30
THE LABOR MARKET IN
PROFESSIONAL TEAM SPORT
The case of football players in Europe

Bernd Frick

Introduction
Since their origin, player labor markets on both sides of the Atlantic – in Europe and in the United States – have been highly regulated. The justifications brought forward by proponents of interventionist measures, that these help to promote competitive balance and financial stability, have always been, and continue to be, welcomed by sport fans as well as the media. While in Europe the situation has changed considerably since the mid 1990s, American labor markets, though subject to modification, have continued to be more highly regulated, a feature that generates market power for team owners and helps hold down the salaries of many players below their contributions to team revenues.¹ In North America these restrictions include:

• A player draft, where initial entry into the league is through the organized recruitment of a pool of available players, usually from college;
• A reserve clause, where players are tied to their teams until they qualify for free agency; under restricted free agency (as e.g. in the National Football League or NFL), players with three years’ experience can only negotiate new contracts with rival teams if their existing team has not made an appropriate matching offer comparable to rivals’ terms;
• A long period before free agency (the freedom to move to any club that makes a suitable salary offer) is achieved. This period is four years in the NFL and six years in Major League Baseball (MLB);
• A salary cap, which imposes a ceiling on the total payroll allowed for a team, usually as a percentage of designated revenues (this is applied to teams in the National Basketball Association or NBA, the NFL and the National Hockey League or NHL).

Although none of these restrictions has ever applied in European football, the situation was – for different reasons – quite similar to the one in the US until the mid 1990s.² In 1995, however, Belgian footballer Jean-Marc Bosman challenged the “traditional” labor market principles restricting player mobility when his case appeared before the European Court of Justice. Bosman, whose contract with RFC Liège – a Belgian first division club – had expired, was offered a new contract on inferior terms to his previous contract. When Bosman rejected the offer, his club refused permission for him to join US Dunkerque, a French second division...
The player then sued RFC Liège, citing restraint of trade. In December 1995, the European Court of Justice ruled that the provision, whereby out-of-contract players could only move between two clubs in different EU countries if a transfer fee was agreed between the clubs, was incompatible with Article 48 of the Treaty of Rome, which relates to freedom of movement of labor. Moreover, Article 48 was also ruled as incompatible with restrictions on the number of foreign players permitted in a team. Prior to 1995, the European Football Association (UEFA) had set a limit of three for the number of foreign players who were allowed to participate in a European competition match, plus two further players, termed assimilated, who had been residents, without interruption, of that country for five years, including three years in junior teams (this was called the 3 plus 2-rule). This regulation was overturned by the Court’s decision because restrictions on the composition of teams on the basis of nationality were deemed a violation of Article 48 of the Treaty of Rome since they discriminated against players from other EU member states and denied free access to employment in EU countries (see Forrest and Simmons, 2000: 20).

The German Football Federation (DFB), for example, decided to expand the right to play professionally in Germany without being considered a foreigner not only to EU residents but to all players living in one of the 51 member states of UEFA. Nevertheless, some restrictions against non-EU players have remained in force until today and are said to be necessary to stop “floods of foreign imports” and to “prevent mediocre foreign players taking the places of domestic players.” However, economic theory would suggest that it is difficult to see why clubs should want to employ foreign players who are inferior to domestic players. Since employing foreigners usually incurs extra costs (see Lazear, 1999), foreign players should have some superior ability that makes their employment worthwhile (see Forrest and Simmons, 2000: 21). Obviously, the removal of restrictions on the number of foreign players allowed on a team will lead to an increasing competition for better foreign-born players and a simultaneous decrease in the demand for domestic players. Given these developments, it is clear that labor markets in European football and other sports have far fewer restrictions and opportunities to move are much greater, especially within the European Union countries where freedom of labor to move is a central tenet.

The next section presents data on the economic relevance of European football, which is then followed by basic theory to show how salaries of professional team players might be determined. Some particular issues discussed in player labor markets are then examined. These include the role of player transfers for cash in European football in the former case, and then an assessment of the evidence on the determinants of player salaries in an occupation which is inherently risky, since players can be cut from their teams and may also suffer long-term injuries, in the latter case. The last issue to be considered is the extent to which forms of discrimination against ethnic minorities persist in modern sports leagues. The chapter concludes with a brief summary and some implications for further research.

The economic relevance of football in Europe

For many years football has been a rapidly growing business. Over the period from 1996/97 to 2009/10, annual revenue growth exceeded 20 percent in Italy and Spain and 25 percent in England, France and Germany (see Jones, 2010: 11). In the season 2005/06, average team values in the Big 5 European leagues varied between €54 and €112 mil., and between €74 and €161 mil. in 2010/11. The most expensive teams (Chelsea in London, Real Madrid, FC Barcelona, Bayern Munich, Juventus in Turin and Inter Milan) have in the meantime reached levels far above €300 mil. each, similar to the team values reported for the most valuable franchises in the US Major Leagues (see Table 30.1).
<table>
<thead>
<tr>
<th>Country</th>
<th>Season</th>
<th>Aggregated transfer value (in 1.000 €)</th>
<th>Average transfer value per team (in 1.000 €)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
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<tr>
<td>England</td>
<td>2005/06</td>
<td>2,257,600</td>
<td>112,880</td>
<td>36,550</td>
<td>366,075</td>
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<td>116,353</td>
<td>20,800</td>
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<td>144,259</td>
<td>34,800</td>
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<td></td>
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<td>3,214,875</td>
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<td>1,653,905</td>
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<td></td>
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<td>73,927</td>
<td>14,150</td>
<td>195,050</td>
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* relegated at the end of the 2005/06 season due to involvement in a league-wide bribery scandal.

