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COMPETITIVE BALANCE IN THE ITALIAN BASKETBALL CHAMPIONSHIP

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Introduction

The competitive balance is crucial to determine the attractiveness of a particular sport, as it is directly related to the rational expectations of fans about the winners of a given event or competition. If the outcome of a sporting competition or event is easily predictable, the attendance, that is the demand from the public, will be necessarily very low.

This paper aims at carrying out a first analysis of competitive balance and its potential relationship with the severe shift in talent supply across seasons due to the Bosman ruling[1] and other subsequent amendments to regulations concerning foreign players in the top division of Italian basketball. More specifically, it presents a general analysis of competitive balance and its evolution over time in Italian *Serie A*, dealing with a very long period of time (1957-2010, a total of 54 seasons) divided according to the main regulatory changes concerning the enrolment of non-homegrown players, and a more specific analysis of the performance of the competitive balance and its potential relationship with the talent supply shock

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[1] CURIA, December 15 1995, C-415/93, in *Raccolta della Giurisprudenza della Corte*, 1995, 4921.

following the Bosman ruling, which removed all limits to the acquisition of EU players and began the gradual globalization of the sporting talent market as *free-trade zone of the rights to the athletic performance of different players between different clubs.* Relaxation of regulations restricting the employment of non-homegrown players implied that market became international rather than national and made the supply of playing talent elastic, unlike the North America major leagues.[2] However, according to the upholders of protectionist line aiming at preserving national nurseries, this globalization trend in professional sports, accurately emphasized by Andreff,[3] would induce an asymmetry in the distribution of talent which would damage the competitive balance, as the richest clubs would be advantaged in the acquisition of worldwide talent.

In the specific case of the Italian basketball league, the severe shift in supply originated by the Bosman ruling yielded an almost constant increase in the average number of non-homegrown players per team over 15 seasons (1996-2010), and the protectionist line adopted by the Italian Olympic Committee (from now onwards simply CONI), which aims at introducing a minimum number of homegrown players for any discipline in order to bypass the effects of the Bosman ruling, seems not to have stemmed the inflow of foreign players.

Moreover, the analysis of seasons following that ruling does not allow to draw clear-cut and definitive conclusions on the relationship between competitive balance and these modifications in non-homegrown talent supply, because a negative correlation seems to emerge only in the first half of the seasons examined.

The paper has the following structure: Section 1 contains a brief presentation of the concept of competitive balance (from now onwards CB) in professional sports; Section 2 presents some analytical tools used in literature to measure CB; Section 3 shows the analysis of CB trend in the Italian championship, with a special section devoted to the seasons from 1997 to 2010, the post-Bosman era, in order to verify the existence of a relationship between CB and the number of foreign players present in Italian teams. Section 4 contains some concluding remarks.

1. The Competitive Balance in Professional Sports

The CB is closely related to the expectations the audience of a sporting event has about who will be the winners: in a context of perfect balance, fans believe that all results are equally possible, thus there is a complete uncertainty about the final result. The more balanced the competition, the greater the interest of the audience. The uncertainty of outcome, although conceptually difficult to measure in professional sports, is therefore a key explanatory variable of the demand for sports, as recently repeated by Caruso.[4]

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[2] See S. Kesenne, *What's the Game Team Owners Play?*, in *Riv. Dir. Ec. Sport*, vol. 5, n. 1, 2009, 81-87.

[3] W. Andreff, *Globalization of the Sport Economy*, in *Riv. Dir. Ec. Sport*, vol. 4, n. 3, 2008, 13-31.

[4] R. Caruso, *Crime and Sport Participation: Evidence from Italian Regions Over the Period 1997-2003*, in *J. of Soc.-Ec.*, In Press, 2011.

It was first discussed by Rottenberg[5] in his seminal piece in sports economics on the baseball players' labour market, which highlighted the uncertainty of outcome is the key factor to attract paying customers to a sporting event: thus, professional sports leagues need a certain balance in competition between teams to maximise the number of spectators.

Neale[6] defined the economics of professional sports leagues as *peculiar*, meaning that they have distinctive characteristics compared to other industries, mainly due to the so-called *Louis-Schmelling paradox*. Neale, referring to the world heavyweight title boxing match between Joe Louis, the defending champion, and Max Schmelling, argued Lois would have got more economic benefits by meeting evenly matched than weaker contenders: therefore, his revenues would have been directly proportional to the opponents' strength. In other words, the demand for a sporting event does not depend only on the absolute strength of the challengers, but on the gap between them as well. A few years later, the peculiarities of sports (especially football) as both market and relational good are pointed out by Caruso.[7]

El-Hodiri and Quirk[8] strengthen this idea and highlight that the demand for professional sports (particularly baseball, which is the subject of their paper aimed at analyzing the professional sports framework in order to assess to what extent current laws justified the exemption of professional leagues from some aspects of the antitrust rules) depends crucially on the uncertainty of the outcome of games played within the league and, consequently, gate receipts decline significantly when one of the challengers has a probability of win next to one. A very interesting contribution comes from Sloane.[9] He points out the quality of the game arouses fans interest as well as the uncertainty of the outcome and sets an implicit distinction between short-run and long-run uncertainty in football championships: short-run uncertainty refers to CB among the teams within a season, which increases the number of spectators, whereas long-run uncertainty is related to the degree of dominance few teams have over time, which reduces significantly fans interest. Moreover, Sloane claims clubs do not necessarily behave as *profit maximizers*, but can behave as *utility maximizers* as well, introducing objectives such as their own survival, increasing attendance, championship wins, league preservation into their utility function. Thus, clubs' investments may rely on reasons different from profit: for instance, teams could be interested in winning the competition, consequently not interested in having a well-balanced competition. In this respect,

