunities to show their skill against high quality opponents in a domestic competition. As for big5 leagues, the information channel should be irrelevant, since they already compete regularly against the best teams and players. So, an effect on big5 players would be evidence of behavioural factors at play.

Literature Review

Players are the most important investments in professional football from both a sporting and a financial standpoint. Although professional athletes in American football or baseball are often

exchanged for other athletes or for potential draft picks, football players are typically traded for cash settlements, known as transfer fees (Frick, 2007). Accordingly, the transfer market operates under two structured blocks – the precision of foreseeing the future and bidding competitively. These bright lights will be the roots under the development of the thesis, which come interconnected with some of the cognitive biases previously pointed. While still ambiguous to question if any of these biases are to be indicted for decision making, they still invigorate the underlying issue of deviating from fully rational decisions.

In the psychological field, optimism is one of the most ubiquitous effects in human behaviour, closely associated with predicting the future. It is defined to be a personal trademark, when individuals are likely to accept that a particular action will result in a certain positive result. Following Baker and al (2007) and Hackbarth (2009), optimistic leaders tend to overestimate the growth prospects of their firms, pursuing riskier investments in R&D to increase competitiveness. A natural motivation for this is that optimism is a direct product of wishful thinking. Nevertheless, some studies have found no proof that the desirability of an outcome swells the perceived likelihood - wishful thinking may be nothing but an elusive effect.

It is also important to consider how optimism and precision are most often different. Intuitively, optimism is the propensity to anticipate the most ideal result so for them to be identical it would require the best result to be the most probable result. Rationally, accurate forecasts would assist individuals with choosing where to invest their assets, limited time or avoid disasters and losing a great deal of invested money (Forsyth, Lawrence, Burnette, & Baumeister, 2007). Likewise, Baisand al (2005), Chuang and al (2009), found a positive relationship between uncertainty and optimism, concluding that people usually do not perceive the limits of their cognitive capacities nor apply an adequate load to the globe's vulnerability.

Overconfidence is another concept tapped in the foresight of the future. Overconfident conduct can be defined as the habit of overestimating the probability of achieving an objective based on

the abilities and attributes of one's beliefs. Ho and Chang (2009) found a beneficial correlation between corporate over-investment and over-confident CEOs because these types of leaders sometimes feel underestimated by the capital market, thereby being more likely to follow riskier behaviour. Schrand and Zechman (2010) underline that over assessors of individual aptitudes tend to determine financial decisions that are inconsistent with the features of the business. In the football industry, managers frequently think their experience is more robust than it actually is, investing millions on the acquisition of players who later may not fit the ideology of the coach or the club.

For this paper, it is also important to clarify how confidence varies with the amount of available information. It can be judiciously deduced that confidence in the decision-making will improve when individuals are furnished with more information, nonetheless, this confidence often expands more than the real limit of predicting the future. To test the validity of this argument, the actions of stock market investors have been analysed as a paradigm. Investors who think they have more detailed data and are smarter than the average investor, usually move from being reasonable to highly overconfident, causing in an excess of exchanging situations (Biais et al. 2000, Odean 1998, 1999) and experiencing vast losses. Thus, they end up overreacting to private information signals and underreact to public information signals. Therefore, an overconfident investor is one who overestimates his private information signal accuracy, but not publicly exposed information.

Clubs face analogous circumstances in the context of the international football business. Teams assess players consistently since these are youths. When scouts or coaches enthusiastically discover a player, stretched out perceptions are carried out to compile a detailed report on the athlete's qualities and shortcomings along with the club's payoffs if they sign him. In the event that it finds a solid match, the club will try to integrate the player in their squad.

The international competitions approached in this paper are played only periodically, usually every four years, as a supplement to the country's domestic competitions. As such, they

disseminate an additional precious source of player knowledge until the end of their careers. While such material can be considered to strengthen team decisions on the transfer market, the previous research points that additional information encourages CEOs of clubs to engage in overconfident or optimistic behaviour. The paper will determine whether the ability to produce impartial decisions is preserved in the time after the international competition takes place by contrasting the performance effects of the competition for the big5 players with those of the ROW players. The primary purpose for this split is to differentiate between well-known players that are already expected to easily perform and less visible players that are dubious and more likely to call for surprises, and do not encompass the same kind of assurance.