Source: <www.transfermarkt.de>, various years
Moreover, the growth rates of the different markets are quite different. While the market value of the average first division club during that five-year period grew by more than 10 percent per year in Germany and in Spain, the growth rate in Italy and France was considerably lower (at 7 percent). Perhaps not surprisingly, the discrepancy in the market values of the top teams from each division (clubs that reach the Champions League regularly) and the market values of the bottom teams in the respective national league has also increased over the five-year interval. Each of the five leagues under consideration includes a number of small-market teams that sometimes do not even reach two-digit figures (such as FC Nancy in France and FC Cadiz in Spain). Since in Europe access to the first division in professional football depends mainly on sporting performance – and not on the size of the market – the variance in team values is considerably higher than in the US Major Leagues, where franchise rights tend to be sold to investors from large metropolitan areas only.

Until recently, however, European football has received less attention from academic economists than any of the big four American team sports (football, basketball, baseball and (ice) hockey). The reasons for that lack of interest primarily reflect data availability. This situation is now changing. Szymanski and Kuypers (1999) examined England as an outlier and now in Germany a nationwide Sunday newspaper (Welt am Sonntag) and a highly respected football magazine (Kicker) have started to collect and publish the data that is required to analyze the (potential) determinants of transfer fees and player salaries.

Thus, the availability of detailed information on player salaries, transfer fees and contract lengths, together with the recent dramatic changes in the regulatory regime governing the football players’ now international labor market have convinced an increasing number of economists from all over Europe to devote more attention to that particular market. It is in this context, therefore, that this chapter examines the various dimensions of that market and the forces shaping its operation.

**Labor market structure and labor market outcomes**

A convenient starting point for an analysis of transfer fee and/or pay determination of sport players in teams is marginal productivity theory, which is the workhorse of modern labor economics. In this theory, firms (teams) demand (hire) labor to produce output (team wins). Players are then workers who supply labor services. These players produce team wins in conjunction with other inputs (coaches, training facilities). Players participate in games, viewing of which will be purchased by spectators at the stadium or through television broadcasting. The marginal product price paid by fans is then a weighted average of broadcast fees (for pay TV) and ticket prices for the particular match. If this average price of viewing a particular match is $P$ and matches played are $Q$ then the marginal revenue product of one extra player ($L$) on a roster is $\text{MRP} = P \times dQ/dL$. If total revenue from one match is $R$ and we replace matches played by wins, $W$, then:

$$\text{MRP} = \frac{dR}{dW} \times \frac{dW}{dL} \quad (30.1)$$

Hence the marginal revenue product of an extra player is the marginal revenue of one more win multiplied by the marginal contribution of the player to wins.

Conventional economics presumes diminishing returns in production. Adding extra players will generate more wins but at a decreasing rate. Then, if the market for players is perfectly competitive without restrictions, market forces will ensure that the wage paid to a player will equal their marginal revenue product. From this principle, it can be deduced that professional
The labor market in professional team sport

Professional team sport players are highly paid because their marginal revenue products are high. This could mean that high salaries could be a reflection of high product prices (high marginal revenues from wins) rather than high ability to convert playing effort into wins. This raises the question of whether celebrity players can generate high salaries from their marginal revenue product, independent of their ability to generate wins. For example, a Chinese footballer on an English Premier League team’s roster might generate high levels of merchandise sales in Asia. Arguably David Beckham’s signing for LA Galaxy might reflect this ability to generate merchandising revenues internationally. However, it is unlikely that players would be selected for teams just because they have high celebrity appeal in mass markets. Celebrity appeal would diminish if the player was revealed to be unsuccessful in helping his team win matches.

It is not surprising that high potential earnings in major sports such as football induce many youngsters to try to gain entry into leagues. Even in lower division football, typical earnings will exceed what players might earn in their next best occupations. In general, increased player earnings will encourage more potential candidates to attempt to join the professional ranks.

At this point, the term “supply” needs further clarification. The number of players on the field at any time in a given sport will be fixed, and team rosters will be fixed in size, either by league rules (as in the NFL) or by convention (as in football). The treatment of supply in sport economics then switches from being number of players to the less easily measured concept of “talent.” Many players are available to play professional sport but few have the requisite talent.

In a competitive market, the supply of talent should be upward sloping as wages increase (that is in wage–talent space) while the demand for talent is downward sloping. In market equilibrium, demand for talent should match supply and the resulting salaries should reflect this. The competitive theory does deliver some sensible predictions. If there is an increase in available talent due, for example, to more lenient rules governing work permits for foreign-born players, the supply of talent schedule shifts to the right (in wage–talent space). Player salaries will fall and units of talent (and by implication player quality) will increase, which will be more attractive to fans. Likewise, if there is an increase in the value of broadcasting rights, then the demand for talent schedule, derived from marginal revenue product, will shift to the right. Player salaries will increase and units of talent will also rise. Again this will attract bigger audiences but clubs will face increased player costs.