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[5] S. Rottenberg, *The Baseball Players' Labour Market,* in *J. of Pol.Ec.*, vol. 64, n. 3, 1956, 242-258.
[6] W.C. Neale, *The Peculiar Economics of Professional Sports, A Contribution to the Theory of the Firm in Sporting Competition and in Market Competition,* in *Quart. J. Econ.*, vol. 78, n. 1, 1964, 1-14.
[7] R. Caruso, *Il calcio tra mercato, relazioni e coercizione,* in *Riv. Dir. Ec. Sport*, vol. 4, n. 1, 2008, 71-88.
[8] M. El-Hodiri, J. Quirk, *An Economic Model of Professional Sports Leagues,* in *J. of Pol.Ec.*, vol. 79, n. 6, 1971, 1302-1319.
[9] P.J. Sloane, *The Economics of Professional Football, The football club as utility maximizer*, in *Sc. J. of Pol. Ec.*, vol. 4, n. 2, 1971, 87-107.

Peel and Thomas[10] assert teams could not appreciate any attempt to make a competition more uncertain in order to increase gate receipts, as supporters seem to enjoy watching a top-level game when the team they support has many chances of winning. Actually, Jennet[11] had already argued the uncertainty of outcome is a decisive factor for the number of spectators in a single game rather than in a whole season. Therefore, another factor affecting the demand for sports is fans devotion, which fosters the distinction between committed and uncommitted fans. If the formers are in the majority, teams will prefer winning the championship to the balance of competition, whereas, if uncommitted fans prevail, teams will prefer the uncertainty of outcome in order to attract them to the games.

Koning[12] asserts two teams playing a game determine a joint production and audience is more satisfied when the competition is well-balanced. Thus, dealings between teams aimed at increasing the quality of game could be in the interests of spectators, and professional leagues should provide tools needed to preserve CB.

Different views on the relationship between the uncertainty of outcome and the demand for sport stem also from differences between US and European professional leagues organisations. Hoehn and Szymanski[13] emphasize the two main differences: a) US professional leagues are closed, in sense that they are not characterized by a promotion and relegation system, rarely allow new teams entry and are not open to international competitions, unlike European professional leagues; b) US professional leagues managements tried to preserve CB via intervention in the labour market and redistribution of franchises revenues, particularly through the introduction in 1962 of radio-television rights, which teams have equally, whereas European professional leagues have been drawing on radio-television rights just since the early '90s and revenues allocation implies both a fixed - and a performance-based amount. Forrest and Simmons[14] explain CB refers to a professional league framework where each team has equal strength, whereas the uncertainty of outcome is related to a framework characterized by the unpredictability of the final result. Buzzacchi, Szymanski and Valletti[15] introduce the concept of dynamic CB, which takes into account turnover at the top in team standings over time, and argue that dynamic measures provide a more realistic description of CB compared to the static ones. Finally, CB was considered the rationale of antitrust rules, such as revenue sharing, transfer fees and salary cap,

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[10] D. Peel, D. Thomas, *Outcome Uncertainty and the Demand for Football: an Analysis of Match Attendances in the English Football League*, in *Sc. J. of Pol. Ec.*, vol. 35, n. 3, 1988, 242-249.

[11] N. Jennet, *Attendances, Uncertainty of Outcome and Policy in Scottish League Football*, in *Sc. J. of Pol. Ec.*, vol. 31, n. 2, 1984, 176-198.

[12] R.H. Koning, *Balance in Competition in Dutch Soccer*, in *The Stat.*, vol. 49, n. 3, 2000, 419-431.

[13] T. Hoehn, S. Szymanski, *The Americanization of European Football*, in E*c. Pol.*, vol. 14, n. 28, 1999, 205-240.

[14] D. Forrest, R. Simmons, *Outcome Uncertainty and Attendance in Sport: The Case of English Soccer*, in *The Stat.*, vol. 51, n. 2, 2002, 229-241.

[15] L. Buzzacchi, S. Szymanski, T.M. Valletti, *Equality of Opportunity and Equality of Outcome: Open Leagues, Closed Leagues and Competitive Balance*, in *J. of Ind., Comp. and Tr.*, vol. 3, n. 3, 2003, 167-186.

both in USA and in Europe. In particular, Szymanski and Kesenne[16] focused on the impact of revenue sharing on CB, which, other than expectations, tends to reduce teams inducement to invest in talent and even to yield greater inequality in talent distribution across teams, which lowers CB: therefore, they suggest that the choice to adopt revenue shares requires a more exhaustive economic analysis.

2. Alternative Measures of Competitive Balance

There are several ways to measure CB. Each measurement technique has its own advantages and disadvantages, and it is effectively not possible to select a technique that fully measures the level of competitiveness in a professional league.[17] Among the more popular measures are the standard deviations of end-of-season wins or points (if each game determines the allocation of a certain number of points to each team according to the result) of the various teams taking part in the league, the Herfindahl-Hirschman Index, and the range of winning percentages, as mentioned by Perline and Stoldt in an analysis of CB performance in the US College Basketball.[18] A closer overview of CB measures is presented by Goosens[19] and Humphreys,[20] and another interesting contribution comes from Groot,[21] who introduces the so-called *surprise index*.

