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ARTICLE

Research Article

- The mediating effect of competitive balance on the relation between foreign players and performance of the Greek National Basketball Team** **72**
Meletakos Panagiotis*, Noutsos Konstadinos, Manasis Vasileios, Bayios Ioannis

Full Length Research Paper

The mediating effect of competitive balance on the relation between foreign players and performance of the Greek National Basketball Team

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The purpose of the present study is to initially investigate the association between the presence and number of foreign players and the competitive balance indices in the Greek National Basketball League; it subsequently determines whether the competitive balance mediates a positive effect on the performance of the Greek National Basketball Team, as evidenced by its rankings in the EuroBasket Championships. The study examines 47 seasons of the Greek National Basketball League, from 1965-66 to 2012-13. National legislation allowed only the participation of Greek players until the 1988-89 season. There are 22 seasons without the presence of foreign players and 25 with the presence of foreign players. Within the period under examination, 24 EuroBasket Championships have been organized. A set of specially designed indices of competitive balance, encompassing all levels of competitiveness were calculated for each year. Results showed that the performance of the Greek national basketball team in the EuroBasket Championships improved with the appearance of foreign players in the league, which also had an immediate positive effect on all aspects of competitiveness. This continued to improve with the influx of increasing numbers of foreign players. Analysis has shown that the effect of foreign players on the National Team performance is better explained through the mediating effect of competitiveness. In conclusion, the present study revealed that the presence and number of foreign players in the Greek National Basketball League led to an improvement of competitive balance, which, in turn, had a positive effect on the performance of the Greek National basketball team, as evidenced by its performance in the EuroBasket Championships.

Key words: Competitive balance, Greek National Basketball League, National team, foreign players.

INTRODUCTION

Sport is both a social and economic phenomenon. To deeply comprehend it requires a multi-scientific approach arising from different sectors of research. In sports, fan interest is generated when what they witness is exciting

without knowing the final outcome. This can be said only if both teams are of relatively equal strength and the outcome is unforeseen. Rottenberg (1956) clearly states that competitors must be of relatively equal status to

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make a championship competitive. In addition, Neale (1964) perceived sport as an economic entity which requires the participants to cooperate to mutually maximize profit. El-Hodiri and Quirk (1971) stress competitive balance as an important ingredient of a sports league in their economic model. Forrest and Simmons (2002) state that competitive balance is present when each team has the same capability in a league. Similarly, Michie and Oughton (2004) denote that competitive balance encompasses the potential capabilities of teams and to what degree these are balanced. It follows that in a perfectly balanced championship each team has equal chances of ending up as the winner. Groot (2008) proposes that a line needs to be drawn between static and dynamic competitive balance. Static competitive balance refers to the equilibrium between teams at the end of one championship season while dynamic competitive balance defines what happens from season to season. Scelles et al. (2011a) extend the idea of dynamic competitive balance to what happens during one season, whereas Scelles et al. (2011b) extend it to what happens during one match.

In the study by Fort and Maxcy (2003), there is a discernible difference between the analysis of competitive balance (ACB), which relates to possible decision making by the sports authorities and the uncertainty of outcome hypothesis (UOH) which is related to fan interest. Our study deals with the ACB parameter. A number of indices have been used to capture the competitive balance in sports competitions. Noll (1988) and Scully (1989) introduce the Ratio of Standard Deviation (RSD). Moreover, Utt and Fort (2002) refer to the use of the Gini coefficient while Owen et al. (2007) borrow the economic index Herfindahl-Hirschman Index (HHI) adjusted for sports. Another index, the so-called National Measure of Seasonal Imbalance (NAMSI) is proposed by Goossens (2006). Michie and Oughton (2004) present the C5 Index of Competitive Balance (C5ICB). Koning (2000) introduces the widely used index of Concentration Ratio (CR) while Manasis et al. (2011) propose a development of this index, the Normalized Concentration Ratio (NCR_K).

It is a well-documented fact that there are fundamental differences between the U.S. and European model of professional sports. The latter is organized in a pyramidal fashion comprising a system of national federations that are affiliated to European and International federations. At the top there are the European federations followed by the national federations. Further down we find regional federations and finally the clubs themselves (European Commission, 1998b, p. 2-3). In the U.S, the professional sports leagues consist of a fixed number of clubs, which usually have exclusive territorial rights covering major metropolitan areas, so there is no local rivalry (Rader, 2002). New teams may enter the competition only by being accepted by the current members (Shropshire, 1995).

One of the striking differences is that the U.S leagues

are closed, which means that the teams within the league are not relegated to lower divisions nor are teams promoted while in Europe they are characterized by a relegation and promotion system in team sports (Troelsen, and Dejonghe, 2006). Another different feature is that generally in European domestic sports leagues, the top final ranking positions are the objective of all the teams as these positions allow them to compete in international competitions in the context of the European continent, which is applicable to all team sports (Hoehn and Szymanski, 1999). This issue cannot be completely expressed by the above indices of competitive balance. Manasis et al. (2012) developed some specially designed indices in order to capture the multi-level competitive balance. These indices were used in our study and they are described in the method section.