In major sport leagues, the number of teams or franchises will typically be limited. Premier divisions of European football leagues contain 18 or 20 clubs, although some entry is assured by the system of promotion and relegation. Typically, three clubs are promoted and three are relegated each season. Spain has 42 professional clubs in two divisions and Germany has 56 professional clubs in three divisions, both with a semi-professional tier below this. England’s football league is unusually large with a hierarchy of 92 teams in four divisions.

Overall, this means that the number of professional clubs is fairly small and this confers some buying power for teams in the player labor market. But players themselves have some specialized ability. Players are neither completely homogenous nor completely specialized. This creates a situation of bilateral monopoly in which players and teams share a surplus or economic rent. Rent in this context can be viewed as the return to talent above that required to attract it into professional sport. Only a few players who are sufficiently differentiated can shift surpluses (rents) completely into salaries; these players will tend to be the “superstars” of their sport. With bargaining over salaries between team owners and players (or rather their agents) wages will generally fall between marginal revenue product and lowest wage that would induce players to remain professionals. The greater the bargaining power for players, the closer salaries will move towards marginal revenue products. But restrictions on entry
into leagues, and a small number of professional teams, will ensure that salaries lie below marginal revenue product.

One plausible rationale for underpayment of players relative to marginal revenue product is that players enjoy rising salaries over their careers as they establish themselves as professionals. But teams may incur costs of training and development. Training tends to be fairly common in style and methods across teams, and only a small proportion could be thought of as specific to the team, i.e. most training is transferable. In the early years of player careers, players implicitly pay for some of the costs of training with salaries that are below marginal revenue product. In later years, assuming they survive in the league, players receive salaries in excess of marginal revenue product both as compensation for earlier underpayment and as an incentive to reject bids for services from rival teams.

The theory of bilateral monopoly is not particularly well suited to European football, since these leagues have a thick labor market. This is because players are potentially mobile across many leagues, the number of potential buying teams is quite large and players can sort themselves into hierarchical divisions on the basis of ability. Moreover, in European football free agency is advanced and the barriers to mobility that persist are largely due to culture and language.

Many European football fans will readily identify with an application of the winners’ curse to their leagues. Teams often seem to hire players without extensive research into their background, attributes, lifestyles and ability to complement existing team members. This is especially the case for imports of players from far-off foreign countries in South America and Africa. Players are sometimes hired largely on the basis of recommendations of agents and video clips. Perfect information on player ability cannot be taken for granted and asymmetric information may have important effects on transfer fees, player salaries and team performance. Mistakes in hiring are often associated with panic buying behavior by teams fearing impending relegation and hence substantial losses of revenues. Such vulnerable teams are precisely those which lack the resources and infrastructure to conduct efficient searches for new player talent. But overpayment following such buying is largely due to asymmetric information rather than a winner’s curse. Although players’ agents like to promote the notion of multiple bidders for player services, the reality is that at most three clubs, and usually just one or two, will be involved in active negotiations over a player’s contract.

Summarizing, economic theory predicts that in the absence of labor market restrictions (such as salary caps, reserve clauses and/or draft rules) players will be paid according to their marginal product, i.e. the wage an individual player receives is a function of his talent and his contribution to team revenues (see Rottenberg, 1956). Since the clubs differ with respect to their drawing potential – there are small market and large market teams – they also differ with respect to their ability to pay.

However, since it rests on a number of critical assumptions (such as player mobility, complete information and risk neutrality), the neoclassical model of wage determination has often been rejected not only by sport fans, but also by some highly respected economists, such as “the elementary classical model presents a very poor description of employment relations in advanced economies” (Milgrom and Roberts, 1992: 329).

However, the problems that are characteristic for most – if not all – real life labor contracts (information asymmetries, incompleteness, importance of implicit elements) are clearly less important in professional team sport. Here, an individual player’s performance can easily be measured, shirking can be detected at low cost, and effort and talent can be evaluated not only by a player’s current club but also by other teams. It is, therefore, plausible to assume that in professional team sport leagues with an unregulated labor market, players are paid mainly according to their productivity.
Transfer fees in European football

As in any team sport, the trading of players between clubs has always been commonplace in football. Contrary to the major leagues in the US, however, where players are usually traded for other players or for future draft picks, players in European football are usually traded for cash settlements.

Average transfer fees in the German Bundesliga, for example, have increased from €350,000–400,000 (in the seasons 1981/82–1986/87) to more than €4 mil. in 2001/02 before they declined again to less than €2 mil. in 2002/03 (see Figure 30.1). In the last five years an upward trend can again be observed. This development, however, seems to be rather volatile, because the standard deviation seems to have increased more than the mean (see Figure 30.2).
This, in turn, indicates that – contrary to the early years of the post Bosman era – an increasing percentage of star players move from one club to another before their contracts expire. Thus, top clubs bidding for the services of a particularly gifted player do not wait until that player’s contract expires but approach that player’s current club much earlier than they did a few years ago.