Following Perline and Stoldt, we use the standard deviations of end-of-season wins, although Italian basketball championship is characterized by a two point-system. This statistic measures the dispersion of wins around its average and has the same unit of measurement as the observed values

$$\sigma = \frac{\sqrt{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2}}{n-1} \qquad (1)$$

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[16] S. Szymanski, *The Economic Design of Sporting Contests*, in *J. of Ec. Lit.*, 41, 2003, 1137-1187; S. Kesenne, *Revenue Sharing and Competitive Balance in Professional Team Sports*, in *J. of Sp. Ec.*, vol. 1, n. 1, 2000, 56-65; S. Kesenne, *Revenue Sharing and Competitive Balance, does the Invariance Proposition Hold?*, in *J. of Sp. Ec.*, vol. 6, n. 1, 2005, 98-106; S. Szymanski, S. Kesenne, *Competitive Balance and Gate Revenue Sharing in Team Sports*, in *J. of Ind. Ec.*, vol. 53, n. 1, 2004, 165-177.

[17] F. Halicioglu, *The Impact of Football Point System on the Competitive Balance: Evidence from some European Football Leagues*, in *Riv. Dir. Ec. Sport*, vol. 2, n. 2, 2006, 67-76.

[18] M.M. Perline, G.C. Stoldt, *Competitive Balance in Men's and Women's Basketball: The Cast of the Missouri Valley Conference*, in *The Sp. J.*, vol. 10, n. 4, 2007.

[19] K. Goosens, *Competitive Balance in European Football: Comparison by Adapting Measures: National Measure of Seasonal Imbalance and Top 3*, in *Riv. Dir. Ec. Sport*, vol. 2, n. 2, 2006, 77-102.

[20] B.R. Humphreys, *Alternative Measures of Competitive Balance in sports League*, in *J. of Sp. Ec.*, vol. 3, n. 2, 2002, 133-148.

[21] L. Groot, *L'Equilibrio del Campionato di Calcio di Serie A*, in *Stat.*, vol. 63, n. 3, 2003, 561-577; si veda anche L. Groot, *De-commercializzare il Calcio Europeo e Salvaguardarne l'Equlibrio Competitivo: Una Proposta Welfarista*, in Riv. Dir. Ec. Sport, vol. 1, n. 2, 63-91.

where x_i is the number of wins of the team i, $\bar{x}$ the number of games a team should win in a perfectly balanced championship, and n the number of teams taking part in the league: the lower the standard deviation, the more balanced the championship.

The standard deviation is the most commonly used measure of CB in team sports. Vamplew[22] used this method to measure CB in the Scottish football league over the period 1890 to 1915 and found that league was not very well-balanced mostly if compared to the English league, which did not show high CB as well. Quirk and Fort[23] applied standard deviation to assess CB in US professional leagues and introduced the so-called *Noll-Scully approach*: the idealized value for a league with teams of equal playing strength is shown by the expression $0.5/\sqrt{N}$, where N is the number of games a team plays in a season and 0.5 is the probability a team wins a game when the league is perfectly balanced. Koning[24] examined CB trend in Dutch professional football using standard deviation, which markedly increased during the 60's, decreased during the first half of the 70's and thereafter did not show a clear trend. Finally, Caruso and Verri[25] analyzed relationship between CB and the number of non-homegrown players in the Italian volleyball league after Bosman ruling and argued the balance of that championship did not change significantly in spite of the considerable increase in the number of foreign players.

The standard deviation provides a good picture of the variation among the winners, but it does not indicate whether it is the same teams winning every season or if there is considerable turnover among the winners from one season to the next. Therefore, another measure of CB is the Hirfindahl-Hirschman Index (HHI), which was originally used to measure concentration among firms within an industry and measures how the championship or first place finish is spread amongst the various teams: the greater the number of teams that achieve championship status over a specific time period, the greater the CB[26]. The HHI formula is

$$HHI = \frac{\sum_{i=1}^{n} Y_i^2}{m} \qquad (2)$$

where Y_i is the number of times that each team won the championship, n the number of teams participating in the league and m the number of seasons considered: the lower the HHI, the higher the CB.

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[22] W. Vamplew, *The Economic of a Sports Industry: Scottish Gate-Money Football, 1890-1914*, in *The Ec. His. Rev.*, vol. 35, n. 4, 1982, 549-567.

[23] J.Quirk, R.Fort, *Pay Dirt: the Businees of Professional Team Sports*, Princeton University Press, 1992.

[24] R.H. Koning, *Balance in Competition in Dutch Soccer*, cit., 11.

[25] R. Caruso, I. Verri, *Competitive Balance dopo la Sentenza Bosman:il Caso della Pallavolo in Italia*, in *Riv. Dir. Ec. Sport*, vol. 5, n. 1, 2009, 59-79.

Among the most important contributions which used HHI to measure CB, we may mention Eckard,[27] who analysed CB performance in US college American football over the period 1953 to 1983; Zyman,[28] who aimed at verifying whether the increasing disparity in wages paid by MLB franchises had a harmful effect on CB; and Depken,[29] who measured CB in MLB over the period 1920 to 1996 and examined it was influenced the distribution of talent and the introduction of *reserve clause*. Finally, Owen, Ryan and Weatherston[30] made use of data utilized by Depken in order to present a normalized measure of the HHI.