The participation of athletes in leagues is of pivotal importance. Every team selects players who are capable of optimum performance. In this way, the players can be said to be the most important part of the human capital of a team. In a globalized professional sports world, the mobility of players both from team to team and from country to country is an undeniable fact, although with restrictions. Every country initially had selective restrictions for the participation of foreign players in their domestic leagues. In the known Bosman ruling of 1995 (European Court of Justice case C-415/93), the European Commission was forced to remove the restrictions on the free movement of athletes. Binder and Findlay (2011) register a significant increase of registered foreign players in European top football division leagues and an increase in the number of foreign players in the starting lineup. Although foreign players are not allowed to participate in national teams (FIBA Internal Regulations, 2012), they do seem to influence, in some way, the performance of the national team.

Initially, it was suggested (Maguire and Pearton, 2000) that foreign players may have a negative impact on national team performance. However, later findings contend that foreign players have a positive impact. Baur and Lehmann (2007), with regards to the 2006 Football World Cup found that the number of foreign players that play in the league has a positive effect on the performance of the national team. Kuper and Szymanski (2012, p.314) also think that the English national football team has taken advantage of the Bosman ruling: "*The experience of playing against the best foreign players every week has probably helped English internationals to improve.*" In a respective study, by Alvarez et al. (2008), their findings in European basketball suggest that the increase in the participation of foreign players in European domestic leagues provokes an improvement in the performance of national teams. The latter three studies propose that this enhancement occurs through an interaction between the players in a team, termed the spillover effect as studied by Kendall (2003). For example, Alvarez et al. (2008) state that "*spillovers not only improve*

local player performance while they play alongside imports in the domestic league but also have a more permanent effect whereby they raise the quality of these local players for the long term”.

Finally, with regards to the effect of foreign players on competitive balance, Flores et al. (2010), in a study comprising seventeen European football leagues, found that liberalization of the mobility of players improves competitive balance.

Therefore, the performance of national teams can be seen as a complex and multidimensional variable. A number of factors can be said to influence this performance. The “momentum” of the team consists of the home hosting and the presence of “superstar players”, who may not only have a clear financial dimension as stated by Lucifora and Simmons (2003) but also an effect on game performance.

Basketball in Greece is recognized as being the sport which has generated large scale acceptance and interest by fans. It is organized into four leagues. The first is termed A1 league followed by A2 both at national levels. Next in line is B league and finally C league. The latter two leagues, B and C, have two and four sub leagues respectively based on geographical criteria. Below these leagues there are many local leagues based on prefecture and town. Basketball is also a sport which has harbored and developed many young talented players. It has been played since the 1927-28 season, but officially recorded competition began in the year 1963-64. Ever since that time, the first division comprised teams from various geographical areas with the majority coming from the two biggest cities, Athens and Thessaloniki. There was a time when foreign players were barred from playing in the Greek domestic league but from the 1989-90 season, the relevant authorities took the decision to permit foreign players’ participation in the league. A major highlight was the 1992-93 season with the beginning of the professional phase of the league when the total number of teams participating finally became fourteen (It begun as 10 teams and later on 12). The structure is organized such that each team takes part in two rounds (home and away) within the regular season. This is followed by play-off games which lead to the final rankings of the teams. From a team owner’s perspective, one can say that the overwhelming majority of owners fall into the win maximize category compared to those who belong to the profit maximize one (Kessenne, 1996; Vrooman., 1997; 2000; 2007). Therefore, basketball in Greece, both at club and national levels, has appreciable victories, something that has not been achieved in other national sports (except in football with the success in Euro 2004).

Competitive balance is an important parameter for a league and is sought for by the organizing authorities and the participating teams as it is mutually beneficial for both. Having some knowledge of the competitive balance is like knowing the environment and conditions the team plays in. This is an important issue for every sport

manager, but also for owner and coaches.

The purpose of the present study was to initially investigate the association between the presence and number of foreign players and the competitive balance indices in the Greek National Basketball League and subsequently determine whether the competitive balance mediates a positive effect on the performance of the Greek National Basketball Team, as evidenced by its rankings in the EuroBasket Championships.

METHODS

The study examined 47 seasons of the Greek National Basketball League, from 1965-66 to 2012-13. National legislation allowed only the participation of Greek players until the 1988-89 season. There are 22 seasons without the presence of foreign players and 25 with the presence of foreign players. Within the period under examination, 24 EuroBasket Championships have been organized. EuroBasket, formerly known as European Basketball Championship, is the main basketball competition contested biennially by the men’s national teams governed by FIBA (Federation International Basketball Association, 2012) Europe. The Men’s Greek Basketball Team participated in the final stages for 21 of these 24 championships and achieved ranking positions from 1st to the 16th. It did not manage to enter the final stage of these championships in three cases, namely in 1971, 1977 and 1985 as it was knocked out in the preliminary rounds. The initial legislation that did not allow foreign players to participate in the Greek National Basketball League until the 1988-89 season affected the first twelve (n=12) EuroBasket Championships in which Greece played.