Moreover, the literature identifies a bidding system as an ancient practice already settled in the Babylonian and the Roman slave market (Milgrom and Weber, 1982). A bid based on the common value model reflects uncertainty. In this type of bid, the value is unknown, and the bidders estimate it based on the information they have (Avenel et al., 2011). This system led to Richard Thaler's (1988) brilliant paper on the winner's curse, a negative externality listed in the auction theory, first discussed by Capen, Clapp, and Campbell in the academia (1971). Thaler (1988) lists two ways where the winner is cursed: (1) the winning bid exceeds the value of the tract, so the firm loses money; or (2) the value of the tract is less than the expert's estimate so the winning firm is disappointed. Klemperer (2002) stressed the winner's curse as the condition "when bidders have the same real value for a prize, or close to the same, but they have different information about that real value." Therefore, even though they have impartial notions about the prize, the winner of an auction typically overpays.

Firms engage in tacitly collusive behaviour to mitigate the effect of rivalry in many industries; such action is not observable in professional football, at least in aggregate. The market pushes clubs to bid against each other competitively to secure the services of the best players. If teams sought to be rational during the bidding course, they would reduce their bids, especially when the

number of teams in the auction increases, cancelling out the winner's curse problem. However, as reported by Kagel & Levin (1986), "Auctions with large numbers of bidders produce more aggressive bidding than with small numbers, resulting in negative profits, the winner's curse".

Clubs tend to promote this mechanism upon an international competition, because the demand for good performers inevitably increases. As explained previously, even if decisions are entirely rational, it is predicted that athletes who performed well in the competition will gain in value. Selling clubs also benefit from this by raising the transfer fee paid to release the players from their rosters. Therefore, it is plausible to assume that an international competition would provoke a winner's curse anomaly. In this situation, the effects coming from the performance in the competition would be inflated in big5 leagues when compared to weaker leagues, signaling teams paying over the odds for a player that was already expected to perform well. However, if such effects are not found to be stronger, that would be consistent with the absence of a winner's curse and consequent overvaluation on the transfer of players.

Together, all the considered biases are a premise on which football clubs engage regularly. Though professional football has been around for some time, the debate on whether clubs act rationally or biased following an international competition is sharp. Some claim that an international cup reveals what a player is capable of, others that it is more prudent and healthier to pay attention to domestic performance, week in, week out. Sir Alex Ferguson once said, "Sometimes players get themselves motivated and prepared for World Cups and European Championships and after that there can be a levelling off, so we cannot be expecting the same kind of value post competition".

Whilst football clubs are still learning their lessons, there have been both cases of success and disappointment signings. The goalkeepers Keylor Navas and Guillermo Ochoa were examples of good purchases after the 2014 World Cup. In comparison, Renato Sanches (Euro 2016) and Asamoah Gyan (WC 2010) were examples of blown deals, as they performed very well during

the competition but would soon be considered flops at their new teams, after being acquired. These are just examples among hundreds that have happened, which should have contributed to the learning curves of clubs.

However, non-behavioral variables are also present that interfere with the nature of professional football, fostering skepticism in the transfer market. At least two key factors are involved: the increasing private investment and acquisition of clubs, primarily through family offices or private equity, and the role of the football agency. These intermediaries and private investors sometimes also cooperate and work together for a particular target, putting personal interests ahead of the teams' long-term sustainability. The case of Peter Lim, a Singaporean businessman who purchased Valencia, a Spanish club, 6 years ago, is publicly recognized. Even though he started off to a promising start, he has been questioned a lot by the fans and the media in the past two years due to a growing divesting policy. When faced with the allegations, the Lim family challenged “Some Valencia fans are scolding and cursing at my family. Don't they get it? The club is ours and we can do anything we want with it and no one can say anything”.

More examples like these continue to happen, especially in the big5 leagues. FIFA is aware of the issue and promised tougher guidelines and penalizations for corruptive or free of good governance practice investments. The last published report estimated that the total commissions paid to agents in 2018 was around 2.14\$ billion, a sharp increase in relation to the 218\$ million paid in 2013. By enhancing an easy-money mentality, international competitions contribute dangerously to this, because agents and private investors realize that these players are very attractive at that time. They would attempt to increase their share of commissions, often even bribing club's executives to purchase or sell a player, undermining the transfer system's balance. This reality is becoming unstoppable and these are critical paths for the sport that FIFA should put an end to, otherwise this bubble will end the football game as it is known.

Carmichael & Thomas (1993) proposed that the principle of Nash bargaining would fit into the transfer market as a proxy. In their model, the strengths of the selling and buying club are determined by its features as well as the players' characteristics who shape the squad. The authors split a formal transfer market into two pillars: (1) to facilitate and organize the acquisition and exchange of players by clubs to enable the reconstitution of teams with the aim of increasing player strengths and improving team performance; (2) to facilitate the movement of players between clubs in their search for better opportunities, higher earnings or increased job satisfaction.