As already said, the standard deviation does not specifically reveal if it is the same teams winning or losing from season to season. Similarly, the HHI is able to assess the number of teams which win the championship over a period of time, but it does not display what is happening to the other teams participating the championship: for instance, it could happen that a few teams win the competition, but there is greater variability concerning the other final positions.

Thus, the range of winning percentages imbalance may be a useful method to gain some insight into the changes in final standings of all teams over time: it is calculated the mean percentage wins for each team over a given period and the closer each team is to 50% of wins, the greater the competitive balance over this period. This method was used by Perline and Stoldt,[31] who analyzed CB in Big 12 Conference of NCAA American football over the period 1986 to 2005, and La Croix and Kawaura,[32] who studied how amendments in regulations concerning talent market impacted on CB in Japanese professional baseball league over the period 1958 to 1993. However, the range of winning percentages imbalance is difficult to apply to European professional leagues, as it assumes teams taking part in the championship are always the same: this assumption fails in European championships, characterized by promotion and relegation systems.

3. The Italian basketball championship

3.1 Amendments to regulations concerning foreign players

The Italian Basketball Federation (FIP from now onwards) deals with the promotion,

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[27] E.W. Eckard, *The NCAA Cartel and Competitive Balance in College Football*, in *Rev. of Ind. Org.*, vol. 13, n. 3, 1998, 347-369.

[28] S. Zyman, *The Effect of the Increased Wage Gap on the Competitive Balance of Major League Baseball*, Tri-College DSpace Repository, 2005, http://triceratops.brynmawr.edu/dspace/bitstream/10066/586/1/2005ZymanS.pdf (*july 2009*).

[29] C.A. Depken, *Free Agency and the Competitiveness of Major League Baseball*, in *Rev. of Ind. Org.*, vol. 14, n. 3, 1999, 205-217. Vedi anche C.A. Depken, *Free Agency and the Concentration of Player Talent in Major League Baseball*, in *J. of Sp. Ec.*, vol. 3, n. 4, 2002, 335-353.

[30] P.D. Owen, M. Ryan, C.R. Weatherston, *Measuring Competitive Balance in Professional Team Sports Using the Herfindahl-Hirschman Index*, in *Rev. of Ind. Org.*, vol. 31, n. 4, 2007, 289-302.

[31] M.M. Perline, G.C. Stoldt, *Competitive Balance and Conference Realignment: The Case of Big 12 Conference*, in *The Sp. J.*, vol. 10, n. 2, 2007.

[32] S.J. La Croix, A. Kawaura, *Rule Changes and Competitive Balance in Japanese Professional Baseball*, in *Econ. Inqu.*, vol. 37, n. 2, 1999, 353-368.

regulation and development of basketball in Italy and is also responsible for rules that clubs must follow in players acquisition. In 1965, for the first time FIP allowed the employment of a non-Italian player per team; that number was increased to two since 1977. The regulatory framework remained unchanged up to the Bosman ruling, except for the introduction, in 1980, of the opportunity for teams to release and replace foreign players during the season because of injuries or "technical" reasons.

After the Bosman ruling, two other events contributed to increase the inflow and employment of non-Italian players: a) in 1996 the Regional Administrative Court (TAR) of Lazio pronounced itself in favour an American player, Dan Gay,[33] asking to be enrolled as an Italian player as he had obtained Italian citizenship through marriage, and ordered FIP to revise rules concerning non-homegrown players acquiring Italian citizenship: now, a foreign player who gets Italian citizenship during a season can be immediately considered as an Italian; b) in 2001 the Court of Giulianova[34] dictated FIP to allow the enrollment of American player Jeff Sheppard to Roseto Basket, in addition to the two non-EU players already enrolled (George Gilmore and Ian Lockhart), stating that only the Government can impose quotas for the admission of non-EU citizens and that the refusal to enroll a player solely on the basis of nationality is considered discriminatory according the Italian legislation concerning immigration[35] and New York International Convention.[36] The consequent wave of liberalization forced FIP to reconsider the rules for the enrollment of foreign players focusing on the idea of a minimum number of Italian players that must be present in every game, in order to protect the nurseries and the competitiveness of national teams in international competitions. The adoption of a definitive regulation concerning the enrollment of foreign players, however, found many obstacles in the difficult relationships between FIP and Lega Basket, the association of the basketball clubs affiliated to FIP and taking part in the Italian Serie A that is in charge of the organization of the top division of the Italian basketball championship. In particular, FIP's need to preserve the national nurseries collide with Lega Basket's need to control wage costs.

Therefore, since 2001-2002 season, where the only constraint for teams was to line up 3 Italians,[37] the compromise between these two requirements brought about constant amendments to regulations concerning foreign players. In 2002-2003 season[38] FIP, given the resolution of CONI that assigned the maximum quota

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[33] See CORRIERE DELLA SERA, *Ordine del TAR: Gay italiano e forse azzurro*, 12 ottobre 1995, http://archiviostorico.corriere.it/1995/ottobre/12/Ordine_del_Tar_Gay_italiano_co_0_9510123632.shtml

[34] Tribunale di Teramo, sez. Distaccata di Giulianova, ordinanza 4/12/2000, Sheppard, in *Foro It.*, 2002, I.

[35] Decreto Legislativo 25 luglio 1998, n. 286 in *Gazzetta Ufficiale n.191 del 18 agosto 1998, n. 191, Supplemento Ordinario*

[36] Legge 13 Ottobre 1975, n.654.