The independent variable of the number of foreign players was transformed into a binary variable signifying the absence or presence of foreign players (FP – No/Yes). The ranking of the Greek National Basketball Team in the EuroBasket Championships was recorded into a binary variable to differentiate between whether the team had qualified in the top four or was eliminated before semifinals (Above 4th position /1st- 4th).

Finally, the optimal cutoff value for the NCR¹ index was converted to a binary variable that provides the best discrimination of the final ranking, which was determined with receiver operating characteristics (ROC) analysis (Hanley and McNeil, 1982). The cutoff value that provides the best tradeoff was calculated at 0.7. Therefore, values equal to or greater than 0.7 signify poor competitive balance and values below 0.7 indicate satisfactory competitive balance (CB – Poor/Satisfactory).

Competitive balance indices

In the European environment of team sports, a significant characteristic is that there are different leagues, the topleague followed by others of lower status as detailed in the Introduction. In this set up, the first team wins the championship and the following top teams (the number may vary from season to season) gain the right to participate in the European tournaments. The teams occupying the bottom places are relegated to a lower league. Consequently to be able to capture the competitiveness at the different levels as described above, a number of specially designed indices were selected. In particular, Manasis et al. (2013) identified three levels of competition:

- a) The first level that refers to the competition for the domestic championship title.
- b) The second level that refers to the qualifying places for European

tournaments the next season.
c) The third level that refers to the competition for relegation.

According to Manasis et al. (2013), competitive balance is determined by the degree of competition in the three aforementioned levels. The development of the special indices is based on the *Normalised Concentration Ratio* (Manasis et al., 2011) which is the normalization of the frequently used CR_K index developed by Koning (2000). The range of all indices is from zero (perfect balance) to one (complete imbalance). A short description of the indices is followed by the relevant formula.

The *Normalized Concentration Ratio for the Champion* (NCR_1), which captures the first level, describes the degree of champion domination, and is given by,

$$NCR_1 = \frac{1}{2(N-1)} P_1 - 1,$$

where P_1 stands for the numbers of points collected by the champion and N is the number of teams participating in the league.

The *Adjusted Concentration Ratio* (ACR_K), which captures both first and second levels, competition for the championship and competition for the positions which provide the right to participate in European Competitions. It must be said that the number of entitled teams is not fixed but may vary from season to season, something which has been taken into account in the collected data. This is defined as:

$$ACR_K = \frac{\sum_{i=1}^K NCR_i}{K}$$

ACR_K is interpreted as the degree of domination by the top K teams as well as the degree of competition among the same K teams

The *Normalized Concentration Ratio for Relegated Teams* (NCR^I) captures the third level; the relegated teams and though this number is relatively constant (two or three teams). This characteristic has been taken into account in the data collected. It is given by:

$$NCR^I = \frac{N-1}{N-I} - \frac{1}{2(N-I)} \left(\frac{1}{I} \sum_{i=N-I+1}^N P_i \right),$$

where I stands for the number of relegated teams. The NCR^I describes the degree of weakness of the I relegated teams.

And finally,

The *Special Concentration Ratio* (SCR_K^I), which captures all the previous three levels and is given by:

$$SCR_K^I = \frac{\sum_{i=1}^K NCR_i + NCR^I}{K+1}$$

where the interpretation of SCR_K^I is not straightforward since it captures three different qualities: 1) the degree of domination by the

top K teams, 2) the degree of competition among the K teams, and 3) the degree of weakness of the last I teams.

Statistical analysis

The association of the ranking of the Greek National team at the EuroBasket Championships with competitive balance and the number of foreign players was examined with Spearman's rank correlation coefficient. With regards to the competitive balance indices the five-year moving average of the index was also introduced. The moving average is a more robust index of competitive balance (CB) since it eliminates any random fluctuations of the index and encompasses the concept of the integrated consistency of the index.

Differences between the rankings of the National team and the absence and presence of foreign players were checked with the Mann-Whitney test, while differences between the mean values of CB indices in the absence and presence of foreign players were checked with the independent samples t-test.

The strength of association between the binary variables was checked with the p-value of the Fisher exact test, which is the appropriate chi-square test in this special case of 2x2 contingency tables.

Finally, a logistic regression model was used to examine the effect of increased CB on the ranking achieved at EC, reporting both the odds (OR) and the risk ratios (RR) with their 95% confidence interval (CI). The level of statistical significance was set at 0.05.