For this thesis it is necessary to explain how the football labor market works. Clubs acquire players in a competitive labor market, where performance is easily detected and tracked; hence, talent is readily recognizable. The main difference to usual labor markets is that players cannot leave their jobs in the football market with the same flexibility as a typical employee in a firm. Nonetheless, the transfer market has made profound changes towards a world where players enjoy greater independence and control. In fact, prior to 1963 clubs had an effective monopoly over the athletes on their books, since a transfer required the consent of both clubs involved and a transfer fee (compensation) was requested. Although there was a market for players in the sense that transactions took place, they were restricted and comparable to slavery (Sloane, 1969). Until 1977, the retention and transfer regime placed certain limitations on the freedom of players to switch between clubs, but in the late 1960s and early 1970s, the market for players became much more active.

In 1995, the European Commission dedicated itself to controlling the transfer market for European football. It became necessary for football players affiliated to a club to have a contract. Transfers will then occur for a fee during or at the end of the player's contract. Only if his club approved the move for a price agreed with the purchasing club might a player get transferred. When a contract expired, a buying club would still have to buy the player at a price agreed by the

relative football association. That fee depended on the club's relative power to ensure an adequate competitive balance (Fees and Muehlheusser, 2002). In addition, each national league had its own rules over the number of foreign players permitted to join a domestic team. Before, clubs were traditionally allowed to have just three foreigners in the squad.

This system, by hindering the free movement of players through European countries, violated Article 39 of the Treaty of Rome. By abolishing transfer fees for non-contracted players based on their age, the Bosman ruling would put an end to the contentious retention and transfer scheme, which made football a real economic activity. If the player is under 24 years old, the new club would have to reimburse the former by paying a fee to reward the investment made by the latter club in cultivating the talent of the player (Fees and Muehlheusser, 2003). It is important to remember, however, that people from nations unprotected by the Bosman rule are still subject to, typically more stringent, national regulations. Furthermore, in 2001, the European Commission controlled the market by allowing players to transfer within the time of their contract and without their club's permission, paying a fee and restricting the maximum length of the contract to five years.

The economic value of players and clubs has proved to be a decisive factor in professional football's attractiveness. Teams, for this reason, continue to increase their spending on players. Total spending for the year 2019 amounted to USD 7.35 billion worldwide, an increase of 6 percent compared to 2018, according to the FIFA Global Transfer Market Survey. This motivates the investigation to deconstruct on the behaviour of football clubs within the sector as they are inspired to continue developing their rosters, not holding to profits.

Club's Modus Operandi

According to seasonal results, clubs move across their national leagues and returns are usually set given the final position in the league table. By default, sports and businesses are competitive;

therefore, clubs compete in such leagues for their relative place in hopes of gaining sporting glory and financial benefits. Since not everyone can do it simultaneously, leagues have engaged in cross-subsidization (or revenue sharing) such as downward team parachute payments or common bargaining of broadcasting rights (Sloane, 2015). These are set to ensure that the levels of competition remain active and that games are engaging.

The literature established theories in which football clubs operate and communicate. The key issue is whether they are maximisers of utility (success) or maximizers of success. While the second concerns a football club whose objective function is controlled by income, pilling cash, the first sets that clubs can be guided by the performance of sports subject to a zero profits budget constraint (Sloane, 1971). Under a profit maximizing model, a club would not be prone to spend everything on new players but would rather increase the dividend payout policy to shareholders (Leach et Szymanski, 2015). Success is hence sacrificed for shareholder returns. On the opposite, a club that maximizes success will invest much of the incoming profits on new athletes to ensure a certain standard of results. Sloane (1971) disagrees with the view of profit maximization in the football industry because limits on the payment of fees to directors and dividends to shareholders have been created. Also, most clubs never pay dividends.

The same rationale was applied by Leach and Szymanski (2015). They studied the performance of 16 English Football clubs that joined the stock exchange in the mid-90s and argued that the result should have driven a shift towards profit maximizing behaviour. Losses did, however, increase. Their econometric model found that the variable measuring stock market flotation was negligible, indicating that this flotation had no long-term impact on the team's performance. If clubs were utility maximisers, the returns from the stock were likely to be spent on recruiting new talent, resulting in improved results, but not necessarily increased profits.