[37] See GAZZETTA DELLO SPORT, *La Lega ha scelto: 3 italiani per squadra*, 13 luglio 2001, http://archiviostorico.gazzetta.it/2001/luglio/13/Lega_scelto_tre_italiani_per_ga_0_0107133371.shtml.

[38] See LEGA BASKET, http://195.56.77.208/news/?id=6965.

of 150 entry visas for non-EU athletes until May 31, 2003, resolved the allocation of a maximum of four visas to each club, the possibility to line up 4 non-EU players and the obligation to line up a minimum of three Italian athletes under contract.

In 2006,[39] FIP stated each team had to line up at least six Italian and at most 4 non-EU players (with an additional visa available for a replacement). Noteworthy is the introduction of the distinction between players *trained* in Italy and players that *obtained* Italian citizenship. A player is considered *trained* in Italy if he took part in Italian youth championships for at least four seasons, regardless of nationality. From now on, we will refer to these players as homegrown players. Each team had to line up at least 4 homegrown players in every game.

In 2009-2010 season, each team had to line up at most 6 foreign players and at least 6 Italian players. Among foreign players, only 3 could be non-EU citizens according to EU rules and International Basketball Federation (FIBA onwards) rules at the same time, whereas among Italian players at least 4 had to be eligible for the Italian national team and the other two could be provisionally just players that *obtained* Italian citizenship.

Further amendments are planned for the next seasons, although they are still theme of a debate between FIP and Lega Basket. More specifically, for seasons from 2010 to 2013 clubs are required to line up: a) at most 6 foreign players, and among them just 2 non-EU citizens according EU and FIBA, or 5 foreign players, and among them at most 3 non-EU citizens according EU and FIBA; b) at least 5 Italian players eligible for the Italian national team and at most 1 Italian player *not trained* in Italy and/or not eligible for the Italian national team.

3.2 The empirical analysis

The data for the following analysis are derived from Lega Basket website,[40] which contains all the rosters and standings of the past seasons. First, it is presented an analysis of CB performance over a very long period of time (1956-2010), divided into four sub-periods on the basis of the main amendments to regulations concerning the number of non-homegrown players: 1) in the 1957-1965 period, only Italian players were admitted to the championship; 2) in the 1966 -1977 period each team could acquire just one foreign player; 3) the 1978-1996 period follows the introduction of the possibility to sign another non-Italian player; 4) the 1997-2010 period obviously comes after the Bosman ruling. Then, the last sub-period is analyzed in greater detail: particularly, CB trend and its relationship with the number of foreign players are examined.

3.2.1 The Performance of the Competitive Balance (1957-2010)

The performance of CB in the Italian basketball championship is analyzed using

[39] See GIBA, www.giba.it/index.php/regole-di-eleggibilita/40-eleggibilita/622-regole-di-eleggibilita-serie-a.

[40] See LEGA BASKET, www.legabasket.it/.

both the standard deviation and the HHI, in order to investigate both the competitiveness of the single seasons and the changes over time in the "balance of power" between teams.
Standard deviations for the sub-periods considered are means of the standard deviations of the seasons included in the sub-periods.

TABLE 1. COMPETITIVE BALANCE IN THE ITALIAN BASKETBALL CHAMPIONSHIP (1957-2010)

Period	SD	HHI
1957-1965	5,37	5,89
1966-1977	5,02	4,17
1978-1996	5,19	4,26
1997-2010	5,40	3,57

Table 1 shows there are no significant variations over time in the standard deviations, which means the competitiveness of the single seasons has remained basically unchanged over time regardless the amendments introduced, whereas more significant results relate to the HHI, which significantly decreases compared to the no-foreign period (1957-1965) and is affected by a further reduction in the post-Bosman era (the overall decrease compared to the first subperiod is 39,4%), being evidence of a greater alternation of league winners.

The decrease in the HHI, especially in the post-Bosman period, can be interpreted considering: a) the growing popularity of basketball, as proved by the increase in the number of spectators (from 2001-2002 to 2008-2009 season the average audience increased by 35%[41]), very high TV ratings (nearly seven million televiewers, 46,98% audience share) recorded by the Olympic Games final in 2004, when Italy met Argentina, and the increased television coverage of the main national and international competitions provided by *pay-TV*: that popularity has attracted significant investments in the basketball teams of an ever-increasing number of cities; b) the liberalization in EU players transfers, which has given the opportunity to find a rising number of good budget-priced players even to teams not used to compete for the title.

[41] See LEGA BASKET, www.legabasket.it/; *Il basket vola in Tv e la Rai lo perde*, 13 agosto 2004, www.sport.it/articoli/2004/08/31/547094.php; *Il pubblico del basket aumenta ancora*, 1 Febbraio 2008, http://comesefossesport.blogosfere.it/2008/02/basket-il-pubblico-del-basket-aumenta-ancora.html.

3.2.2 Competitive Balance and number of foreign players in the post-Bosman era

Before analyzing the standard deviation of seasons following the Bosman ruling, this section focuses on the inflow of non-homegrown talent ensuing that ruling.

Table 2 shows the number of non-homegrown players enrolled in each season from 1995-1996, the last season before the Bosman ruling, to 2009-2010, including also the number of foreign players per team as the number of teams participating in the championship has changed over time as well: 14 teams took part in Serie A-1 until the 1998-1999 season, 16 in 1999-2000, 18 from 2000-2001 to 2007-2008 (excluding the 2001-2002 season when teams were 19), again 16 in 2008-2009 and 15 in 2009-20010. We have also included a specific column showing the exact number of players having the Italian citizenship but *not trained* in Italy.

