Performance evaluation in UEFA Champions League

Abstract

This paper aims to evaluate the performance of the most significant football teams in Europe. In particular, we have selected all the teams who have participated in the UEFA Champions League (UCL) during the last nine seasons (2004/05 to 2012/13): 94 different clubs in total.

We have applied the Data Envelopment Analysis (DEA), a deterministic non-parametric frontier method usually developed in efficiency studies. To solve the problem of measuring sporting results as output in knockout competitions we have proposed the use of the coefficients applied by UEFA from UCL revenue distribution. As far as we know it is the first time that it is analysed efficiency in UCL considering a long period of time and applying revenue distribution as sporting results measurement.

These differences from previous studies let us to obtain some interesting results. Firstly, there is a high inefficiency level in UCL on the studied period: only the 9% of the teams seem to be efficient. Also, the teams have many problems to maintain their efficiency during the seasons. Secondly, the champion always is efficient. Thirdly, we have identified two inefficiency sources: waste of sport resources and the selection of sport tactics. Finally, from a methodological perspective, the output measure proposed seems to be suitable to represent reliably the sports results archived by clubs in this qualifying competition type.

Some management implications have been suggested to boost efficiency in inefficient clubs. In some cases, clubs might employ better their resources. In other cases, changing tactics is the best solution.

Keywords Efficiency, DEA, Football, UEFA Champions League, Sports results

Performance evaluation in UEFA Champions League

1. Introduction

In the twentieth century sport was established as a cultural phenomenon of evident social, political and economic impact. Today, football is one of the most important ways of expression of sport along with a business of undoubted economic importance. Born in Europe, football is already a global phenomenon, but is still dominated by European. The UEFA[1] Champions League (UCL) is the most important competition at clubs level.

The football industry has changed significantly over the last two decades and the economic survival has become more and more important in the last years. According to Deloitte Football Money League (2014), in 2012/13 season, the top twenty clubs aggregate revenue was € 5.4 billion, 8% better than the last season. Nevertheless, these rates of growth cannot continue indefinitely and independently of that, the indebtedness of clubs still growing. UEFA Benchmarking Report (2013/14) indicates that club losses have ballooned from €0.6 billion in 2007 to a record €1.7 billion in 2011.

This more restrictive future will force clubs to reconsider the prices they have been paying for players, their wages, and how they manage their resources. Based on this panorama, the technical efficiency analysis emerges as a potent tool for assessing clubs management and its sports performance. The marked increase in academic research on sports efficiency confirms the relevance of this approach.

There is extensive literature which studies football efficiency, particularly for the most important national leagues in Europe (Haas, 2003; Espitia-Escuer & García-Cebrián, 2004, 2006; Barros & Garcia-del-Barrio, 2008; Barros & Douvis, 2009; Boscà *et al*., 2009; Gerrard, 2010; and Ribeiro & Lima, 2012). However works on European competitions are sparse and/or not conclusive (Papahristodoulou, 2006; Espitia-Escuer & García-Cebrián, 2010).

Papahristodoulou (2006) observed only the 2005/06 UCL season with a limited sample of thirty-two clubs. Espitia-Escuer & García-Cebrián (2010) on the other hand, evaluated four seasons of UCL (2003/04-2006/07). Nevertheless both studies use questionable variables to measure sports performance results. Papahristodoulou (2006) considered mainly the variable goals scored and points win as output. The second study selected the number of games played as output measure. But in knockout competitions, these variables have some limitations to measure sport results. For example, in terms of number of games played, the champion and the runner-up would have the same result.

This paper tries to overcome these limitations considering a wider sample of seasons and clubs as well as new performance variables. In particular, the main objective of the paper is, through the analysis of a wide time horizon, to determine sports technical efficiency and try to provide useful information about the clubs' inefficiency sources. The more robust analysis, provide accurate, objective and relevant information. This can help in the decision making of coaches and managers, and at the consequent improvement of football clubs efficiency.

So, this work contributes to previous research in several ways. First, our study considers a sample for teams that have participated UCL in nine seasons (2004/05 to 2012/13). It is the first time that it is used this length of data in this context. This let us to check the changes in efficiency among the clubs and seasons. Secondly, we use a new measure of sports output which give us a more representative and more reliable efficiency rankings and overcome some problems detected by previous evidence. The output measure proposed was the revenue obtained, according the coefficients applied by UEFA, from UCL revenue distribution regarding sports performance.

The remainder of this article is structured as follows. The next section introduces the football teams' production process through the framework and empirical review. The third section briefly describes the methodology and explains the output and input variables used.

Results are presented in Section 4. The last section discusses the results and concludes this paper.

2. Framework and Empirical Review

Scully (1974) was one of the pioneers into analysing production function of sports teams, in baseball, specifically in this case. Works such as Schofield (1988) on cricket, Carmichael & Thomas (1995) on rugby, and Carmichael *et al.* (2000) on football, consider that production function in sports is composed of two different stages. More recent studies, specific about football, corroborate that the production function is composed of two different stages, each one with its own inputs and outputs. (Espitia-Escuer & García-Cebrián, 2004, 2006, 2010; Torres-Dávila & García-Cebrián, 2012).

Observing figure 1 we can see the production process flow (from left to right). A squad and a coaching staff (input 1), with their skills and characteristics, will carry out some attack and defense plays (output 1 and input 2); which will produce a result (output 2). In an isolated match this result can be goals or a win, or in a league or a tournament can be points or advance to next phase. Breaking down this production process we may observe two stages:

- In the first stage where players and coach, through their pre-match work (technical, tactical and physical workouts), will training to produce attack and defense plays during the match.
- In the second stage these plays, that are the output from the first stage, will be the input and will generate an outcome, as we said could be goals, wins, points, etc., depending on the context.

Considering this production process, studies analysing UCL efficiency are really scarce. Papahristodoulou (2006) and Espitia-Escuer & García-Cebrián (2010) analysed this competition focused on the production process second stage. Other studies focused on efficiency analysis at national level have followed this framework. For example, Torres-Dávila & García-Cebrián (2012) analysed the Mexican League efficiency, a tournament with a similar UCL format. This championship is composed of two tournaments, and each has a group stage and a knockout round. They studied both competition phases separately.

Haas (2003, 2003a) and Barros & Leach (2006), through the use of economic variables (eg., squad's talent, skills) focused their analysis in the relationship between the Input 1 and the Output 2. No example from football production process first stage analysis was found in literature.

In other sports, it is possible to find interesting papers following this production process. For example, Sexton & Lewis (2003) analysed the baseball clubs efficiency considering separately the two stages of the production process. Carmichael & Thomas (1995) estimated a production function in the rugby league considering "true" inputs, as they call performance-related inputs.

To sum up, and as it can be seen in the empirical evidence, different approaches have been used to analyse football production function. The present study aims to analyse the efficiency at the highest level of European professional football, by using sports variables, represented by the second stage of production process. Following Espitia-Escuer & García-Cebrián (2010) approach, we evaluate the competition as a whole (group stage and knockout round together).

3. Methodology and Data

3.1. Methodology

The idea of relative efficiency proposed by Farrell (1957), measure the efficiency of an organization or DMU (Decision Making Unit) comparing their performance with the best companies observed, which define the efficient frontier.