RESULTS

Association between the presence and number of foreign players in the Greek League and the ranking of the Greek National Basketball team in the EuroBasket championships

The Mann-Whitney test proved that the ranking of the National team in the EuroBasket was significantly better in the period of the presence of foreign players in contrast to the period of the absence of foreign players (Mann-Whitney $U=21.5$, $p<0.01$).

Figure 1 shows that in the absence of foreign players the Greek National team reached the semifinals only once in twelve EuroBasket Championships, while in the presence of foreign players one of the top four positions was achieved seven times in twelve championships. The difference, as shown, is statistically significant.

Following the 1988-89 season, when for the first time the presence of foreigners was allowed, there was a steady increase of their number per team from one player per team to more than eight players per team (Figure 3). In the period of the presence of foreign players, the Spearman rank correlation coefficient between the number of foreign players participating in the League and the position achieved by the national team at the EuroBasket Championship is -0.572, which is statistically significant ($p<0.05$). The minus sign indicates that the more foreign players participating in the League the higher the ranking of the national team in the EuroBasket Championship.

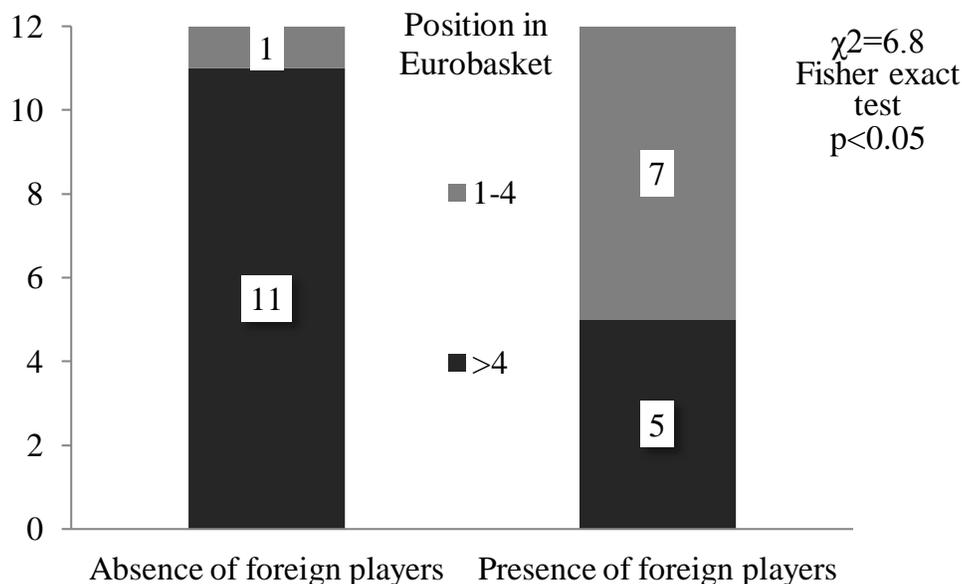


Figure 1. Association between the presence of foreign players in the Greek League and the ranking of the Greek national basketball team at the EuroBasket Championships.

The above results show that the performance of the Greek national basketball team in the EuroBasket Championships improved with the appearance of foreign players in the league. Furthermore the increasing number of foreign players (Figure 3) in the League was followed by an increased performance of the national team in EuroBasket.

Association between the presence and number of foreign players in the Greek League and the competitive balance indices

As Table 1 shows, the positive effect of the presence of foreign players on the Competitive Balances (CB) indices is supported with the independent samples t-test using FP – Absence/Presence as the independent variable. In the presence of foreign players all four CB indices were Specifically, with regards to the binary variable of NCR^I , in the absence of foreign players the NCR^I index was below 0.7 in only 34.7% of the League championships, while in the presence of foreign players this proportion was practically doubled to 72% (Figure 2).

At the same time, in the period of the presence of foreign players, the number of foreign players per team was negatively and significantly correlated with ACR_K (Spearman's $\rho=-0.359$, $p<0.05$), SCR_K^I (Spearman's $\rho=-0.407$, $p<0.05$) and especially with NCR^I (Spearman's $\rho=-0.412$, $p<0.05$), while for NCR_1 the correlation showed only trend (Spearman's $\rho=-0.247$, $p>0.05$). Even higher was the Spearman's rho between the number of foreign

players per team and the moving average of NCR^I ($mAv NCR^I$) during the past five years (Spearman's $\rho=-0.722$, $p<0.05$).

Shown in Figure 3 is the longitudinal record of the number of foreign players per team (this was permitted since the 1988-89 season) and the moving average NCR^I ($mAv NCR^I$) index. The graphical representation depicts the negative correlation between foreign players per team and the $mAv NCR^I$ index (the lower the index the better the competitive balance).

The above results show that the appearance of foreign players in the Greek Basketball League had an immediate positive effect on all aspects of competitiveness, which continued to improve with their influx of increasing numbers of foreign players.