TABLE 2. NUMBER OF TEAMS AND FOREIGN PLAYERS (1995/1996 - 2009/2010)

Season	Teams	Foreign players	Not trained in Italy	Foreign players per team	Not trained in Italy per team
1995-1996	14	43	3	3,07	0,21
1996-1997	14	68	3	4,86	0,21
1997-1998	14	71	7	5,07	0,50
1998-1999	14	84	8	6,00	0,57
1999-2000	16	91	17	5,69	1,06
2000-2001	18	145	25	8,06	1,39
2001-2002	19	167	14	8,79	0,74
2002-2003	18	161	23	8,94	1,28
2003-2004	18	158	26	8,78	1,44
2004-2005	18	173	33	9,61	1,83
2005-2006	18	176	34	9,78	1,89
2006-2007	18	173	27	9,61	1,50
2007-2008	18	166	26	9,22	1,44
2008-2009	16	145	30	9,06	1,88
2009-2010	15	142	27	9,47	1,80

A first significant increase in the number of foreign players took place immediately after the Bosman ruling, when it rose from 43 to 68 (an increase of 58,3%), and a further step up is registered in 2000-2001, when the number of foreign players per team rose from 5,69 to 8,06, an increase of 41,6% from the previous season. Then, the Sheppard case contributed to a further increase of the

number of non-homegrown in following years, and amendments introduced by FIP, aimed at requiring a minimum number of Italians in the line-up without a significant change in the number of non-Italians, were not able to stop this trend. Just in the last four years, after 2005-2006 season that registered the highest value (9,78), there was a very slight decrease of the number of foreign players per team, which had an overall increase of 208% from 1995-1996 to 2009-2010. The number of Italian players *not trained* in Italy was up even by 757%, due to both the inflow of a large number of players having Italian passports because of their origins (particularly U.S. and Argentine players) and the effects of the Gay case, which facilitated the enrollment of non-homegrown who have obtained Italian citizenship. The distinction between Italian players introduced in 2006 by FIP and the limitation to the number of the Italian players *not trained* in Italy did not reduce significantly the inclination to the enrollment of the so-called 'passported' (See Figure 1).

FIGURE 1. FOREIGN PLAYERS IN ITALIAN BASKETBALL CHAMPIONSHIP

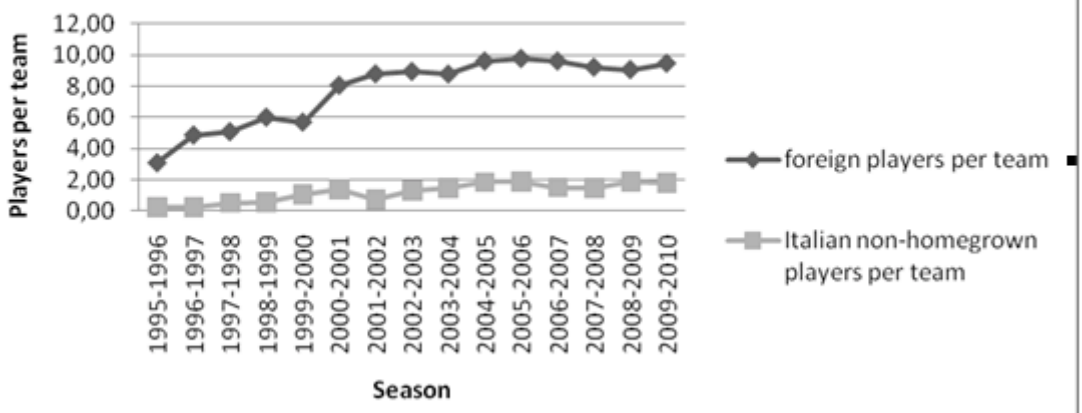
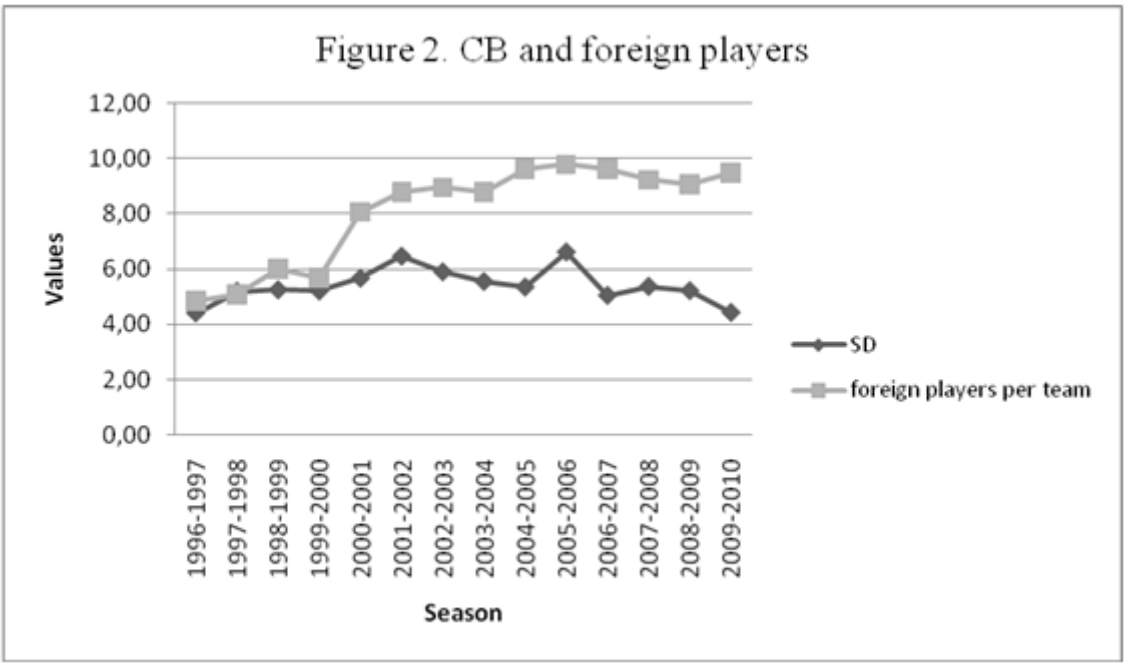