Following Farrell's (1957), Charnes *et al.*, (1978) were the first to use the term Data Envelopment Analysis (DEA), applying linear programming methods to construct a non-parametric frontier over the data. Their basic model known as CCR (Charnes, Cooper & Rhodes) can process non-discriminatory variables. Like in CCR model, the constant return to scale (CRS) assumption calculates the technical efficiency (TE) scores of the DMUs. This model may be oriented towards the input or into the output. Therefore, assuming CRS, the efficiency of each DMU of the sample consists in solving the following linear programming problem:

$$
\begin{aligned}
& Min_{\lambda,z}\, \lambda_{1i} \\
\text{s.a.} \quad & u_i \le z_i U \\
& \lambda_{1i} x_i \ge z_i X \\
& z \in R_+^k
\end{aligned}
$$

where λ_{1i} is the technical efficiency index considering an orientation to the input; u_i is the vector that represents the quantities of *m* products produced by the organisation *I*; *U* is the matrix of range *k.m* which represents the quantities of *m* products for the *k* organisations in the sample; x_i are the quantities of the n production factors used by the organization whose efficiency is being measured; *X* is the matrix of range *k.n* for the quantities of *n* production factors used by the companies in the sample; and z_i is an intensity parameters vector that determines combinations of factors and products observed. When λ_{1i}=1, the organisation analysed belongs to the frontier and it is impossible to obtain its production vector with a radial reduction of all its resources. Under CRS assumption, the efficient units have an efficiency ratio equal to one; and this is the maximum value that the efficiency of a company can represent, for the orientation to the input followed. The technical efficiency value indicates the radial reduction that could be implemented in consumption of production factors that the unit studied can carry out to be efficient. If λ_{1i}<1, it indicates the proportion to which the quantity of all inputs used to at least achieve the actual output quantity could be reduced radially, but in an efficient manner, i.e. without wasting resources.

Banker *et al.*, (1984) proposed some adjustment for the CRS model in which variable returns to scale (VRS) are assumed. Their model, known as BCC (Banker, Charnes & Cooper) allows calculating pure technical efficiency (PTE). The use of the VRS specification is indicated to efficiency calculation when not all DMUs are operating at the optimal scale. The linear programming problem to solve in this case forms the reference unit from units of a similar size/technology[2], which leads to the following formula:

$$
\begin{aligned}
& Min_{\lambda,z}\,\lambda_{2i} \\
\text{s.a.} \quad & u_i \leq z_i U \\
& \lambda_{2i} x \geq z_i X \\
& \Sigma z_i = 1 \\
& z_i \in R_{+}^{k}
\end{aligned}
$$

where λ_{2i} is pure technical efficiency of the unit studied. The pure technical efficiency value indicates the radial reduction that could be implemented in consumption of production factors that the unit studied can carry out to be efficient comparing with those units of similar technology (or tactics especially in this case). So, if we have λ_{1i}<1 and λ_{2i}=1, it indicates an appropriate use of the resources, without waste, and its inefficiency is due to the wrong tactics choice.

The scale efficiency (SE) is given by the ratio between the CRS score and the VRS score. Generally, if SE = 1 means that the DMU operate at optimal scale. Otherwise, if SE < 1, the DMU doesn't work in the most productive scale size (technology). In the present paper, when we have high scale efficiency values (even 1) and low pure technical efficiency, indicates that these DMUs correctly chose the tactics employed, but have employed unnecessary amounts of inputs, wasting their resources.

Technical Efficiency, Pure Technical Efficiency and Scale Efficiency are well-known and were widely used in the last 20 years in many areas (public universities, banks, public sector resources, sports, etc.). In football these models were used too (Haas, 2003; Barros & Leach, 2006; Espitia-Escuer & García-Cebrián, 2004, 2010; Torres-Dávila & García-Cebrián, 2012). Thus Technical Efficiency, Pure Technical Efficiency and Scale Efficiency with the data described below were calculated. We have assumed an input-oriented model given the characteristics of the output variable. Which cannot grow indefinitely and is regulated.

3.2. Data and variables

The UCL is the Europe's top international football competition at club level. Initially contested by the national league's champions, it now has several qualifiers. The UEFA coefficient system[3] is the criteria to access directly into the group stage or to the previous qualifier rounds. The competition itself starts at the group stage, consisting of eight groups with four teams each. All teams meet with others of his group twice, in matches as host and visitor. The two best ranked teams in each group advance to the next stage. With sixteen teams qualified for the second round, the knockout stage is characterised by doubles matches, home and away, the winner advances to the next phase; and the same way until the semi-final. The final, exceptionally, is played as a single match, at a field previously chosen a year early.

The sample consists of the 32 clubs qualified for the UCL group stage in each of the nine sports seasons between 2004/05 and 2012/13, totalling 288 units of observation. Some of these 288 DMUs are the same club in different seasons. Many clubs participated only once in competition during the study period, and for example, a select group consisting of Arsenal, Barcelona, Chelsea, Manchester United and Real Madrid, has participated in all nine seasons analysed. Therefore, there are 94 different clubs.

The performance on field, that is, the outcome of actions taken by teams during the match, expressed through plays/movements of attack and defense, is the core of football clubs production process. As we could see on framework, these attack and defense plays are the output of the production process first stage (Figure 1) but they are also the input of the second stage. The present study is focussed on the production process second stage, so the sports variables are our inputs. Total attempts, ball possession and ball recoveries are the selected inputs variables, forward the reasons of its election will be detailed.

The total attempts made, both shots as halters, are the completion of the offensive plays of a team. Lago-Peñas *et al.* (2011) analysed group stage matches of three UCL seasons (2007/08 - 2009/10), their results showing that winning teams have average values significantly higher ($p < 0.01$) for total shots than losing teams. Torres-Dávila & García-Cebrián (2012) used it as an input measurement.

The minutes of ball possession represents the volume of play from a team, usually says a lot about which team has dominated the match, or has shown more initiative and intent to have the ball. Lago-Peñas et al. (2011) conclude that ball possession is an indicator of success on UCL. Espitia-Escuer & García-Cebrián (2006, 2010), and Papahristodoulou (2006), used it in their models.

Ball possession could have potential limitations in the development of tactics in opposition sports. A team that plays a counter-attack may not take the initiative to have the ball possession, counting on the speed and capacity to counter-attack with their players. Then, a team following this tactic could become fairly efficient, if he manages to turn their counter-attacks into goal. Then, in order to overcome this potential limitation, ball recovery is an important indicator of that active attitude in relation to control the match. Furthermore, this variable can be a substitutive input of ball possession, because if a team has a lot of ball possession, consequently it will have fewer opportunities to recover the ball, and vice versa. Therefore, a ball recovery, a defensive play, is the third input variable used in the model.