Moreover, the percentage of player moves involving payment of a transfer fee has declined from more than 95 percent in the 1980s and until the mid 1990s to less than 40 percent in 2003/04, before increasing again (to 50 percent over the last couple of years; see Figure 30.3). Clearly, this development is to be attributed to the Bosman ruling stipulating that, for a player who wants to change clubs after his contract has expired, no transfer fee has to be paid. This does not mean, however, that out-of-contract players are “cheaper” than players who still have a valid contract when moving from one team to another. In the former case, the new team usually pays a “signing bonus” to the player. Although these signing fees are usually not disclosed, anecdotal evidence suggests that their level is comparable to the transfer fees that are being paid for observationally similar players still under contract at the time they move from one club to another.

The observable variation in transfer fees can largely be explained by player age, career games played, career goals scored, and international caps, which all have a positive yet decreasing influence on the amount of money paid for the services of a player. Moreover, characteristics of the buying as well as the selling club have also been shown to influence transfer fees: the more successful the buying and/or the selling club is (either in economic or in sporting terms), the higher the transfer fee that the two clubs agree upon (see e.g. Eschweiler and Vieth, 2004; Carmichael, Forrest and Simmons, 1999; Speight and Thomas; 1997a, 1997b; Reilly and Witt, 1995; Carmichael and Thomas, 1993; Frick and Lehmann, 2001; Dobson, Gerrard and Howe, 2000; Dobson and Gerrard, 1999). 14

There are, however, some extensions to the traditional framework of analysis that deserve to be mentioned in this context. First, since transfer fees are quite often a matter of dispute between the selling and buying club, most European leagues have implemented some kind of arbitration procedure. Controlling for arbitrated settlements (see Speight and Thomas, 1997a,
1997b; Reilly and Witt, 1995; Carmichael and Thomas, 1993) produces mixed results. Some studies find that arbitrated fees are higher than those on which buyer and seller agree while others find that they are significantly lower.

Second, since the probability of being traded to a new club is not identical for all players, the estimation procedure employed in almost all of the available studies is likely to produce biased coefficients (see Carmichael, Forrest and Simmons, 1999). Controlling for these individual differences in the probability of transfer via a two-step procedure delivers results that are comparable to the ones produced by simple OLS- or Tobit-estimates. However, it also appears that players who can command higher transfer fees are more likely to be transferred.

Third, particularly since the mid 1990s – since the passage of the Bosman ruling – the number of remaining contract years is likely to be a major determinant of the transfer fees paid (this is due to the fact that under the new regime the old team cannot command a transfer fee any longer when the player’s contract has expired). Unfortunately, only one of the available studies has included that variable when estimating a hedonic price equation. Although their results are as expected, the study by Feess, Frick and Muehlheusser (2004) may suffer from a sample selection bias as they have used a rather small sample of transferred players (n = 239). It cannot be ruled out entirely that the cases where contract duration and transfer fee have been published in the popular press are not a random sample of all transfers that have occurred over the period under investigation.

The determinants of player salaries

Contrary to the situation in the US, European football clubs have few incentives to join together to hold down player salaries. Theoretically this is because the individual clubs try to maximize utility (i.e. sporting success) instead of profits (Sloane, 1971; Késenne, 2007). Therefore, increasing revenues from ticket sales, merchandising activities and especially the sale of broadcasting rights have induced a massive increase in player salaries in all of the major European football leagues. In Germany, for example, team wage bills doubled between 1992/93 and 1996/97 and again doubled between 1996/97 and 2000/01 (see Huebl and Swieter, 2002: 111). The increase in individual player salaries mirrors these developments (see Figure 30.4 and 30.5). In 1995/96 and 1996/97 average player salaries reached €550,000. When, in the late 1990s, the league sold the TV rights to the Kirch group, average salaries increased considerably (from €800,000 in 1999/00 to €1.1 mil. in 2002/03). Following the collapse of the Kirch group, salaries went down again (to €900,000 in 2004/05) before they started to increase once more (again following conclusion of a new TV contract). At the end of the period 2009/10 average salaries have stabilized at a level of about €1.2 mil. per year. Thus, the development of players’ salaries perfectly mirrors the development of club revenues.

Several empirical studies have examined the remuneration of players in European football. These include Franck and Nüesch (2010), Lehmann and Weigand (1999), Lehmann (2000), Lucifora and Simmons (2003), Huebl and Swieter (2002), Lucifora and Simmons (2003), Lehmann and Schulze (2008), Garcia-del-Barrio and Pujol (2005, 2007), and Frick (2007, 2010). The model structure of these studies is quite similar. In a standard Mincer-style earnings function, player salaries are influenced by age, (career) games played, (career) goals scored, international caps, player position, assists and tackles, superstar status, and contract duration. While age and experience have a positive, yet decreasing effect, the influence of contract duration is strictly linear. Midfielders and forwards are found to earn a premium relative to
Moreover, presence in the media (measured, for example, by number of Google hits) is also associated with higher salaries. Apart from these individual characteristics, team characteristics (such as attendance, capacity utilization, sponsoring revenues and qualification for international cup competitions) have also been found to affect player salaries positively and statistically significantly.