Table 3 and Figure 2 focus on CB performance in the post-Bosman era and its relationship with the number of foreign players in the league. Standard deviation is actually the same at the beginning and at the end of the period considered, and its trend is not unambiguous, as it grew quite continuously over the first years after the Bosman ruling, up to 2001-2002 (a 47% increase from 1996-1997), then had an irregular performance, reaching the highest and the lowest values (except for the first and the last season considered) in two consecutive seasons (2005-2006 and 2006-2007). As for the relationship between standard deviation and the number of foreign players per team, the analysis of data and Figure 2 seems to suggest the

existence of a very weak positive relationship between the two variables, and even this relationship seems to come out much more significantly in the first half of the period, up to 2001-2002, characterized by a 81% increase in the number of foreign players compared to 1996-1997 season (which corresponds to the 47% increase in standard deviation above mentioned). Then, the relationship between CB and the number of non-homegrown players becomes much less clear: in the three following seasons, although the number of foreign players per team basically continues its rising trend, standard deviation decreases by 17%; moreover, we can notice more clearly the anomaly of 2005-2006 and 2006-2007 seasons, which recorded the highest values of the number of foreign players per team, but the highest and lowest values of standard deviation respectively. In conclusion, CB declined over the Bosman era, but did not follow a unidirectional trend, especially from 2002-2003, and is negatively related to the number of foreign players, but this relationship seems to arise significantly just in the first half of the period as well. Considering these results together with the HHI value for the period 1997-2010, we argue that the increase in the number of foreign players after the Bosman ruling provided a greater number of teams with the chance to compete for the win, but did not yield a rise in single seasons CB over time, although the CB negative trend does not seem directly related to the number of foreign players enrolled in a season.

TABLE 3. STANDARD DEVIATION AND FOREIGN PLAYERS (1996/1997 - 2009/2010)

Season	SD	Non-homegrown players per team
1996-1997	4,40	4,86
1997-1998	5,19	5,07
1998-1999	5,25	6,00
1999-2000	5,20	5,69
2000-2001	5,67	8,06
2001-2002	6,47	8,79
2002-2003	5,90	8,94
2003-2004	5,55	8,78
2004-2005	5,35	9,61
2005-2006	6,62	9,78
2006-2007	5,04	9,61
2007-2008	5,37	9,22
2008-2009	5,22	9,06
2009-2010	4,42	9,47



We tried to verify the relationship between standard deviation and number of foreign players through a simple regression analysis as well. In particular, we estimated the following equation:

$$lds_t = lforeign_t + dgdp_t + dgdp_{t-1} + unemployment_t + unemployment_{t-1} + population_t + amendments_j + \varepsilon_t \quad (3)$$

where $lforeign_t$ represents the natural logarithm of standard deviation and the number of foreign players per team respectively, $dgdp_t$ and $unemployment_t$ are the growth rate of GDP per capita in the first year of the season considered and the unemployment rate respectively, which are included in order to introduce an indicator of the economic trend into the regression, $population_t$ is the total population in the first year of the season considered, $amendments_j$, with j = 1, ..., 5, is a vector of dummy variables that captures the effects of amendments concerning non-homegrown players' enrollment introduced by FIP after the Bosman ruling, and ε_t is the random disturbance. We introduced the lagged values of the growth rate of GDP per capita and unemployment rate as well, because the investment choices before the start of a season could be affected by the economic performance in the immediately previous year. Moreover, we consider also a couple of season (1994-195 and 1995-1996) before the Bosman ruling, for a total of 16 observations.

The basic econometric approach was to proceed to a Prais-Winsten FGLS[42] (Feasible Generalized Least Squares) estimation, commonly used in the literature,[43] in order to minimize potential autocorrelation issues.

The results are shown in Table 4. We can notice that the coefficient of the number of foreign players is only slightly significant, which is consistent with the preceding considerations highlighting the relationship between number of foreign players and standard deviation gets less clear after 2001-2002 season. Moreover, the regression analysis highlights that CB in Italian basketball championship is not affected by the economic trend, as all the control variables included are not significant. This result is not surprising if we consider the rationale of the investment choices in an Italian basketball team: an entrepreneur, that is a basketball fan and/or is seeking wider social or commercial exposure, takes over a team and tries to achieve the best results in the team history through considerable initial investments; then, after attaining his goal or owing to a succession of disappointing results if compared to the expenses, he reduces progressively the investments up to the transfer or, at worst, the bankruptcy of the team. This pattern, which brought about the bankruptcy or the great retrenchment of a lot of important clubs such as Juve Caserta, Virtus Bologna, Victoria Libertas Pesaro, Basket Napoli (several times) and Fortitudo Bologna, is not related to the economic trend of the country, as it has been observed since the early 90's. Moreover, the investments in a basketball team do not have significant economic returns, as TV rights did not yield the same income as for football and most revenues, which cover just a little part of costs, still come from ticket offices and sponsors.