If there is a point at which there is a consensus in literature it is that the output variable must be sporting performance, or one of them, in the case of more than one outputs. On national regular leagues the most common way to measure this outcome is through the points archived. When it is a mixed character tournament, consisting of a group stage and a knockout phase, the selection of the variable is more complicated. González-Gómez & Picazo-Tadeo (2010) observed the three tournaments that Spanish clubs were playing, the output to the league was the points achieved, the number of rounds played to the cup, and the number of games played to European competitions (UCL and UEFA Europe League). As was mentioned before, Torres-Dávila & García-Cebrián (2010) used the points to the group stage and the games played to the knockout phase to study separately the Mexican national league phases. Finally, Espitia-Escuer & García-Cebrián (2010) used the number of games played to evaluate the technical efficiency of UCL. This number represents teams' progress in competition, which is the main objective in this competition type. A team that has reached the round of 16 for example has had an output of 8 games, 6 in the group stage and 2 in the second round.

In UCL case, to use the number of games played, all the clubs involved in the group stage get the same output, regardless of having won, tied or lost their respective matches. The same happens with the finalists, the winning team and the runners-up obtain the same result, since they play the same number of matches. Using the number of games played, all 16 unclassified to the knockout stage would get the same result, regardless of their performance, and consequently developing bias in the performance evaluation. To solve the problem of sporting results measurement in knockout competitions, we propose the use of the coefficients applied by UEFA from UCL revenue distribution. These coefficients are the output variable used in the present paper and appear as a more accurate and representative way of measuring the output of the football clubs participating in competitions with mixed format like UCL. This output measure fully preserves the order of the competition final ranking overcoming some limitations shown by previous studies. A team that qualified to an advanced phase never has a lower score that an eliminated team, and furthermore the scale differentiates them depending on its sports performance, although they were eliminated in the same tournament stage.

The distribution of UCL revenues are as following. A fixed part of the amount of revenue[4] from media rights and commercial contracts is allocated to clubs and corresponds to the sports results achieved. The group stage participation and performance are rewarded, adding a bonus for wins or draws. At the knockout stage they are rewarded for pass to the next phase. The other part concerning revenue is variable, depending on the market pool, and is not related to sports performance, therefore does not matter for this work. For all analysed period the prizes assigned respect the same criteria (as can be seen in Appendix A, a summarized table of prize values evolution). Participation in each phase and the performance in group stage are rewarded. As the contract with sponsors and television are negotiated by UEFA in a three-year cycles, the prize values also change in the same cycles.

For instance, in the 2012/13 UCL each of 32 clubs involved in the group stage received a base fee of €8.6m, and in terms of performance a bonus of €1m was paid for a win and €500.000 for a draw. Teams that classified for the round of 16 received €3.5m, the quarter-finalists €3.9m and the semi-finalists €4.9m. The UCL winners take €10.5m and the runners-up €6.5m. So for this season, the minimum a club received for its sports performance in 2012/13 could be € 8.6m and the maximum could be € 37.4m, depending on its sports performance. Thus the problem outlined above is solved; furthermore to differentiate the champion team from the runners-up, the proposed measure also best represents the results obtained in the group stage.

The descriptive statistics for the inputs and output variables used is show in Table 1. The sports data used in this study were generously provided by Opta Sports, a company with one of the largest sports databases of European football. The UCL results were consulted in the official UEFA website (www.uefa.com).

4. Results

The results of each season are exposed sorted by sporting performance in table 2. To ease results comparison, the lines separating clubs on the results tables represents the final stage that clubs are ranked in each season; from top to bottom: final (champion and runner-up), semi-finals, quarterfinals, knockout round, and group stage. Following the methodology described in the previous section, we are going to introduce the results in a similar approach. Firstly, it is shown the technical efficiency results, stressing the more efficient seasons and the efficient DMUs. Secondly, the inefficient cases (TE < 1) are decompose. By one side, cases characterised by PTE = 1 and SE < 1, let us to identify the DMUs that didn't wasted its resources. By other side, with SE = 1 and PTE < 1, cases of good tactical choices and waste of resources are characterised. Finally, inefficient cases in both estimates (PTE < 1 and EE < 1) are also described and decomposed.

In terms of technical efficiency, an analysis of results along the seasons studied in this paper, it can see that there is a high degree of inefficiency in the UCL. Just twenty-five DMUs - eighteen clubs, considering that some of them appears more than once - had an technical efficiency ratio equal to one in some season (less than 9% of all DMUs observed – grey highlight in table 2).

The 2010/11 season is the most efficient of all observed. This season has the best TE average (0.86), and is the one with the highest number of efficient clubs: five totals. Instead, in 2004/05 only one club have a technical efficiency ratio equal to one, and the TE average is the lower (0.67) of the sample.

Barcelona highlights, being efficient three times over the studied period. These results contrast with those obtained in other seasons, where the club gets to have rates below the average efficiency of the respective season. Furthermore APOEL, Arsenal, Liverpool, Manchester United and Rangers also had good results in efficiency, repeating technical efficiency twice.

In terms of pure technical efficiency, a minimum of two and a maximum of seven DMUs have had TE < 1 and PTE = 1 in each season analysed. The performance of these DMUs (edge highlight in table 2), compared with those that employed the same technology, is characterized by an appropriate use of their resources, without waste. Its inefficiency is exclusively due to an incorrect choice of technology, especially in this case by wrong game tactics choice. For example, Dynamo Kyiv (2004/05, 2008/09 and 2009/10) being three times TE inefficient, nevertheless it did not wasted its resources being considered efficient in terms of PTE analysis.

Decomposing inefficiency, we could find the second main inefficiency source, which is related of good tactics choice and waste resources (TE < 1, PTE < 1 and SE =1). There is no an exclusively case of this inefficiency source in our sample.

The most part of the sample is not efficient and its inefficiencies sources could be the both main causes described before: the waste of resources and the wrong tactical choices (TE <1, PTE < 1 and SE < 1). In table 2 the underlined cases stand out predominantly for a mixed of a very high scale efficiency value, which indicates an appropriate choice of tactics; and a low pure technical efficiency value, which characterized the waste of resources. Barcelona, Bayern Munich, Milan and Real Madrid featured, being inefficient for wasting their resources four times in nine seasons. Clubs like Arsenal, Chelsea, Lyon and Valencia obtained similar results (three times), all big clubs that belong to the Big Five (the five most important domestic/national European leagues: English, Spanish, German, Italian and French).

From a longitudinal perspective, we could study the evolution of efficiency along the nine seasons. In Figure 2 we can observe the average efficiency values of TE (under CRS assumption), PTE (under VRS assumption) and scale efficiency (SE). This figure shows that the efficiency (or inefficiency) levels are not constant over the time. A more detailed analysis let us to consider that the technical and the scale efficiencies are clearly unstable from 2004/05 to 2012/13 seasons. Only the pure technical efficiency shows a relative stable behaviour on average.

In this longitudinal perspective, we are going to analyse the efficiency behaviour shown by the clubs that have played UCL in all the nine seasons under review. Figure 3 shows the efficiency behaviour from the only five clubs that played UCL in all the nine seasons: Barcelona, Madrid, Arsenal, Chelsea and Manchester. As can be seen, technical efficiency is not kept over time. Looking at the performance of these five clubs together, we can observe that 2004/05, 2006/07, and 2009/10 seasons were the worse in terms of technical efficiency.