Recently, three different extensions of the traditional estimation framework have emerged in the literature. First, only one of the available studies uses longitudinal data. In this context Frick (2007) demonstrates that player age, career games played and international appearances

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**Figure 30.4** The development of player salaries in the German Bundesliga (1995/96–2009/10)

*Source: Kicker (special issue), 1995–2010; own calculations – figures not available for 1998 – in 1,000€, nominal*

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**Figure 30.5** The development of player salaries by position in the German Bundesliga (1995/96–2009/10)

*Source: as above*
have a positive, yet decreasing impact on salaries. The distribution of salaries across playing positions is also confirmed. Second, Bryson, Frick and Simmons (2009) also include direct productivity measures, such as the capability of professional football players to control the ball perfectly with both feet, on the individuals’ remuneration. They use a large cross-section data set with information on more than 2,500 players who at the beginning of the 2005/06 season were under contract with one of the first division teams in England, France, Germany, Italy or Spain. Controlling for age, height, player position (dummies for midfielder and forward; reference group: defender) and national league (dummies for Serie A, Primera Division, Premier League and Ligue 1; reference league: Bundesliga) it appears that both-feet players enjoy a pay premium of more than 50 percent. Moreover, left-footed players also receive a statistically significant premium of 15 percent. These premiums are identical across the five European leagues (the respective interaction terms are statistically insignificant). This finding is compatible with the idea that due to the liberalization of the national player markets induced by the Bosman ruling in late 1995 a European salary model for players has emerged in the meantime.

Finally, Huebl and Swieter (2002) as well as Feess, Frick and Muehlheusser (2004) find that contract duration has – other things being equal – a significantly positive influence on annual player salaries. This is not surprising as contract length is an increasing function of a player’s potential (i.e. better players are signed to longer contracts – which can be termed the selection effect). At the same time, however, a player’s performance will be lower, the longer his contract (i.e. guaranteed multi-year contracts reduce player effort – a phenomenon that can be termed the moral hazard effect). If long-term contracts are indeed used to reward the better players, it remains to be seen whether the selection effect is larger than the moral hazard effect or whether the latter outweighs the former.

The most recent study by Frick (2010) employs a variety of estimators to deal with features of the data. The estimators include an Ordinary Least Squares (OLS) model which is estimated with robust standard errors because of heteroscedasticity in the data. This occurs when the variances in the data are not constant and is typical in broadly cross-section data. One possible reason for this is because the data are organized across teams as well as seasons. To potentially control for this a Random Effects panel data model is employed. In addition a Median Regression model, followed by various quantile regressions (.10, .25, .75, .90) with and without bootstrapped standard errors (200 repetitions again to control for any heteroscedasticity) are employed to explore the possibility that the impact of performance on pay varies across the distribution of pay. A number of studies have employed this approach (Hamilton, 1997; Reilly and Witt, 2007; Berri and Simmons, 2009; Simmons and Berri, 2009; Leeds and Kowalewski, 2001; Vincent and Eastman, 2009). OLS salary regressions are sensitive to the presence of outliers and can be inefficient if the log salary measure has a highly non-normal distribution, as is often the case in professional team sport. In contrast, quantile regression estimates are more robust. The results are comparable to those obtained from OLS as well as RE- and MR-estimation. However, few of the coefficients remain constant over the percentiles.

The estimated model is of the following general form:

\[
\ln{PAY} = \alpha_0 + \alpha_1 AGE + \alpha_2 AGE^2 + \alpha_3 GPL + \alpha_4 CGP + \alpha_5 CGP^2 \\
+ \alpha_4 CGP^3 + \alpha_5 IAL + \alpha_6 IAL^2 + \alpha_7 IAL^3 + \alpha_8 IAP \\
+ \alpha_9 IAP^2+ \alpha_{10} IAP^3 + \alpha_{11} GSL + \alpha_{12} CGS + \alpha_{13} CGS^2 \\
+ \alpha_{14} CGS^3 + \alpha_{15} TEN + \alpha_{16} CAP + \alpha_{17} FDD + \alpha_{18} PD \\
+ \alpha_{19} RD + \alpha_{20} TD + \alpha_{21} YD + \varepsilon
\]  

(30.2)
where

- AGE: player age
- GPL: number of appearances in Bundesliga in last season
- CGP: number of career appearances in Bundesliga
- IAL: international appearances last season
- IAP: international appearances in career
- GLS: goals scored last season in Bundesliga
- CGS: career goals scored in Bundesliga
- TEN: tenure with current club
- CAP: captain of team (0 = no; 1 = yes)
- FDD: previous team in first division abroad (0 = no; 1 = yes)
- PD: position dummies (ref.: goalkeeper)
- RD: region of birth dummies (ref.: Germany)
- TD: team dummies (ref.: Borussia Moenchengladbach)
- YD: year dummies (ref.: 2001/02)

Thus, the models distinguish between a player’s career performance and his most recent (i.e. last season) performance. The most recent performance (measured by, inter alia, the number of games played, the number of international appearances and the number of goals scored) is, of course, not included in the career performance.  

The quantile regression estimates are displayed in Table 30.3.

The main findings from Tables 30.2 and 30.3 can be summarized as follows. First, age, career games played, international appearances over the entire career and international appearances in the last season all have a statistically significant non-linear influence on salaries. The statistically significant coefficient of the cubic term suggests existence of superstar effects (Rosen, 1981). A strange result is obtained for career goals scored: the coefficient of the linear and the cubic term are statistically significant and negative, while the coefficient of the squared term is positive and significant.