Thus, also the regression analysis confirms the number of foreign players has a negative but slightly significant impact on CB. Probably, a key factor of the irregularity in CB trend in the second half of the period considered may be the "quality" of the non-homegrown talent rather than its amount. In the first years after the Bosman ruling, top teams made important investments and signed a lot of very talented foreign players, former NBA stars or current European top players: for example, in 1997-1998 the best European and American players in the Old Continent, Predrag Danilovic and Dominique Wilkins respectively, played in the Italian championship, in Virtus Bologna and Fortitudo Bologna respectively; moreover, in 2000-2002 period Virtus Bologna had in its line-up champions such as Emanuel Ginobili, Antoine Rigadeau, Matjaz Smodis, David Andersen, Rashard Griffith, Marko Jariæ, who were or would have become top players in Europe or even NBA. The consequences of these investments were evident both at national

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[42] J.S. Prais, C.B. Winsten, *Trend Estimators and Serial Correlation*, Cowles Commission Discussion Paper n. 383, Chicago, 1954.

[43] See for example B. Buraimo, R. Simmons, *A Tale of Two Audiences: Spectators, Television Viewers and Outcome Uncertainty in Spanish Football*, in *J. of Ec. and Bus.*, vol. 61, n. 4, 2009, 326-338; T. Lee, *Competitive Balance in the National Football League After the 1993 Collective Bargaining Agreement*, in *J. of Sp. Ec.*, vol. 11, n. 1, 2010, 77-88; J. Berkowitz, D.P. Wilson, C.A. Depken, *When Going in Circles is Going Backwards: Outcome Uncertainty and Fan Interest in Nascar*, mimeo, 2010.

level, where the economic and technical gap between the top teams and the others grew substantially, and at international level, where Italian teams scored a series of great successes: 2 Euroleague wins (Virtus Bologna in 1998 and 2001) and 6 Euroleague finals (4 Virtus Bologna, 1 Pallacanestro Treviso and Fortitudo Bologna) from 1998 to 2004. Since the half of last decade, top teams budgets have been considerably reduced, which yielded a drop in the economic gaps between Italian teams and in the average "quality" of the foreign players signed by them, because especially the best European players are likely to search for higher salaries offered by NBA (that has more and more international players), Greek, Spanish and Russian teams, and a consequent higher CB in the national championship, whereas at international level the best result over the past 5 years is the Euroleague semifinal (Mens Sana Siena, 2008).

TABLE 4: STANDARD DEVIATION AND NUMBER OF FOREIGN PLAYERS: A REGRESSION ANALYSIS
PRAIS-WINSTEN FGLS
Dependent variable: natural log of standard deviation.

Variable	**Coefficent**	**Standard Error**	**P-value**
lforeign	0.678	2.23	0.090
$dgdp_t$	1.705	0.40	0.709
$dgdp_{t-1}$	5.011	1.91	0.129
$unemployment_t$	0.071	0.43	0.688
$unemployment_{t-1}$	-0.039	-0.48	0.657
population	0.000	0.29	0.789
$amendment_1$	-0.425	-2.7	0.054
$amendment_2$	-0.578	-2.57	0.062
$amendment_3$	-0.434	-1.81	0.145
$amendment_4$	-0.498	-1.28	0.270
$amendment_5$	-0.591	-1.31	0.260
R-squared	0.9999		
RESET test	0.299		
Durbin-Watson test	2.077		

Conclusions

This paper aimed at presenting the first analysis of CB in the Italian basketball championship, as most Sport Economics studies are football oriented. First, we focused on CB trend over a very long period of time divided into 4 sub-periods according to the main amendments to regulations concerning the number of foreign players; then, we analyzed CB performance in seasons following the Bosman ruling and its potential relationship with the number of non-homegrown players in the Italian league. The results show CB of the single seasons did not change significantly over time regardless the amendments introduced, but more and more teams competed for the title, especially in seasons following the liberalization of EU players transfers, which is likely due to the fact that all teams had the opportunity to acquire budget-priced talent and the growing popularity of this sport encouraged important investments in new cities bringing about a larger number of competitive teams.

Then, the seasons following the Bosman ruling are characterized by a decrease in CB, which does not follow a unidirectional trend, particularly after 2001-2002 season; furthermore, CB trend seems to be related to the number of foreign players, as shown by both descriptive and regression analysis; yet, this relationship gets less clear after above mentioned 2001-2002 season and is characterized by a slightly significant coefficient in regression analysis, which also reveals CB variability is not affected by economic trend, that means the investments in basketball teams do not depend significantly on the current economic situation. Thus, a key factor may be the "quality", rather than the "quantity", of foreign talent present in Italy: actually, the relationship between CB and number of non-homegrown players gets less clear after the inflow of less talented players compared to the past seasons, mostly because of a reduction in the investments of Italian top teams. For example, although the number of foreign players is still high, CB in the last four seasons is higher if compared to the previous seasons. Thus, we conclude wondering if it may be opportune to invest more in the *training* of Italian players rather than to keep on signing less and less talented foreign players: in this sense it is crucial the unity of purpose between FIP and Lega Basket, which is unfortunately still distant.

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