A separate analysis by club let us to obtain interesting results. Barcelona highlights, having the best TE average (0.86 and ± 0.12 of standard deviation) among these selected clubs. In decreasing order, the TE average and standard deviation for the other clubs are: Arsenal (0.84 ± 0.11), Chelsea (0.84 ± 0.08), Manchester United (0.81 ± 0.12) and Real Madrid (0.74 ± 0.10). In terms of stability, Chelsea stands out by having the most stable performance in the nine seasons. By contrast, Barcelona, in spite of having high efficiency in three seasons, and Manchester United show very poor performances stability. Nevertheless, the poor performance is shown by Real Madrid. This club is the only one that has not been efficient in any occasion. With the exception of 2010/11 and 2011/12 seasons, his technical efficiency is below the average values in each season. The results also show that this phenomenon is explained in most part by a waste of resources.

Other clubs showing high technical efficiency average have not participated in the UCL in all the nine seasons considered. The best examples are APOEL, Anorthosis and Slavia Prague, with a technical efficiency of 1. These clubs have the best *average* of the sample, and they were efficient in all the seasons that they participated in the competition. Nevertheless, it should be taken in mind that they have participated in two and one seasons respectively. More regular participants such as Bayern Munich, Internazionale and Milan also had good results in eight participations over the nine evaluated.

From a national perspective, it can be observed that among the twenty five DMUs with an technical efficiency of one, those that play in the Big Five are the majority. English DMUs were efficient seven times, four different clubs appears: Arsenal, Liverpool and Manchester United twice; and Chelsea once. Spain is the second country, with four efficient DMUs; Barcelona three times and Valencia once. Internazionale, Juventus and Milan are the three Italian efficient DMUs. Schalke 04 and Bayern Munich represent the German Bundesliga in the efficient frontier. France and Portugal doesn't have any efficient DMU. Surprisingly, the Cypriot league contributes with three efficient DMUs: Anorthosis once and APOEL twice. Highlighting the performance obtained by APOEL, which reach quarterfinals in UCL 2011/12.

5. Discussion and Conclusions

Considering the current economic and financial situation of football clubs, the need of know about how efficiently a club use its resources increase. Furthermore this analysis also is important to evaluate clubs sports performance. Among the different tools that it has been widely applied in literature for measuring efficiency, we have opted DEA methodology.

Cooper *et al*. (2007) stand out its ability to identify efficient and inefficient units, as well to the sources (and amounts) of inefficiency.

In this paper, we have applied DEA to the best clubs in Europe, considering 94 different clubs that played in the Champions League in nine seasons (2004/05-2012/13). The use of number of seasons higher than in previous evidence allows us to provide interesting conclusions for each season as well as for the all period of time.

First conclusion, to the analysed period, the UCL champion always is efficient, but not all the efficient clubs are going to win the UCL. This means that being efficient is necessary cause but not enough to be the UCL champion. This result has been tested in all the nine analysed seasons and confirms previous empirical evidence (Papahristodoulou, 2006, Espitia-Escuer & García-Cebrián, 2010). Nevertheless, some differences could be highlighted from previous studies. In previous empirical evidence, the champion and the runner-up were considered efficient. However, our results show that all the champions were efficient, but just only a third of the runners-up were efficient. This difference is due to the use of different performance variables. The use of UEFA coefficient of revenue distribution let us to make a clear distinction between efficient and inefficient clubs in the UCL Championship. In fact, if we consider only the same seasons analysed by Espitia-Escuer & García-Cebrián (2010), we could see that all DMUs considered efficient in our paper have also been in Espitia-Escuer & García-Cebrián (2010). Nevertheless, the reverse is not true, since many more DMUs were considered efficient in their paper.

The analysis of the technical efficient DMUs, those were not able to win the UCL (sixteen cases) let us to suggest to some improvements. These clubs have employed adequately theirs sports resources but they must to increase the amount of inputs employed if they want improve their sports results. In general, these clubs are characterised as medium and small sized clubs. The main characteristic of these clubs is that they have been able to be efficient in the use of their scarce sport resources.

A second conclusion could be derived from the large number of seasons included into our study. As we could see in the nine seasons analysed no club managed to keep technical efficiency. This means that for the clubs is very difficult to maintain the efficiency in the most competitive European football tournament. Furthermore it is important to note that the clubs and the resources employed change from a season to other, as well the opponent teams. So if an efficient club in previous seasons employ the same resources, by the same way, is possible that it is not enough to be efficient in next seasons.

The low level of DMUs considered efficient in our study lead us to the third highlighted conclusion: there is a high degree of inefficiency in UCL. Observing the results of the per season analysis as a whole, we have found a 9% of efficient units as average, comparing with a 29% of Espitia-Escuer & García-Cebrián (2010). As is known, DEA is a methodology very sensitive to changes, and this fact is not thoughtless. But these differences found were expected not for this weakness, but because through the implement of a new, more representative and reliable output measure it is expected that the differences between efficiency indexes be larger. It is easiest to comprise it, considering that with the output measure used in previous studies, the same output was assigned to all teams eliminated in the same phase. If between them, there is anyone that employed a few amounts of inputs and has had no positive sport results, its efficiency could be greater than the others. As the output measure applied in the present paper is better related with sports results; we have found many of the runners-up and teams not classified to the knockout phase that are no longer efficient. These clubs represent over half of the sample and now its performance is differentiated by the output measure. Nevertheless, at global level by season, our results are very similar to previous evidence. For example, in the study developed by Espitia-Escuer & García-Cebrián

(2010), the season with the highest inefficiency level was 2004/05 season. The same result is obtained in our research.

As fourth conclusion, we have detected different sources of inefficiency. The first source of inefficiency is observed through the pure technical efficiency analysis and is related to a clear waste of resources. Clubs in this situation can employ better their resources, improving technically. Also, when forming a new squad to the next years, clubs must to search and purchase for players with specific characteristics with efficient individual performances, trying to improve collective numbers.

The second inefficiency source could be observed through the calculation of scale efficiency and is associated to the choice of an inappropriate sports tactics. Of course the head coach is the most involved in this case. The problem is not only how they have applied their sport resources, or if they are employing fewer or more inputs. These clubs should develop a medium and long-term strategy in order to develop new and different tactics with the resources that they have or could have in the future. In consequence, if the current coach is not capable to do it, the purchase of a new coach becomes necessary. In the same way, and associated with the coach choices, the purchase of players also should be analysed in the context of the development of these necessary new sport tactics. All these guidelines, lead to infer in the first stage of the production process, which is possible just if the performance evaluation is continuous.

We have found some clubs that suffer both types of inefficiency. In this case, these clubs might be encouraged to look at carefully to their reference unit, in particular in terms of size to discover how those efficient clubs develop efficient sport tactics and use their sport resources adequately. Benchmarking could be considered in terms of sport management an essential tool to sportive and economic survival of football clubs.

Finally, the new output measure proposed seems to be suitable to represent reliably the sports results archived by the football clubs that play UCL. This new measure could allocate more real values to the sports results. The use of the coefficients applied by UEFA from UCL revenue distribution will be helpful on further research.