Data & Methodology

The international football ecosystem seems the perfect setting to study the influence of behavioural factors on club's leaders. In addition to the previous analysis, football entails a persistent emotional component, especially by the pressure caused by the fans, which makes the job of the management teams to be even more hampered. If club CEOs are potential bounders to fall in cognitive biases, an international competition is an opportunity to test the validity of the phenomenon. The main hypothesis of this paper is that, if information is the dominant channel on the weaker players after the competition, and their effects are stronger, it will be concluded that clubs behave in a way that is consistent with rational expectations. On the other hand, if transfers are overvalued, meaning if the effects are higher for the big5 leagues, the result would be clubs behaving biasedly, causing inefficient outcomes at the transfer market level.

For that purpose, it is evaluated the effects coming from performance at the international competitions and at the domestic competitions, thereby allowing for a comparable term. In addition, as explained, these effects are determined by dividing the players into big5 leagues and ROW leagues. The key explanation for this distinction is that there is a disparity between the information available à priori on those players prior to international competition. Although the output of big5 players is weekly scrutinized, players enrolled in other leagues are not given the same weight, so it is important to understand how teams react to fresh and sensuous details about these players.

While models that integrate bargaining theory for the buying and selling clubs have been briefly listed, the research will concentrate on player performance. Thus, a proxy for individual player performance will be used for regression analysis as independent variables. In the past, researchers have used indirect proxies of player performance as well as other player characteristics and tested their relationships to transfer prices. Those include age, playing position on the field, career goals and number of games played in the previous season, among

others. Only a few analysts have used performance metrics other than goals or assists to understand fluctuations in market values and transfer prices, due to the lack of credible sources for accurate performance data in professional football.

In this work, three dependent variables are analyzed: the percentual variation in market value (**Difference**), in log terms to account for outliers; the probability of a player being transferred in the period (**ProbTransf**); and the probability of a player being transferred from outside a big5 league into a big5 league or being transferred within two clubs in a big5 league in the period (**TransfToBig5**). Essentially, it is evaluated the change in the market value of players, in one season and after the international competition, the likelihood of being transferred in the following period after the international competition and whether the footballer transfers from a minor to a big5 league or remains in big5 league. It was assumed that the three dependent variables improved the robustness of the paper by allowing different paths to draw similar conclusions about the actions of football clubs.

For simplicity terms, an explanation of how data was obtained and will be exploited is as follows: let the 2018 World Cup be played between June and July of 2018 and let the domestic season before be played between September 2017 and May 2018. The variation in market value was taken for both periods and treated as independent. For instance, the player Paulo Dybala was worth 65M at September 2017 and 110M at May 2018, a real variation of 69,23%. The same player did not change values between June 2018 and July 2018, keeping at those of 110M. This process was repeated for every player that participated in the 2018 World Cup, 2016 Euro Championship and 2014 World Cup. As for the other two dependent variables, these are dummy variables (0;1) that reflect the following transfer window. Usually, a player can be transferred from the 1st of July to the 31st of August, depending on the country's football association rules. Some secondary FAs allow the market to be functioning until the end of September, where clubs usually try to place the players that are dispensable.

For this paper, data was collected from **Transfermarkt**, relative to player's personal information and market information. This website is a German community-based information that provides performance statistics as well as market values of soccer players. Concerning personal information, it was gathered information on their (1) nationality, (2) age, (3) height. On the market side, Transfermarkt provided information on (4) the actual club, (5) the league of the actual club, (6) the position, (7) minutes played, (8) goals scored, (9) assists made, (10) the difference in the player's market value both for the domestic and international plan, in absolute value and percentage, (11) the probability that the player is transferred, (12) the probability of a player to be transferred from outside or within a big5 league. The data was set up in an Excel workbook divided into competitions. Each competition (sheet) had all this information about players. After that, a panel data was constructed with all information in another sheet, to analyze the results in Stata.

The database consists of 1707 observations that comprise 3 international and 3 domestic competitions. For the development of the paper a set of variables were created to run significant regressions and analyze the results. These predictors can be grouped into 2 categories: Independent and dependent variables (latter already seen). Regarding the former, some variables were built. **CodePosition**: A code from 1 to 4 to list the 4 football positions. 1) Goalkeeper, 2) Defender, 3) Midfielder and 4) Striker. **MinutesPlayed** is a dummy variable (0;1) that states whether a player has been on the pitch for >200 min for the international competition and >2000 min for the domestic competition. **GoalsUAssists** is a dummy variable (0;1) that assumes the value of 1 if a player has at least scored a goal or made an assist and 0 otherwise. This indicators for individual performance were chosen because they are clearly identifiable and measurable (Franck & Nuesch, 2008). The variable **Age** is a numerical variable that represents how old is a player. One important thing to highlight is that, given the variable selection, goalkeepers were not included in the dataset, as they would not provide insightful content.