Association between competitive balance indices and the ranking of the Greek National basketball team at the EuroBasket Championships.

The ranking of the Greek National basketball team in EuroBasket Championships (EC) was significantly correlated with NCR^I (Spearman's $\rho=0.497$, $p<0.05$). Even higher was the Spearman's rho between the ranking of the Greek national basketball team in EuroBasket championship and the $mAv NCR^I$ index during the past five years (Spearman's $\rho=-0.596$, $p<0.05$). The correlation coefficients of the ranking with the other three indices were 0.033, 0.111 and 0.268 for, NCR_1 , ACR_K and SCR_K^I correspondingly were not

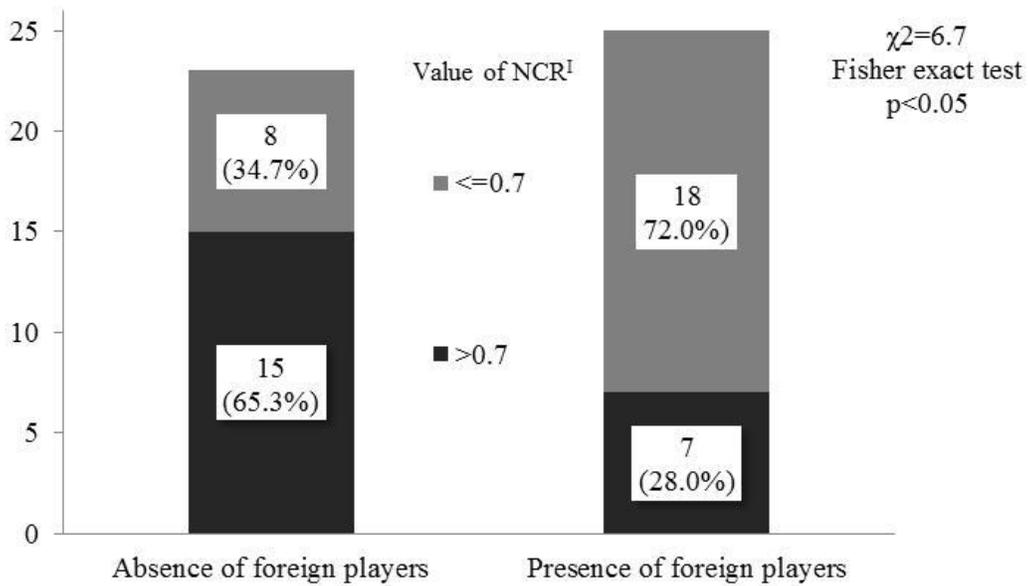


Figure 2. Association between the presence of foreign players in the Greek League and the value of the NCR' index.

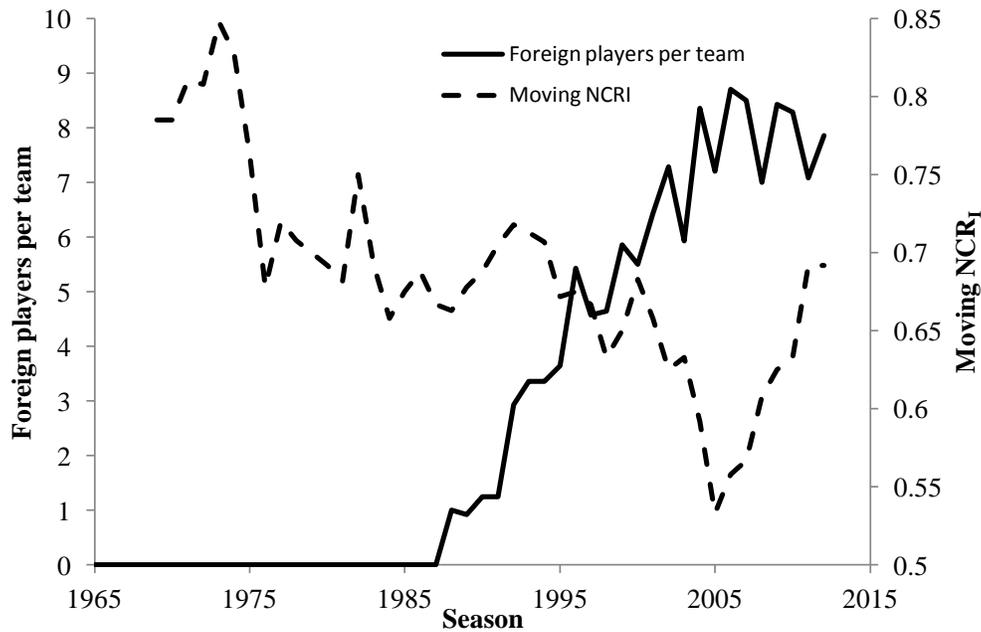


Figure 3. Longitudinal recording of the number of foreign players per team (continuous line) and mAv NCR' index (dashed line).

significant.