In this context, the coefficients of revenue distribution from the UCL might be also used to analyse all the seasons as a whole. This procedure has as the main advantage the number of units considered under analysis, helping to overcome one of DEA limitations. As the values of revenue distribution applied by UEFA changes in a three-year cycle, should homogenize its monetary values. Considering the coefficients values of the last season analysed as reference, it could be applied to the other seasons of the sample. In the same way this methodology and output measure could be applied to other competitions with similar UCL format, such as the FIFA World Cup, the national cups or the South American club tournament (known as the *Copa Libertadores de America*, an important market sector, still poorly studied).

Notes

[1] Union of European Football Associations (UEFA) represents the national football associations of Europe, runs nation and club competitions including the UEFA European Championship, UEFA Champions League, UEFA Europa League, and UEFA Super Cup, and controls the prize money, regulations, and media rights to those competitions.

[2] Normally on DEA literature the size of a unit is related with the different technologies that could exist to make a product. In the present specific case, analysing football clubs through the use of true variables like sports variables, the technology are the different types of play, namely the tactics employed. When the term “size” is employed in the present paper is making reference to the tradition and the "financial-economic" size of the football clubs, like regular companies.

[3] More information about the competition format and the UEFA coefficient system, available at: "http://www.uefa.com/memberassociations/uefarankings/index.html" (accessed 18 February 2014).

[4] UEFA negotiates agreements with sponsors and television in three-year cycles. Between 75-82% of the total revenue from media rights and commercial contracts concluded by UEFA go to clubs, while the remaining 25-18% is reserved for European football and remain with UEFA to cover organizational and administrative costs and solidarity payments to associations, clubs and leagues. What defines the exact value of these figures is the revenue of each period, for the season of 2012/13 for example, to a maximum of € 530m, 75% were intended for clubs, and any revenue in excess of this value raises the clubs percentage to 82.

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Table 1. Descriptive Statistics of the Data Used

		Inputs			Output
		Total attempts	Ball recoveries	Ball possession	Sports results
UCL 2004-05	Max	168	690	375	17.374
	Min	46	210	119	3.57
	Average	100.44	373.59	209.63	6.49
	SD	38.59	135.31	69.77	3.26
UCL 2005-06	Max	217	748	390	18.14
	Min	51	234	132	3.9
	Average	103.28	404.81	200.47	6.78
	SD	41.42	136.12	66.73	3.31
UCL 2006-07	Max	209	750	352	22.2
	Min	50	274	129	5.4
	Average	105.56	427.19	197.34	9.64
	SD	41.73	137.53	62.70	4.02
UCL 2007-08	Max	216	813	401	23.4
	Min	44	278	128	5.4
	Average	107.34	436.69	204.41	9.64
	SD	45.59	138.08	71.67	4.19
UCL 2008-09	Max	227	769	428	22.8
	Min	49	298	117	5.7
	Average	105.06	435.72	199.84	9.64
	SD	45.48	136.20	78.58	4.09
UCL 2009-10	Max	204	695	445	29.5
	Min	34	243	118	7.2
	Average	102.84	408.47	195.94	12.91
	SD	44.63	135.92	80.45	5.47
UCL 2010-11	Max	221	984	504	30.7
	Min	45	364	119	7.2
	Average	105.44	540.41	205.44	12.91
	SD	46.55	164.32	84.70	5.74
UCL 2011-12	Max	255	994	472	29.9
	Min	54	340	121	7.2
	Average	107.50	546.59	206.97	12.91
	SD	52.17	172.35	83.84	5.58
UCL 2012-13	Max	231	960	472	35.9
	Min	42	344	99	9.1
	Average	103.19	534.53	208.13	15.47
	SD	48.01	163.86	77.57	6.64

Notes: UCL: UEFA Champions League; Max: maximum; Min: minimum; SD: standard deviation

Table 2. Efficiency Scores for Teams Playing in UEFA Champions League

UCL 2004-05					UCL 2005-06					UCL 2006-07				
DMU	TE	PTE	SE	Sports Results	DMU	TE	PTE	SE	Sports Results	DMU	TE	PTE	SE	Sports Results
Liverpool	1.000	1.000	1.000	17.374	Barcelona	1.000	1.000	1.000	18.140	Milan	1.000	1.000	1.000	22.200
Milan	0.866	0.879	0.986	15.098	Arsenal	1.000	1.000	1.000	15.580	Liverpool	1.000	1.000	1.000	19.800
Chelsea	0.812	0.854	0.951	11.198	Villarreal	0.871	0.886	0.983	11.260	Chelsea	0.793	0.812	0.977	15.800
PSV Eindhoven	0.649	0.686	0.947	10.874	Milan	0.767	0.822	0.933	11.260	Manchester United	0.772	0.802	0.963	15.500
Juventus	0.639	0.721	0.886	8.922	Lyon	0.793	0.878	0.903	9.180	Valencia	0.874	0.878	0.996	12.800
Internazionale	0.671	0.748	0.897	8.760	Juventus	0.719	0.791	0.909	9.020	Bayern Munich	0.764	0.813	0.939	12.800
Lyon	0.714	0.782	0.913	8.598	Internazionale	0.752	0.842	0.893	8.860	Roma	0.822	0.859	0.957	12.200
Bayern Munich	0.751	0.829	0.907	8.274	Benfica	0.797	0.897	0.889	8.380	PSV Eindhoven	0.873	0.932	0.936	12.200
Werder Bremen	0.698	0.804	0.869	6.648	Liverpool	0.754	0.888	0.849	6.940	Lyon	0.824	0.908	0.907	10.600
Arsenal	0.672	0.808	0.832	6.486	Bayern Munich	0.721	0.859	0.839	6.940	Real Madrid	0.789	0.868	0.910	10.000
Bayer Leverkusen	0.596	0.699	0.853	6.486	Chelsea	0.732	0.851	0.860	6.780	Porto	0.825	0.893	0.924	10.000
Manchester United	0.713	0.826	0.864	6.486	Ajax	0.692	0.799	0.866	6.780	Barcelona	0.851	0.871	0.977	10.000
Monaco	0.623	0.835	0.746	6.486	PSV Eindhoven	0.929	1.000	0.929	6.620	Arsenal	0.805	0.839	0.960	10.000
Real Madrid	0.603	0.698	0.864	6.486	Real Madrid	0.642	0.768	0.836	6.620	Lille	0.813	0.915	0.888	9.700
Barcelona	0.670	0.779	0.859	6.324	Rangers	0.881	0.941	0.937	6.460	Internazionale	0.912	0.916	0.996	9.700
Porto	0.709	0.830	0.854	6.162	Werder Bremen	0.698	0.846	0.826	6.300	Celtic	0.963	0.996	0.967	9.400
Dynamo Kyiv	0.722	1.000	0.722	4.704	Schalke 04	0.765	0.975	0.784	4.860	Werder Bremen	0.811	0.972	0.835	7.500
Olympiacos	0.748	0.960	0.779	4.704	Club Brugge	0.905	1.000	0.905	4.700	CSKA Moscow	1.000	1.000	1.000	7.200
Panathinaikos	0.685	0.913	0.750	4.704	Artmedia	0.839	0.991	0.847	4.700	AEK	0.903	1.000	0.903	7.200
Fenerbahçe	0.708	0.917	0.773	4.542	Udinese	0.758	1.000	0.758	4.700	Shakhtar Donetsk	0.724	0.875	0.827	6.900
CSKA Moscow	0.708	0.905	0.783	4.380	Lille	0.712	0.944	0.754	4.700	Copenhaguen	0.904	1.000	0.904	6.900
Valencia	0.628	0.926	0.678	4.380	Manchester United	0.699	0.853	0.820	4.700	Bordeaux	0.806	0.889	0.907	6.900
Celtic	0.574	0.937	0.613	4.218	Betis	0.643	0.839	0.766	4.700	Benfica	0.905	0.999	0.906	6.900
Paris Saint-Germain	0.652	0.936	0.697	4.218	Porto	0.800	1.000	0.800	4.540	Steaua Bucarest	0.900	1.000	0.900	6.600
Shakhtar Donetsk	0.696	0.899	0.774	4.218	Thun	0.715	1.000	0.715	4.380	Sporting Lisboa	0.687	0.849	0.810	6.600
Ajax	0.618	0.808	0.765	4.056	Rosenborg	0.706	0.988	0.714	4.380	Spartak Moscow	0.760	0.901	0.843	6.600
Maccabi Tel Aviv	0.765	1.000	0.765	4.056	Panathinaikos	0.672	0.936	0.718	4.380	Anderlecht	0.748	0.915	0.817	6.600
Deportivo La Coruña	0.536	0.840	0.638	3.894	Olympiacos	0.671	0.935	0.718	4.380	Olympiacos	0.667	0.896	0.745	6.300
Rosenborg	0.526	0.801	0.657	3.894	Fenerbahçe	0.644	0.890	0.724	4.380	Galatasaray	0.828	0.956	0.866	6.300
Roma	0.626	1.000	0.626	3.732	Anderlecht	0.767	1.000	0.767	4.220	Hamburg	0.636	0.872	0.730	6.000
Sparta Prague	0.498	0.826	0.602	3.732	Sparta	0.668	0.971	0.688	4.220	Dynamo Kyiv	0.663	0.935	0.709	6.000
Anderlecht	0.493	0.732	0.673	3.570	Rapid Wien	0.593	0.931	0.637	3.900	Levski	0.692	0.924	0.748	5.400