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	1707	26.9092	3.709792	18	38
CodePosition	1707	2.859402	.7672428	2	4
MinutesPlayed	1707	.4463972	.4972641	0	1
GoalsUAssists	1707	.0620972	.2414028	0	1
Difference	1151	.0221752	.1164266	-.4771213	1.09691
ProbTransf	1707	.2765085	.4474023	0	1
TransfToBig5	1707	.0697129	.2547372	0	1

Table 1 – International Competition Summary Statistics

Table 1 represents the summary statistics for the international competitions. Regarding the variable **Age**, the paper has 1707 observations, ranging from a minimum of 18 years old to a maximum of 38 years old and an average value of 27 years old. As for **CodePosition**, the paper has 1707 observations and the average value is around 3, meaning midfielders are the position that appear the most. Regarding **Difference**, the paper contains 1151 observations with a maximum variation of 109% and a minimum variation of -47%. The other variables are, as explained, dummy variables that are not interpretable in terms of summary statistics, either the take the value (0;1).

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	1707	26.9092	3.709792	18	38
CodePosition	1707	2.858231	.7662625	2	4
MinutesPlayed	1707	.4973638	.5001396	0	1
GoalsUAssists	1707	.6168717	.4862916	0	1
Difference	1151	.0884827	.2476202	-.7269987	1.60206
ProbTransf	1707	.2765085	.4474023	0	1
TransfToBig5	1707	.0697129	.2547372	0	1

Table 2 - Domestic Competition Summary Statistics

Table 2 represents the summary statistics for the domestic competitions. Regarding the variables

Age and **CodePosition**, since the data is equal for both competitions, no differences appear in relation to Table 1. As for **Difference**, the paper contains 1151 observations with a maximum variation of 160% and a minimum variation of -72%. The other variables are, as in accordance, dummy variables that are not interpretable in terms of summary statistics, either they take the value (0;1).

Regression Analysis

Bearing in mind the main hypothesis of the paper, the following regressions were made, both for the international and the domestic competitions, and then the regressions were compared to ensure the significance of findings. The command **esttab** and **estout** were used in Stata to produce more clear and comparable tables.

Regression 1:

$$\text{Difference} = \alpha + \beta_1 X_i + \varepsilon$$

Where $X_i = \text{MinutesPlayed GoalsUAssists Age}$

Regression 2:

$$\text{ProbTransf} = \alpha + \beta_1 X_i + \varepsilon$$

Where $X_i = \text{MinutesPlayed GoalsUAssists Age}$

Regression 3:

$$\text{TransfToBig5} = \alpha + \beta_1 X_i + \varepsilon$$

Where $X_i = \text{MinutesPlayed GoalsUAssists Age}$

Discussion

The regressions to be presented will follow an order: the first give respect to the variation in market value (**Difference**), the second to the probability of transfer (**ProbTransf**) and the third to the probability of transfer outside or within a big5 into a big5 league (**TransfToBig5**). The

tables are set to be interpretable in a stimulating way since the effects are easily observed and comparable. The coefficients that arise for each variable give the type of relations with the dependent variable in study. The level of significance can be divided in 3 types: the 10-percent level (p-value under 0.1); 5-percent level (p-value under 0.05) and 1-percent level (p-value under 0.01), the most significant level.

	Big5 International	Other International
	Difference	Difference
MinutesPlayed	0.0229 (0.012)	0.0218 (0.040)
GoalsUAssists	0.00772 (0.410)	0.0281 (0.039)
Age	-0.00979 (0.000)	-0.0142 (0.000)
_cons	0.272 (0.000)	0.393 (0.000)
<i>N</i>	602	549

p-values in parentheses

Table 3 -Regression 1

	Big5 Domestic	Other Domestic
	Difference	Difference
MinutesPlayed	0.111 (0.000)	0.0681 (0.000)
GoalsUAssists	0.0356 (0.146)	-0.0236 (0.429)
Age	-0.0353 (0.000)	-0.0390 (0.000)
_cons	0.956 (0.000)	1.129 (0.000)
<i>N</i>	602	549

p-values in parentheses

Table 4 -Regression 2

After running the first two regressions in Stata some interesting results appeared. Regarding the performance in the international competitions, Table 3, it is observable that **MinutesPlayed** is relevant in explaining market value variation both for players coming from big5 leagues and ROW leagues, given the p-values of 0.012 and 0.04, at 5-percent levels. This makes intuitive sense because minutes played are supposed to demonstrate a favorable relationship to market value, representing a player's experience of time on the pitch. In addition, each set of 200 minutes played is expected to improve the market value of a player in 2,2%, as evidenced by the coefficients, with no relevant differences found. Concerning the variable **Age**, the same reasoning is applied. In both cases the p-values of 0.000 are significant because as a player gets old, its market value continues to decline, after hitting his peak, and the coefficients are accordingly

negative, both around -0.01.