Second, goals scored last season as well as games played last season have a significantly positive and strictly linear influence on annual income, i.e. there seem to be no decreasing returns to either goals scored or games played. Comparing the returns to career performance and to performance in the last season, it appears that historical merits do not count very much, i.e. recent performance is – as expected – far more important than past performance.

Third, defenders, midfielders and forwards earn significantly higher salaries than goalkeepers. The premia for these positions, however, differ considerably across estimations: the effect is most pronounced in the RE estimation and weakest in the MR model. Fourth, region of birth is also important: players from South America and Western Europe receive a considerable pay premium while players from the rest of the world are neither favored nor discriminated against. The pay premium for South Americans and West Europeans is not surprising: other things being equal, players from these regions attract larger crowds (Wilson and Ying, 2003) and contribute more to merchandising revenues (Kalter, 1999). The longer a player has been active for his current club, the lower is his annual salary. Whether this is the result of an adverse selection process (better players are traded while less talented players remain with their old club) or whether some players are willing to forfeit money to stay at home is not yet clear.

Finally, team captains and players who moved from a first division club abroad to Germany are paid a significant premium, too. In the former case this is obviously due to leadership skills
**Table 30.2** Estimation results I: various methods

<table>
<thead>
<tr>
<th>Variable</th>
<th>Random Effects</th>
<th>Robust OLS</th>
<th>Median Regression</th>
</tr>
</thead>
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<td></td>
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<td>B</td>
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<tr>
<td>AGE</td>
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<td>AGE²</td>
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<td>25.66***</td>
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<td>7.48***</td>
<td>.0056</td>
</tr>
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<td>.0002</td>
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<tr>
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<td>.0016</td>
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<td>.0002</td>
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<td>-.0011</td>
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<td>.0329</td>
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</tbody>
</table>

Team dummies included
Season dummies included
N of observations 6,147 6,147 6,147
Obs. per player 1–13 — —
N of players 1,993 — —
R²*100 61.7 62.7 40.5
F-value 164.5*** — —
Wald Chi² 6,672.0*** — —
LM-Test 392.0*** — —
Raw sum of dev. 4,656.6 — —
Min sum of dev. 2,772.6 — —

+ not significant; * p < .10; ** p < .05; *** p < .01
that are required for the job and that are, therefore, particularly rewarded in the market (Kuhn and Weinberger, 2005; Deutscher, 2009).

Few of the coefficients retain their magnitude across the different quantiles of the salary distribution:

- Generally, the maximum income is reached at an age of about 27 or 28 years. The age-earnings profile, however, is much flatter for the players with the highest incomes.
- The impact of games played last season as well as career games played on annual salaries is much stronger for players at the bottom of the income distribution.

### Table 30.3 Estimation results II: quantile regressions

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<tr>
<th>Variable</th>
<th>0.10 quantile</th>
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<td>.2829***</td>
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<td>.0047***</td>
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<td>−.0001**</td>
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<td>.0030***</td>
<td>.0013 +</td>
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<td>.1129 ***</td>
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<td>−.0034 *</td>
<td>−.0149 ***</td>
<td>−.0114 ***</td>
</tr>
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<td>.0000 +</td>
<td>.0006 ***</td>
<td>.0004 ***</td>
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<td>.0119 ***</td>
<td>.0126 ***</td>
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<td>−.0003 ***</td>
<td>−.0002 **</td>
<td>−.0002 *</td>
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<td>.0486 ***</td>
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<td>−.0132 ***</td>
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<td>.0002 **</td>
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<td>.0000 +</td>
<td>−.0001 ***</td>
<td>−.0009 **</td>
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<td>.6895 ***</td>
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<td>−.0509 +</td>
<td>−.2002 ***</td>
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<td>.1992 ***</td>
<td>.1637 ***</td>
<td>.1627 ***</td>
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<td>.0085 +</td>
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<td>−.2022 ***</td>
<td>−.1494 *</td>
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<td>4.6571 ***</td>
<td>5.1341 ***</td>
<td>8.6862 ***</td>
<td>10.4911 ***</td>
</tr>
</tbody>
</table>

Team dummies included
Season dummies included
N of cases 6,147 6,147 6,147 6,147
Pseudo R$^2$*100 | 43.6 | 42.4 | 39.2 | 39.2
Raw sum of dev. 2,196.5 3,891.5 3,577.2 1,934.0
Min sum of dev. 1,239.1 2,240.8 2,139.6 1,175.5

+ not significant; * p < .10; ** p < .05; *** p < .01
• International appearances (past as well as current) seem to have a much stronger influence on the salaries of the players at the top of the income distribution.
• Goals scored (past as well as most recent season), tenure with the current club and being a team captain seem to have a more or less constant impact on player salaries, i.e. the coefficients are quite similar for the different quantiles.
• The coefficients of the position dummies change considerably across the income distribution, indicating that goalkeepers are the “real superstars” in the business.\(^{24}\)
• The pay premium enjoyed by players from South America increases across the pay distribution while the premium of players from Western Europe decreases.\(^{25}\)

Is discrimination an issue in European football?