Notes: DMU: Decision Making Unit; TE: Technical Efficiency; PTE: Pure Technical Efficiency; SE: Scale Efficiency.

Table 2. Continued

UCL 2007-08					UCL 2008-09					UCL 2009-10				
DMU	TE	PTE	SE	Sports Results	DMU	TE	PTE	SE	Sports Results	DMU	TE	PTE	SE	Sports Results
Manchester United	1.000	1.000	1.000	23.400	Barcelona	1.000	1.000	1.000	22.800	Internazionale	1.000	1.000	1.000	29.500
Chelsea	0.827	0.845	0.978	19.800	Manchester United	0.904	0.927	0.975	19.500	Bayern Munich	0.904	0.916	0.987	26.100
Barcelona	0.785	0.829	0.947	16.100	Arsenal	0.842	0.907	0.928	15.500	Lyon	0.785	0.821	0.957	21.300
Liverpool	0.715	0.767	0.932	15.200	Chelsea	0.889	0.904	0.983	15.500	Barcelona	0.722	0.751	0.961	20.900
Arsenal	0.768	0.785	0.979	12.800	Bayern Munich	0.877	0.881	0.996	13.100	Bordeaux	0.868	0.923	0.940	17.900
Fenerbahçe	0.718	0.808	0.889	12.500	Liverpool	0.894	0.897	0.997	13.100	Arsenal	0.719	0.752	0.956	17.100
Roma	0.753	0.840	0.897	12.500	Porto	0.911	0.933	0.977	12.500	Manchester United	0.703	0.753	0.934	17.100
Schalke 04	0.741	0.828	0.895	11.900	Villarreal	0.809	0.818	0.989	12.200	CSKA Moscow	0.749	0.776	0.965	16.300
Internazionale	0.910	1.000	0.910	10.600	Atlético Madrid	0.987	1.000	0.987	10.300	Chelsea	0.782	0.864	0.905	14.200
Sevilla	0.749	0.858	0.873	10.600	Juventus	1.000	1.000	1.000	10.300	Fiorentina	0.828	0.915	0.905	14.200
Milan	0.729	0.827	0.882	10.300	Lyon	0.943	0.945	0.998	10.000	Real Madrid	0.679	0.754	0.900	13.800
Olympiacos	0.924	0.963	0.960	10.000	Real Madrid	0.763	0.792	0.963	10.000	Sevilla	0.770	0.856	0.900	13.800
Porto	0.716	0.857	0.836	10.000	Roma	0.942	0.958	0.983	10.000	Porto	0.725	0.837	0.867	13.400
Real Madrid	0.655	0.765	0.856	10.000	Sporting Lisboa	0.990	1.000	0.990	10.000	Olympiacos	0.787	0.885	0.890	13.000
Lyon	0.719	0.855	0.842	9.700	Panathinaikos	0.861	0.925	0.931	9.700	Milan	0.788	0.884	0.891	13.000
Celtic	0.980	0.990	0.990	9.400	Internazionale	0.774	0.831	0.931	9.400	Stuttgart	0.753	0.846	0.890	13.000
Benfica	0.682	0.897	0.760	6.900	Dynamo Kyiv	0.953	1.000	0.953	7.200	Juventus	0.832	1.000	0.832	9.600
Marseille	0.714	0.879	0.813	6.900	Shakhtar Donetsk	0.880	0.963	0.914	7.200	Unirea Urziceni	0.868	1.000	0.868	9.600
PSV Eindhoven	0.756	0.912	0.829	6.900	Werder Bremen	0.737	0.914	0.806	7.200	Liverpool	0.782	0.964	0.811	9.200
Rangers	1.000	1.000	1.000	6.900	Aalborg	0.897	0.954	0.940	6.900	Marseille	0.686	0.871	0.788	9.200
Rosenborg	0.796	0.931	0.855	6.900	Anorthosis	1.000	1.000	1.000	6.900	Wolfsburg	0.673	0.862	0.781	9.200
Sporting Lisboa	0.703	0.923	0.762	6.900	Bordeaux	0.785	0.989	0.794	6.900	Rubin Kazan	0.955	1.000	0.955	9.200
Besiktas	0.927	1.000	0.927	6.600	Fiorentina	0.858	0.917	0.935	6.900	AZ Alkmaar	0.743	0.880	0.844	8.800
Lazio	0.768	0.953	0.806	6.600	Celtic	0.888	1.000	0.888	6.600	Dynamo Kyiv	0.731	1.000	0.731	8.800
Shakhtar Donetsk	0.617	0.845	0.730	6.600	Zenit	0.732	0.871	0.840	6.600	Standard Liège	0.781	1.000	0.781	8.800
Slavia Prague	1.000	1.000	1.000	6.600	BATE Borisov	0.865	0.995	0.869	6.300	APOEL	1.000	1.000	1.000	8.400
Valencia	0.752	0.799	0.941	6.600	CFR Cluj	0.792	0.924	0.857	6.300	Atlético Madrid	0.651	0.847	0.769	8.400
Werder Bremen	0.640	0.845	0.757	6.600	Marseille	0.692	0.860	0.805	6.300	Besiktas	0.662	0.838	0.789	8.400
Stuttgart	0.566	0.845	0.670	6.000	Fenerbahçe	0.691	0.898	0.769	6.000	Zürich	0.899	1.000	0.899	8.400
CSKA Moscow	0.599	0.910	0.658	5.700	PSV Eindhoven	0.660	0.848	0.779	6.000	Rangers	0.716	0.916	0.782	8.000
Steaua Bucarest	0.665	0.863	0.771	5.700	Basel	0.781	1.000	0.781	5.700	Debreceni VSC	0.698	1.000	0.698	7.200
Dynamo Kyiv	0.570	0.930	0.613	5.400	Steaua Bucarest	0.755	0.934	0.809	5.700	Maccabi Haifa	0.682	0.961	0.710	7.200