When the NCR' index was above 0.7, the Greek National team reached the semifinals only once in twelve significantly less than in the absence of foreign players. EuroBasket Championships (EC) while when the NCR'

index dropped below the cut-off value of 0.7 one of the top four positions was achieved seven times in twelve championships.

The logistic regression model with the ranking achieved in EuroBasket Championships (EC) (1-4, > 4) as the

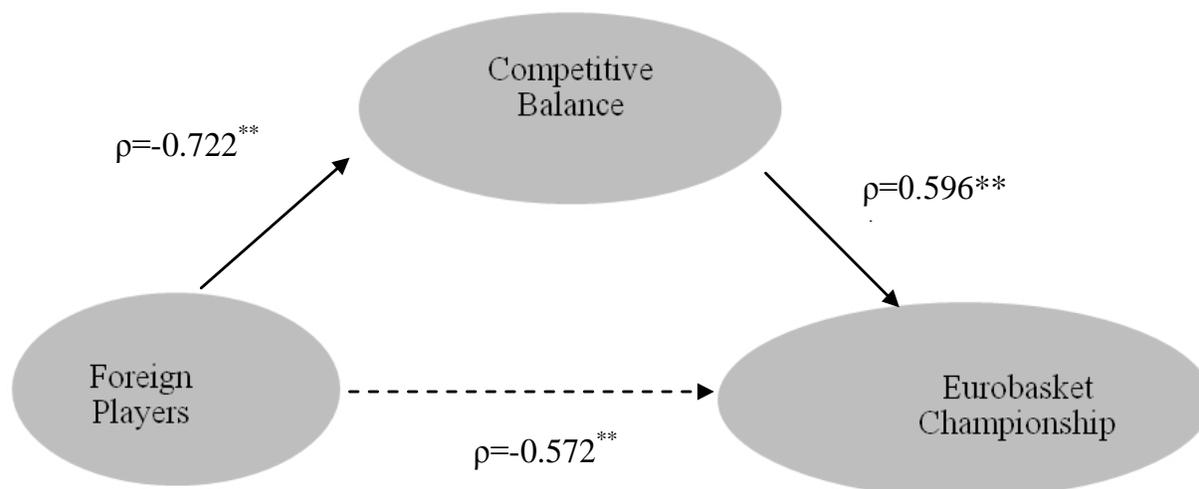


Figure 4. Association between the number of foreign player per team, the $mAvNCR'$ index and the ranking of the National team in the Euro basket championship. Continuous arrows describe direct relationships, while dashed arrows represent indirect relationships.

Table 1. Mean values (\pm SD) of the CB indices in the absence and presence of foreign players.

	Foreign players (FP)		t-value (df=45)
	Absence	Presence	
NCR_1	0.869 \pm 0.104	0.780 \pm 0.119	2.74*
ACR_K	0.806 \pm 0.069	0.747 \pm 0.083	2.64*
NCR'	0.734 \pm 0.137	0.653 \pm 0.110	2.23*
SCR'_K	0.795 \pm 0.065	0.734 \pm 0.080	2.85*

Comparison with the independent samples t-test. * - Significant difference at $p < 0.05$.

dependent variable and the value of the NCR' index (≤ 0.7 , > 0.7) and the number of foreign players as the independent predictors, proved that the value of NCR' was a significant predictor of the ranking achieved at EuroBasket Championships (EC) ($p < 0.05$), with a value of $OR = 15.4$ (95% CI = 1.47-160.97) and of $RR = 7.0$ (95% CI = 1.01-48.5). The risk ratio value of 7 means that when the NCR' achieved values less than 0.7, the probability that the National team would conquer one of the first four positions in the EuroBasket Championships (EC) was seven times more than when the NCR' index was above 0.7.

At the same time the number of foreign players did not enter the logistic regression equation, even though, as was shown above, there is an association between foreign players and position in the EuroBasket. However this effect was indirectly entered into the model through the mediating effect of the CB index.

Figure 4 shows the final synopsis of the findings. The number of foreign players per team is significantly and

negatively related with the ranking of the National team in the EuroBasket championship (Spearman's $\rho = -0.572$) and at the same time with $mAvNCR'$ index (Spearman's $\rho = -0.722$). In its turn $mAvNCR'$ index is significantly related with the ranking of the National team in the EuroBasket championship (Spearman's $\rho = 0.596$). As the above results have shown, the effect of foreign players on the National Team performance is better explained through the mediating effect of competitiveness.

DISCUSSION

The decision to allow the inclusion of foreign players in the national league was a momentous one. This was augmented by the introduction of the Bosman Ruling. The role played by athletes in the final outcome of a game is decisive (Palamino and Sakovics, 2003). In addition, Ericson (2000) suggests that players' talents are vital for the financial prosperity of a club and subsequent expansionary capabilities.