Especially since the mid 1990s, the percentage of foreign-born players has been increasing in most, if not all, of the European football leagues (today, even Russian teams hire players from Brazil or from Africa). In the German Bundesliga, for example, the percentage of German-born players has dropped from more than 95 percent in the 1960s to less than 50 percent in the most recent seasons (similar developments have occurred in the English Premier League and, to a lesser extent, in Italy and Spain, too). Although this is prima facie evidence against the hypothesis that managers, domestic players and/or fans are discriminating against foreigners, it is at best a necessary, but certainly not a sufficient condition. Discrimination is said to occur when individual characteristics of a player (such as his race or nationality) that are clearly irrelevant for his productivity have an influence on pay, transfer fees, playing time, and career duration.

A number of studies have analyzed various aspects of discrimination. Although the evidence is not completely conclusive, discrimination is apparently not a problem in European football: Pedace (2008) finds that in the English Premier League an increasing percentage of players from South America is detrimental to team performance, but at the same time increases attendance. Preston and Szymanski (2000) corroborate this finding with respect to black players: the number of appearances by black players has a significantly positive influence on team performance, but no effect on gate attendance (with similar results, see Wilson and Ying, 2003).

Moreover, foreign players in the Bundesliga are not paid less, but very often are paid more than otherwise similar German players: Frick (2007, 2010), for example, finds that players from Eastern Europe earn salaries about 15 percent higher than comparable German athletes while players from Western Europe have a 30 percent higher pay and the “ball artists” from South America enjoy a 50 percent premium. These findings are not only in accordance with the argument that in a highly competitive (labor) market discrimination is unlikely to persist; they also suggest that all the players are paid according to their marginal product: players attracting additional spectators and inducing these additional spectators to buy merchandising products have a higher remuneration – even after their contribution to the performance on the pitch has been controlled for.

Similarly, country of origin usually has no influence on the transfer fees paid once individual player characteristics are controlled for. Neither Frick and Lehmann (2001) nor Reilly and Witt (1995), who explicitly address the question, find any evidence of discrimination against, for example, black players or players from Eastern Europe.

Finally, Frick, Pietzner and Prinz (2007, 2009) suggest that there is no discrimination against players from specific areas of the world with regard to the duration of their individual careers. The positive and statistically significant coefficients for Eastern Europeans, Western
Europeans and South Americans may at first suggest that players from these regions face a higher risk of being eliminated from the Bundesliga. This, however, is certainly not necessarily indicative of discrimination in the sense that either managers or spectators prefer players of German origin. Rather, especially players from Western Europe and South America often leave the Bundesliga because they sign more lucrative contracts with teams in Spain, Italy, England and France. This explanation, however, does not apply in the case of players from Eastern Europe, who may indeed suffer from discrimination: Kalter (1999), for example, has recently shown that the number of replica shirts sold is significantly influenced by the players’ origin: while shirts with the names of players from Eastern Europe do not sell well, those with the names of South American players are bestsellers.

Thus, the finding that teams may discriminate against players from Eastern Europe should be subject to further research. The most pertinent question in this context is whether teams pay a penalty for their management’s or their supporters’ taste for discrimination (for empirical evidence on this point see, for example, Szymanski, 2000).

Conclusions
Since the mid 1990s, the labor market for football players has been subject to an already large and still increasing number of empirical studies. That growth can be attributed to a number of different, yet closely related developments. First, the football industry has in the last 15 years enjoyed unprecedented growth, which has turned it into an economically relevant part of the service sector in general and the entertainment industry in particular. Second, the labor market for football players has experienced changes in its regulatory framework that are unparalleled in other labor markets. Starting with the Bosman ruling of the European Court of Justice and subsequent developments, the labor market has liberalized, encouraging economists to examine it. Third, the increasing availability of detailed information on player salaries, transfer fees, contract lengths and career durations has made thorough empirical analyses feasible in Europe that, until recently, could only be conducted by economists working with data from the Major Leagues in the US. This chapter has reviewed those developments.

These developments notwithstanding, a number of questions have not yet been dealt with adequately:

• In principle, a large number of additional measures to explain the observable variance in player salaries are available to the researcher, but have not yet been used in empirical analyses: each player appearing in a regular season match in the German Bundesliga for at least thirty minutes is graded by the journalists of a highly respected football magazine (Kicker) with a school grade. Given the relative paucity of individual performance measures, such a composite index should be used in further analyses.

• With only one exception, none of the available studies on the determinants of transfer fees takes into account the fact that remaining contract duration is likely to be of major importance. This deficit is certainly due to the fact that the duration of individual player contracts is usually not disclosed. Assembling that information for a representative sample of players is very time-consuming and, therefore, costly.

• The duration of individual player contracts apparently varies with the peculiarities of the regulatory regime. Following the Bosman ruling, average contract length increased by about 20 percent. It is very likely, that under the new Monti regime, which stipulates a maximum contract length of five years, the average has declined again. Since contract
duration is an important part of an incentive-compatible remuneration package, the behavioral consequences of alternative contract lengths deserve closer investigation.