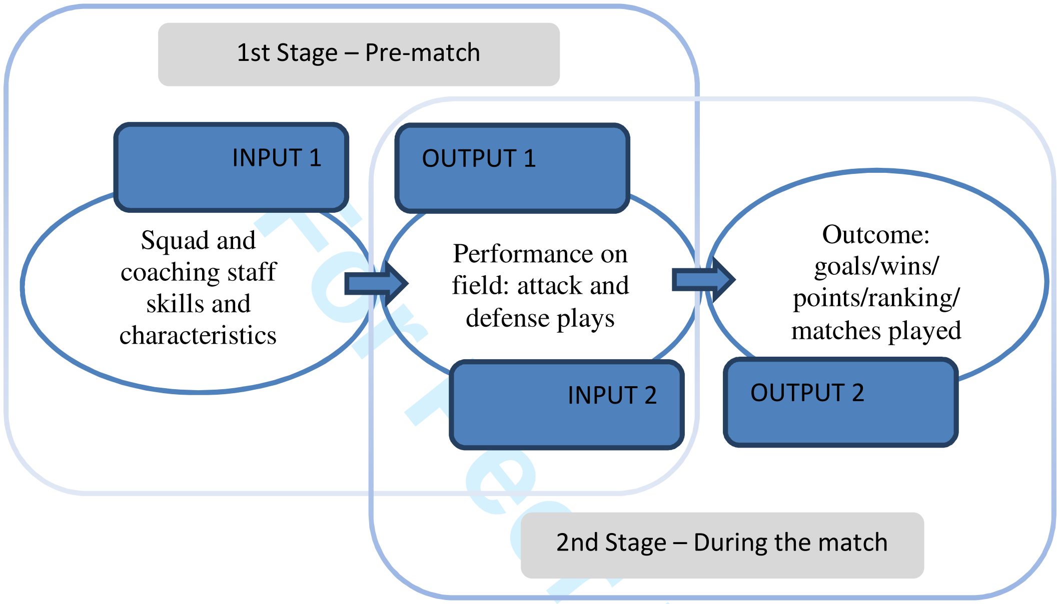
Notes: DMU: Decision Making Unit; TE: Technical Efficiency; PTE: Pure Technical Efficiency; SE: Scale Efficiency.

Table 2. Continued

UCL 2010-11					UCL 2011-12					UCL 2012-13				
DMU	TE	PTE	SE	Sports Results	DMU	TE	PTE	SE	Sports Results	DMU	TE	PTE	SE	Sports Results
Barcelona	1.000	1.000	1.000	30.700	Chelsea	1.000	1.000	1.000	29.900	Bayern Munich	1.000	1.000	1.000	35.900
Manchester United	1.000	1.000	1.000	27.300	Bayern Munich	0.832	0.841	0.989	26.900	Borussia Dortmund	0.978	1.000	0.978	32.400
Real Madrid	0.932	0.937	0.994	22.100	Real Madrid	0.805	0.832	0.967	22.500	Barcelona	0.908	0.945	0.962	25.400
Schalke 04	1.000	1.000	1.000	21.300	Barcelona	0.843	0.873	0.965	22.100	Real Madrid	0.767	0.771	0.995	24.900
Chelsea	0.895	0.907	0.987	17.500	Benfica	0.737	0.821	0.898	17.100	Paris Saint-Germain	0.864	0.868	0.995	21.000
Shakhtar Donetsk	0.947	0.961	0.986	17.500	APOEL	1.000	1.000	1.000	16.300	Juventus	0.794	0.794	0.999	20.500
Tottenham	0.913	0.917	0.995	16.700	Marseille	0.771	0.801	0.962	16.300	Málaga	0.903	0.988	0.914	20.500
Internazionale	0.837	0.850	0.984	16.300	Milan	0.784	0.862	0.909	16.300	Galatasaray	0.772	0.793	0.974	19.500
Bayern Munich	0.773	0.900	0.859	14.200	Arsenal	0.834	0.896	0.931	13.400	Porto	0.782	0.805	0.971	16.600
Valencia	0.778	0.808	0.963	13.400	Basel	0.843	0.934	0.903	13.400	Schalke 04	0.722	0.757	0.954	16.600
Arsenal	0.891	0.904	0.985	13.400	Napoli	0.862	0.950	0.907	13.400	Valencia	1.000	1.000	1.000	16.600
Marseille	0.838	0.853	0.983	13.400	Bayer Leverkusen	0.817	0.894	0.914	13.000	Manchester United	0.806	0.893	0.903	16.100
Copenhaguen	0.939	0.943	0.996	13.000	Internazionale	0.792	0.912	0.868	13.000	Arsenal	1.000	1.000	1.000	15.600
Lyon	0.763	0.782	0.976	13.000	Zenit	0.680	0.780	0.872	13.000	Celtic	0.903	0.921	0.981	15.600
Roma	0.907	0.931	0.974	13.000	CSKA Moscow	0.751	0.837	0.898	12.600	Shakhtar Donetsk	0.772	0.843	0.915	15.600
Milan	0.839	0.863	0.972	12.600	Lyon	0.655	0.775	0.846	12.600	Milan	0.754	0.778	0.969	15.100
Sporting Braga	0.974	1.000	0.974	9.600	Manchester City	0.831	1.000	0.831	10.000	CFR Cluj	1.000	1.000	1.000	12.100
Spartak Moscow	0.811	0.896	0.905	9.600	Manchester United	0.736	0.918	0.801	10.000	Chelsea	0.840	1.000	0.840	12.100
Ajax	0.790	0.949	0.832	9.200	Ajax	0.751	0.935	0.803	9.600	Benfica	0.833	0.939	0.888	11.600
Rangers	1.000	1.000	1.000	9.200	Olympiacos	0.827	1.000	0.827	9.600	Olympiacos	0.824	0.850	0.970	11.600
Rubin Kazan	0.937	0.960	0.975	9.200	Porto	0.657	0.867	0.758	9.600	Zenit	0.744	0.836	0.889	11.100
Twente	0.815	0.874	0.933	9.200	Valencia	0.698	0.884	0.789	9.600	Anderlecht	0.791	0.870	0.910	10.600
Basel	0.725	0.885	0.820	8.800	Trabzonspor	0.787	0.967	0.814	9.600	BATE Borisov	0.832	0.890	0.934	10.600
Benfica	0.834	0.968	0.862	8.800	Lille	0.691	0.901	0.767	9.200	Dynamo Kyiv	0.806	0.867	0.930	10.600
Hapoel Tel-Aviv	0.937	0.946	0.991	8.800	Shakhtar Donetsk	0.639	0.856	0.747	8.800	Ajax	0.717	0.866	0.829	10.100
Werder Bremen	0.778	0.891	0.874	8.800	Viktoria Plzeň	0.786	1.000	0.786	8.800	Manchester City	0.726	0.866	0.838	10.100
CFR Cluj	0.887	1.000	0.887	8.400	Borussia Dortmund	0.580	0.769	0.754	8.400	Lille	0.654	0.906	0.721	9.600
AJ Auxerre	0.792	0.935	0.847	8.000	KRC Genk	0.755	1.000	0.755	8.400	Montpellier	0.595	0.776	0.767	9.600
Panathinaikos	1.000	1.000	1.000	8.000	BATE Borisov	0.716	0.972	0.737	8.000	Spartak Moscow	0.758	0.920	0.824	9.600
Bursaspor	0.703	0.931	0.755	7.600	Dinamo Zagreb	0.719	1.000	0.719	7.200	Sporting Braga	0.643	0.930	0.692	9.600
Partizan	0.631	0.819	0.770	7.200	Oţelul Galaţi	0.651	1.000	0.651	7.200	Dinamo Zagreb	0.751	0.918	0.818	9.100
MŠK Žilina	0.767	1.000	0.767	7.200	Villarreal	0.656	0.931	0.705	7.200	Nordsjaelland	0.895	1.000	0.895	9.100