The initial findings showed that during the years that foreign players were allowed to participate in the national league the Greek National team evidenced better results in the EuroBasket Championships. This finding may at first sight seem paradoxical, since foreign players, according to the existing regulations, are not allowed to play in the National team of the country that their clubs belong to. Therefore this association is an indirect one, which can be explained following a more complicated path.

This path passes through competitive balance. As the findings show, the presence, as well as the increasing number of foreign players seems to have a positive effect on the competitive balance indices. A point which must

be stressed is the higher correlation of the number of foreign players per team not only with the NCR' index but even more so with the $mAvNCR'$. As has been mentioned, the particular index expresses the competitive balance for the third level, the weak teams fighting to avoid relegation (something which exists in the European leagues).

The results show that when these teams are able to employ foreign players and consequently become stronger, competitive balance for this level is enhanced. Therefore the "health" and "balance" of a championship is not only determined by the prevailing top teams but also by "the power of the weak" (i.e., the teams in the lowest places of ranking). The question that must be posed therefore is not how strong the strongest teams are but how strong the weakest teams are. This explains the idea of competitive balance which is the absence of great differences between the teams. As with Vrooman (2009), the crux of team sports is the symbiotic environment in which the teams operate, similarly proposed by Rosen and Sanderson (2001) who mention "cooperation and competition" between clubs. This concept is supported by our findings of the present study

The way in which foreign players positively influence competitive balance is seen by their contribution to the development of the local players. It seems that this occurs through the spillover effect. This principle has been expressed by Alvarez et al. (2008) in basketball and Bauer and Lehmann (2007) in football to explain the influence of imported talent and mobility of players, in basketball and football respectively and their effect on the National Team.

Competitive balance, in its own right, operates as a mediator variable and affects the performance of the national team. The present findings showed correlation of the performance of the Greek National Team in EuroBasket with both the NCR' and $mAvNCR'$ indices. The results related to the other indices did not exhibit significant correlation. What these results imply is that the improvement of only the higher level competitive balance indices (NCR_1 and ACR^K) is not sufficient to affect the overall performance of the Greek players participating in the league and this reflects on the performance of the National Team. In the end how competitive is a league is reflected by all three indices. The increasing quantity and quality of the foreign players spreads competitiveness from the top the bottom, encompassing (given a sufficient number of top quality foreign players) the whole championship. Inevitably this improves the performance of the Greek players, providing a better pool for the selection in the National Team. Consequently, the index NCR' and $mAvNCR'$ acts as a mediator parameter, influenced by the number of foreign players and in its turn positively affecting the performance of the national team, as evidenced by its rankings in the EuroBasket Championships.

However, one cannot leave out of the equation the general development of basketball in Greece especially

after the first victory for the national basketball team in the 1987 EuroBasket. This started a chain reaction, bringing to the surface a number of talented Greek players and attracted not only more foreign players, but also top level ones, many of whom played in their respective national teams, along with players from the National Basketball Association of America. To the aforementioned, one must add a very good financial foundation for Greek basketball (high team budgets, income from TV rights and sponsoring).

Moreover the presence, both in quantity and quality, of foreign players had as a consequence a number of successes of Greek teams in the Basketball Euro league, winning nine championships in the last twenty years.

In conclusion, the present study revealed that the presence and number of foreign players in the Greek National Basketball League led to an improvement of competitive balance, which, in turn, had a positive effect on the performance of the Greek National basketball team, as evidenced by its performance in the EuroBasket Championships.

Conflict of Interests

The authors have not declared any conflict of interests.

REFERENCES

- Alvarez J, Forrest D, Sanz J, Tena JD (2008). Impact of importing foreign talent on performance levels of local co-workers. *Labour Econ.* 18(3):287-296.
- Baur DG, Lehmann S (2007). Does the mobility of football players influence the success of the national team? Working paper from Dublin City University.
- Binder JJ, Findlay M (2011). The Effects of Bosman Ruling on National and Club Teams in Europe. *J. Sports Econ.* 13(2):107-129.
- El-Hodiri M, Quirk J (1971). An Economic Model of a Professional Sports League. *J. Polit. Econ.* 79(6):1302-1319.
- Ericson T (2000). The Bosman Case: Effects of the Abolition of the Transfer Fee. *J. Sports Econ.* 1: 203-2017.
- European Commission (1998b). The European model of sport: consultation document of DGX. Brussels: European Commission.
- Federation International Basketball Association (FIBA). (2012). Chapter H.2 National Status of players. <http://www.fiba.com/downloads/Regulations/2012/FIBABook3AG.pdf>
- Forrest D, Simmons R (2002). Outcome uncertainty and attendance demand in sport: the case of English soccer. *The Statistician*, 51(2):229-241.
- Fort R, Maxcy L (2003). Comment on Competitive Balance in Sports League: An Introduction. *J. Sports Econ.* 4:154-160.
- Goossens K (2006). Competitive balance in European football: Comparison by adapting measures: National measure of seasonal imbalance and top 3. *Rivista di diritto de economia dello sport*, 2: 77-121.
- Groot L (2008). *Economics, Uncertainty and European Football: Trends in Competitive Balance*. Northampton: Edward Elgar Publishing Limited.
- Hanley JA, McNeil BJ (1982). The meaning and use of the area under a Receiver Operating Characteristic (ROC) curve. *Radiol.* 143: 29-36.
- Hoehn T, Szymanski S (1999). The Americanisation of European football. *Econ. Pol.* 28:207-240.
- Kendall TD (2003). Spillovers, Complementarities, and Sorting in Labour Markets with Applications to Professional Sports. *Southern Econ. J.* 70(2):389-402.