Looking now at Table 4, the performance of the players in the domestic competitions, it is observable that **MinutesPlayed** and **Age**, following the previously rationale, are relevant in explaining market value variation, at p-values of 0.000, both for big5 leagues and ROW leagues, at 1-percent level. In fact, these p-values are smaller than the ones for international competitions. This is explained by the influence of temporality as a result of a domestic competition being played in 8 months and an international competition for 1 month, such that smoother effects were predicted to occur in the last case, implying that the difference in the market value of players is greater in the wider period than in the short term.

Interestingly, differences start to appear when looking at the variable **GoalsUAssists**. Although the p-values for big5 players are not indicative of having an effect at 0.410 for the international frame and 0.146 for the domestic frame, for players coming from ROW leagues the effects are strong and significant at the international level of 0.039 compared to the domestic level of 0.429. This features the argument that scoring goals and making assists in an international competition impacts the market value of players from lower leagues, while it does not impact players from big5 leagues. So, the disparity in effects from the international competition to the domestic competition can only be seen at the weaker leagues.

In this case, the positive influence of performance on the market value of ROW players is attributed to the international competition. As for the big5 players, they were already expected to perform, there should be no positive effect. This first inference contradicts the hypothesis of behavioral factors at play, because the dominant channel is information from performance in the weaker leagues and no overvaluation signal is found in the big5 leagues. Thus, the first regression points to rational behavior on the part of CEOs.

Nonetheless, one significant point to consider is why the results obtained for **GoalsUAssists** in

the domestic competitions are poor, since it is expected that scoring or assisting throughout the year benefit the market value of a player. As elucidated, however, the dummy variable takes the value 1 if a player has at least scored a goal or made an assist, which may be a value too small to enable a stronger statistical result for a domestic competition. It was considered to change this threshold to at least scoring 5 goals or making 5 assists, but that would lose value since a comparison with the international competition would no longer be realistic. Therefore, complementing the changes in the market value of players with the dynamics of moving clubs, analyzed below, became critical. In the following regressions, the same reasoning is applied.

	Big5 International	Other International
	ProbTransf	ProbTransf
MinutesPlayed	-0.100 (0.001)	0.0753 (0.028)
GoalsUAssists	0.0509 (0.120)	0.111 (0.011)
Age	-0.00506 (0.206)	-0.0194 (0.000)
_cons	0.409 (0.000)	0.793 (0.000)
<i>N</i>	865	842

p-values in parentheses

Table 4 -Regression 3

	Big5 Domestic	Other Domestic
	ProbTransf	ProbTransf
MinutesPlayed	-0.0604 (0.042)	-0.0211 (0.517)
GoalsUAssists	-0.0312 (0.485)	-0.0142 (0.771)
Age	-0.00641 (0.110)	-0.0181 (0.000)
_cons	0.471 (0.000)	0.826 (0.000)
<i>N</i>	865	842

p-values statistics in parentheses

Table 5 -Regression 4

Regarding the results on the likelihood of a player to transfer, these triggered very appealing remarks. For **MinutesPlayed**, it is observable that players from big5 leagues at the international and domestic level present a negative coefficient sign, -0.100 and -0.06, and low significant *p-values* of 0.001 and 0.042, respectively. A stimulating discussion is the difference between the coefficients observed for minutes in the first two regressions (positive), where market value is analysed, and these regressions, for the big5 leagues. In accordance to what was found, the

literature has identified positive effects between playing time and market value (Carmichael & Thomas, 1993; Garcia del Barrio & Pujol, 2007; Ruijg & van Ophem, 2014; Müller et al., 2017), but made no attempt to test the probability of a transfer on minutes played. One potential reason for the outcoming negative signs is that when a big5 player stands out, the club will do everything to keep him in the squad, raising his salary and increasing the termination clause, to prevent the approach of other clubs. Therefore, as the player continue to play more, the chances of the club allowing him to leave are increasingly smaller. Also, since the best football clubs in the world are the ones that play in the big5 leagues, the players also have incentives to stay.

Contrasting, the coefficient and p-value for **MinutesPlayed** for players in ROW leagues at the international level are significant at 0.08 and 0.02, accordingly, so if a less known player gets more minutes in a World Cup or Euro Championship, he will be more likely to get a transfer. However, the minutes played by these players at their domestic competitions seem irrelevant to explain a potential transfer due to a high p-value of 0.517 and negative coefficient of -0.02 as shown in Table 5. Curiously, statistical evidence for the variable **Age** was only found for players coming from minor leagues, both at the international and domestic plan, with p-values of 0.000 and negative coefficients of -0.019 and -0.018 respectively.