Notes: DMU: Decision Making Unit; TE: Technical Efficiency; PTE: Pure Technical Efficiency; SE: Scale Efficiency.

Figure 1: Football Production Process (own elaboration adapted from Espitia-Escuer and García-Cebrián, 2004).



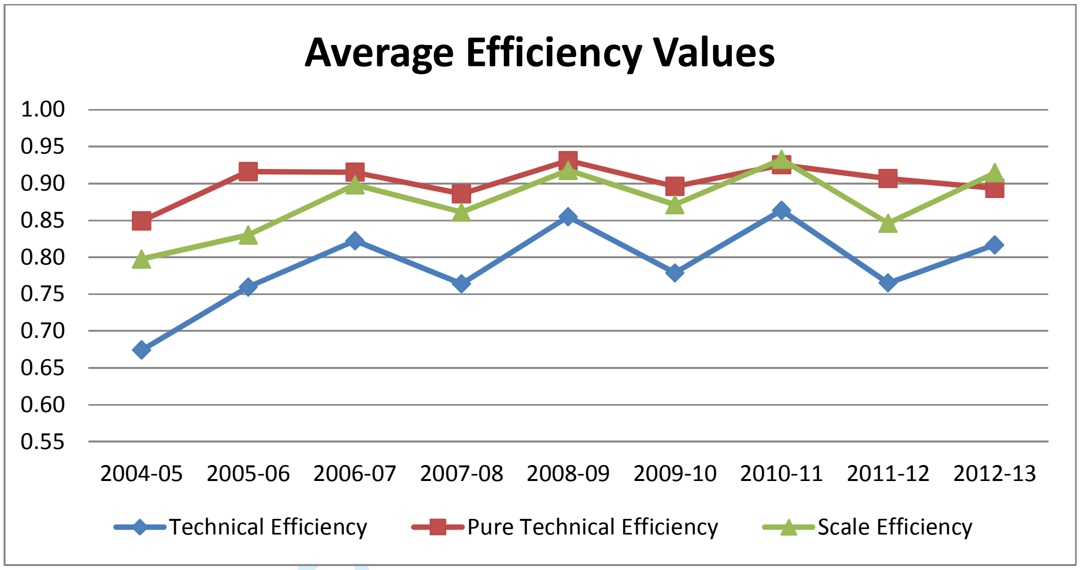


Figure 2: Average efficiency values.

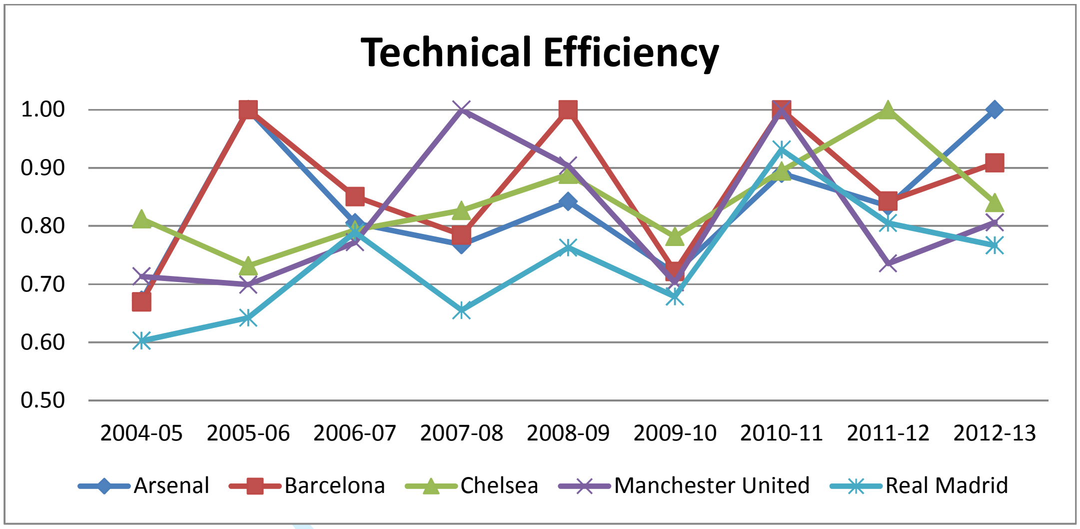


Figure 3: Technical Efficiency results from clubs that played UCL in all the seasons observed.

Appendix A

Prize for participation, matches played and performance (values in millons of Euros)											
	2013/14	2012/13	2011/12	2010/11	2009/10	2008/09	2007/08	2006/07	2005/06	2004/05	2003/04
Participation	8.6	8.6	7.2	7.2	7.1	5.4	5.4	5.4	3.9	3.9	3.9
Win	1	1	0.8	0.8	0.8	0.6	0.6	0.6	0.32	0.32	0.32
Draw	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.16	0.16	0.16
Play rond of sixteen	3.5	3.5	3	3	3	2.2	2.2	2.2	1.6	1.6	1.6
Play quarterfinal	3.9	3.9	3.3	3.3	3.3	2.5	2.5	2.5	1.92	1.92	1.92
Play semifinal	4.9	4.9	4.2	4.2	4.2	3	3	3	2.56	2.56	2.56
Runner-up	6.5	6.5	5.6	5.6	5.6	4	4	4	3.84	3.84	3.84
Champion	10.5	10.5	9	9	9	7	7	7	6.4	6.4	6.4
Mimimum	8.6	8.6	7.2	7.2	7.1	5.4	5.4	5.4	3.9	3.9	3.9
Maximum	37.4	37.4	31.5	31.5	31.4	23.7	23.7	23.7	18.3	18.3	18.3

Source: UEFA.com and UEFADirect