- Kesenne S (1996). League management in professional team sports with win maximizing clubs. *Eur. J. Sport Manag.* 2(2):14-22.
- Koning RH (2000). Balance in Competition in Dutch Soccer. *Journal of the Royal Statistical Society: Series D. The Statistician* 49(3):419-431.
- Kuper S, Szymanski S (2012). *Soccernomics: Why transfers fail, why Spain rule the world and other curious football phenomena explained.* London: HarperCollins.
- Lucifora C, Simmons R (2003). Superstar effects in sport: Evidence from Italian soccer. *J. Sports Econ.* 4:35-55.
- Maguire J, Pearton R (2000). The impact of elite labour migration on the identification, selection and development of European soccer players. *J. Sport Sci.* 18(9):759-769.
- Manasis V, Avgerinou V, Ntzoufras I, Reade J (2011). Measurement of competitive balance in professional team sports using the Normalized Concentration Ratio. *Econ. Bullet.* 31(3):2529-2540.
- Manasis V, Avgerinou V, Ntzoufras I, Reade J (2013). Quantification of competitive balance in European football; development of specially designed indices. *IMA.J.Management Mathematics* 10:1-13.
- Michie J, Oughton C (2004). *Competitive Balance in Football: Trends and Effects.* London: The Sports Nexus.
- Neale W (1964). The peculiar economics of professional sports. *Q. J. Econ.* 78(1):1-14.
- Noll RG (1988). *Professional Basketball.* Stanford University Studies in Industrial Economics Paper nr, 144, Stanford, Stanford University
- Owen PD, Ryan M, Weatherston CR (2007). Measuring competitive balance in professional team sports using the Herfindahl-Hirschman Index. *Rev. Ind. Org.* 31:289-302
- Palamino F, Sakovics J (2003). Inter-league competition for talent vs competitive balance. *Int. J. Ind. Organ.* 22(6):783-797.
- Rader BG (2002). *Baseball: A History of America's Game; Second Edition.* University of Illinois Press.
- Rosen S, Sanderson A (2001). Labor Markets in Professional Sports. *Econ. J.* 111(469):47-68.
- Rottenberg S (1956). The Baseball Players' Labor Market. *J. Polit. Econ.* 64(3):242-258.
- Scelles N, Desbordes M, Durand C (2011a). Marketing in sport leagues: Optimising the product design. Intra-championship competitive intensity in French football Ligue 1 and basketball Pro A. *Int. J. Sport Manage. Market.* 9(1/2):13-28.
- Scelles N, Durand C, Bah ST, Rioult F (2011b). Intra-match competitive intensity in French football Ligue 1 and rugby Top 14. *Int. J. Sport Manage. Market.* 9(3/4):154-169.
- Scully GW (1989). *The Business of Major League Baseball.* Chicago, IL: University of Press
- Shropshire KL (1995). *The sports franchise game: Cities in pursuit of sports franchises, events, stadiums and arenas.* University of Pennsylvania Press
- Troelsen T, Dejonghe T (2006). The need of competitive balance in European professional soccer: A lesson to be learned from the North American professional leagues. *Proceedings of the 14th congress of the European Association for Sport Management: Abstracts pages: 227-230.* Cyprus
- Utt J, Fort R (2002). Pitfalls to Measuring Competitive Balance with Gini Coefficients. *J. Sports Econ.* 3(4):367-373.
- Vrooman J (1997). A unified theory of capital and labor markets in Major League Baseball. *Southern Econ. J.* 63(3):594-619.
- Vrooman J (2000). The Economics of American Sports Leagues. *Scottish J. Polit. Econ.* 47(4):594-619.
- Vrooman J (2007). Theory of the beautiful game: The unification of European football. *Scottish J. Polit. Econ.* 54(3):314-354.
- Vrooman J (2009). Theory of the perfect game: Competitive balance in monopoly sports leagues. *Rev. Ind. Organ.* 32(1):5-44.

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