As for the results for the big5 players, a coefficient of -0.005 and p-value of 0.206 was returned for the international competitions and -0.006 and p-value of 0.11 for the domestic competitions. The reasoning behind this is that while clubs tend to be interested in signing young potential stars from poorer leagues, older players are typically resigned to secondary championships because their anticipated consistency declines with time and they strive to enjoy a certain standard of performance levels.

Differences when considering the **GoalsUAssists** aggregator variable are transparent and revealing. For players in big5 leagues the p-values are not indicative of having an effect at 0.12 for the international frame and 0.49 for the domestic frame, as for players coming from ROW

leagues the effects are strong and significant at the international level of 0.011 when compared to the domestic level of 0.771. This again argues that scoring goals and assisting in an international competition has an effect in the probability of a player to transfer, on players from lower leagues, while it does not affect players from big5 leagues. So, the difference in effects from the international competition to the domestic competition is only found at the weaker leagues. Therefore, the positive influence on the probability of a less known player to get transferred is linked to have played the international competition.

The above evidence goes in line with the one seen for the first regressions, pointing to rational movements of teams on the players' market. On the one hand, the big5 players are shielded by clubs, irrelevantly of playing in an international competition, because they deliver the expected quality the club needs. At the same time, players from weaker leagues that are to play for their countries are more likely to change clubs, because they have performed well during the international competition.

This relationship can be found in Graph 1 (see Appendix), that projects the transfers between the big5 and ROW leagues for the 2018 summer transfer. A total of 1132 transfers were made from the weaker leagues to the strongest ones, although just half of that value, around 505 transfers, were done between big5 clubs. Hence, it is possible to conclude that the dominant channel is information at the ROW leagues. CEOs enter the market for solid deals on players who have had the ability to report their qualities on a highly competitive ground. In the meantime, the data reflects that these CEOs do not get carried away about the big5 players performance in the competition.

Still, one imminent issue needs to be verified, if the career of the player got improved or worsen, meaning if the transfer was made in an upward or downward movement. Therefore, a third variable was necessary to establish, to complement the previous analysis, as stated before, the likelihood of being transferred from a ROW league into a big5 league or within big5 leagues.

	Big5 International	Other International
	TransfToBig5	TransfToBig5
MinutesPlayed	-0.0810 (0.006)	0.0699 (0.005)
GoalsUAssists	0.0324 (0.285)	0.0550 (0.082)
Age	-0.0106 (0.004)	-0.0211 (0.000)
_cons	0.510 (0.000)	0.671 (0.000)
<i>N</i>	865	842

p-values in parentheses

Table 5 -Regression 5

	Big5 Domestic	Other Domestic
	TransfToBig5	TransfToBig5
MinutesPlayed	-0.00758 (0.783)	0.0670 (0.004)
GoalsUAssists	-0.00787 (0.849)	0.0348 (0.321)
Age	-0.0117 (0.002)	-0.0206 (0.000)
_cons	0.521 (0.000)	0.629 (0.000)
<i>N</i>	865	842

p-values in parentheses

Table 6 -Regression 6

The last two regressions allow a robust inference and conclusion on the initial research hypothesis, that clubs act coherently with rational expectations after an international competition and to acknowledge the absence of behavioural factors at play. It became clear that the effect of international competitions affects the players listed in less competitive leagues, although no overvaluation phenomena is found along big5 players. Glancing at tables 5 and 6, the variations that stand out between them can be interpreted.

If a player is already enrolled in a big5 league, then transferring within big5 leagues is independent of playing an international competition. This is evidenced by the negative coefficient of **MinutesPlayed**, -0.08 and low p-value of 0.006 for the international set and -0.007 coefficient and 0.783 high p-value for the domestic set. The same reasoning is applied as in regression 3, as a player tends to play more minutes it is unlikely that the big5 club will let him departure, because he is a high-quality player. Also, if a player is to transfer to another big5 club, then minutes played in the domestic competition are more important than in the international cup, illustrated by the p-values. Intuitively, this suggests that managers assume that the big5 leagues are far more competitive than a World Cup or Euro Championship, which is mostly

accurate, making the approach rational. Nevertheless, at 0.06 and 0.005, the coefficient and p-value of **MinutesPlayed** for players in ROW leagues at international level are important and strong, because if a lesser-known player gets more minutes in a World Cup or Euro Championship, he is more likely to get an upward move, which means that his performance has paid off. Surprisingly, the minutes played by these players at the domestic competitions seem to explain a potential transfer towards a big5 league due to a coefficient of 0.006 and low p-value of 0.004.

The results on **GoalsUAssists** displayed equivalent interpretations. For players in big5 leagues the high p-values of 0.285 for the international and 0.849 for the domestic allude to no significant effects in the move of these players towards other big5 clubs. As for players coming from ROW leagues the effects are significant at the international level of 0.08 when compared to the domestic level of 0.321. In addition, each goal or assist rendered in an international competition for a player of a kind would result in a probability of moving to a big5 club in 5,5%, as shown by the coefficient. Again, the variation in effects from the international competition to the domestic competition are seen only at the weaker leagues. Thus, the reason for the positive effect of performance on the upward transfer of the ROW players is the international competition, so that it is far more decisive for these players. As for the big5 case, the competition is not so decisive because the players were already expected to outstand.

Finally, the variable **Age** is significant at all levels of players due to the low p-values of 0.000 which support that big5 teams usually spot youth potential and are not interested in signing players whose age is incompatible with the desired level of performance and expected quality. All in all, the performance metrics studied are more relevant in explaining a transfer towards a big5 league from an outsider than an intra transfer, meaning the international competition reveals useful information on the market. Once more, it is rejected that CEOs of teams incorporate cognitive biases from these competitions in the decision-making criteria.

Limitations and Future Work

One important limitation of this paper is that not every performance metric was measured. For instance, goals and assists are more associated with forwards and attacking midfielders while recoveries, interceptions and tackles are related to defending midfielders and defenders. The collection of data in professional football is still a new phenomenon, as explained, so the lack of credible sources and the non-response of key data companies forced the very frustrating manual collection of data. Another limitation of the paper was that it only accounted for the three most recent international competitions and the respectively pre domestic performances. Since the sources of performance data will be more reliable and accessible in the future, the paper could be recreated in at least five to ten competitions and checked if the same results are valid.

Moreover, the **GoalsUAssists** variable did not produce statistically meaningful results for domestic competitions, due to the dummy's-imposed threshold of 1 if at least a goal or an assist was made by a player. Therefore, a variable whose results in explaining market value variation and the dynamics of a transfer were intuitively important turned out to be non-optimal in order to make a better comparison with the international plan.

For future work, researchers could incorporate other competitions into the model, such as the UEFA Champions League and the Copa Libertadores America, beyond expanding the window of time in the sample observations, because the performance in these competitions would have influenced the study's dependent variables differently. It would also be interesting and valuable to study performance jointly with characteristics of the buying and selling clubs, as well as adding a variable to go deeper and research on the role of football agency and its effects on football clubs after international competitions are played.

Conclusive Remarks

This paper attempted to study the context of managerial biases applied to a very particular environment, the international football market. In a world where decisions are impacted by irrational stimulus, the research tried to discover the underlying effects of international competitions such as the FIFA World Cup, on the management of clubs, and assessed if those effects varied from those of the previous domestic competitions. A set of behavioural and non-behavioural factors were studied for that. One hypothesis for the paper's outcome was that CEOs would act biasedly after international competitions takes place. If this were valid, the paper would have concluded that transfers based on performance in the international competitions were overvalued. Therefore, some sign of behavioural issues like overconfidence or a winner's curse would be at play. To study this, three dependent variables were created (Difference, ProbTransf, TransfToBig5), and performance measures like age, goals, assists, and minutes played were tested to the dependent variables in regression analysis.

The players in the sample were divided between big5 leagues and ROW (rest of the world) leagues, since the information available on those players is different and the results yielded interesting differences. After a mathematical analysis has been made, it was concluded that the results pointed towards a rational approach on the side of teams' CEOs after the international competitions. In other words, the disparity between the impact of the international competitions and the domestic competitions was only discovered in the weaker leagues, so that, while information is the dominant channel source for lesser-known players, no overvaluation was found on the big5 players, consistent with the irrelevance of new information about those players.





In conclusion, while a lot of anecdotal evidence has pointed that transfers after an international competition were poorly calculated, the research tried to unclothe the status-quo behind it. Interestingly, football clubs are commonly referred to as anything but rational, closely related to emotional leadership. The statistical data analyzed in this paper reveals, however, that this evidence is not so accurate.

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Appendix

		Engaging	
		Big 5	RoW
Releasing	Big 5	505 transfers USD 2,570 million 	1,274 transfers USD 474 million 
	RoW	1,132 transfers USD 1,472 million 	5,611 transfers USD 794 million 

Graph 1 Incoming and Outcoming Transfer Player 2018