- The empirical analysis of individual career durations is still in its infant stage. Although most of the required information is easily accessible, more elaborate models that distinguish between voluntary and involuntary separations have yet to be estimated. Moreover, since that data is usually available for rather long periods of time (several decades), it is also possible to analyze changes in the relative importance of player and team characteristics as well as the impact of changes in the regulatory regime.

- Although the high (and still increasing) shares of foreign players seem to suggest that discrimination is not an issue in European football, several findings warrant further investigation. If, for example, players from Eastern Europe have – other things being equal – shorter careers and sell fewer replica shirts while having no adverse effects on ticket demand, discrimination may or may not exist. Clearly, further analyses using additional data (such as player of the match or team of the day information) are required.

- Finally, we certainly need more comparative studies that carefully control for the peculiarities of the national labour markets. However, given the liberalization of the player market and the internationalization of the individual teams in each of the leagues under consideration one would expect virtually identical coefficients in hedonic salary and/or transfer fee equations using data from different leagues.

Notes

1 Moreover, American labor markets are characterized by closed structures with few imports from overseas until today. Finally, the small number of professional franchises in major North American leagues (generally just over 30 in any league) also contributes to buyer power in the player labor market.

2 The English Football League (comprising tiers two through four) operates a voluntary restraint on ratios of payroll to turnover of less than 70 percent while a hard salary cap is imposed in English rugby league and rugby union.

3 The details of Bosman’s old contract, the new contract offered to him by RFC Liège and the offer made by US Dunkerque are discussed in more detail in Campbell and Sloane (1997).

4 Subsequent changes to labor markets since the Bosman ruling have also occurred. The Kolpak ruling from the European Court of Justice in 2003 declared that it was ineligible to remove Maroš Kolpak, a Slovak handball player, from his German team because a quota of two non-EU players was met. The ruling declared that citizens of certain countries, which have signed agreements with the European Union, have the same right to freedom of work and movement within the EU as EU citizens. The Kolpak ruling has been particularly influential in increasing the mobility of foreign players in rugby and cricket to and from the UK from Commonwealth countries, as well as North African football players to France and throughout Europe.

5 The Russian “Premier Liga” is number six in terms of the aggregated market value of its teams. Their value, however, is half of that of the French teams. In terms of sporting performance in the Champions League and in the UEFA Cup (now called “Europa League”), the Russian league is again ranked sixth in Europe. However, during the last five years the Russian teams have been considerably less successful on the pitch than the French clubs (for the development of the five-Year-moving average of club performances see UEFA, 2010).

6 It is no accident that the names of the poor teams change while those of the rich teams remain the same. Given the close relationship between market values and sporting performance (see e.g. Szymanski and Kuyper 1999), the poor teams are very likely to be relegated at the end of the season.

7 Individual player salaries and endorsement contracts for football celebrities are now on a par with the incomes of American Basketball, Baseball and Football stars. Top players such as Cristiano Ronaldo, Zlatan Ibrahimovic, Lionel Messi, Samuel Eto'o and Kaka are all earning between 10 and 20 mil. € per year (these are base salaries not including bonus payments, signing fees and/or income from endorsement contracts). The five-year contract that David Beckham signed in January 2007
with Los Angeles Galaxy of the US Major League Soccer is estimated at 250 mil. € (including endorsements). This is by far the most lucrative contract that has even been agreed upon in professional football.

8 Although closely related to the players’ labor market the chapter does not examine the existing literature on head coaches (see e.g. Audas, Dobson and Goddard, 2002; Bruishoofd and ter Weel, 2003; Dawson, Dobson and Gerrard, 2000; Barros, Frick and Passos, 2009; Barros, Frick and Prinz, 2010; Breuer and Singer, 1996; Dios Tena and Forrest, 2007; Frick and Simmons, 2008; Hautsch, Frick, Lehmann and Warning, 2001; Koning, 2003; Poulsen, 2000; ter Weel, 2006). Moreover, the literature on team wage bills and playing success (see e.g. Frick, 2005; Forrest and Simmons, 2002, 2004; Hall, Szymanski and Zimbalist, 2004; Lehmann and Weigand, 1997; Szymanski and Kuyipers, 1999; Szymanski and Smith, 1997) is not discussed as it is only indirectly related to the labor market issues discussed here.

9 Note that this makes revenues a function of wins and not matches; losses do not count towards revenue.

10 Unfortunately, estimates of training costs and associated comparisons of salary and marginal revenue product are not available for European football. It is notable, though, that top division teams have expanded their training facilities over the last decade and have simultaneously begun to use “nursery teams.”

11 In North American leagues, buyer power is observed partly because the number of teams is small but also because there are considerable restrictions on free agency.

12 Contrary to the findings reported by Horowitz and Zappe (1998) for baseball veterans, this suggests that nostalgia effects will be of minor importance only.

13 The development was (and continues to be) very similar in, for example, the United Kingdom (see Dobson and Gerrard, 1999).

14 The available econometric analyses differ considerably with regard to sample size: While Dobson and Gerrard (1999) as well as Frick and Lehmann (2001) use information on more than 1,200 transfers, the remaining studies use between 100 and 250 observations.

15 This also applies to other team sports, such as handball, basketball, volleyball and ice hockey.

16 The ensuing rat race has, in turn, led to massive financial problems in most, if not all, of the European leagues (with regard to the five leagues under consideration in this chapter see Baroncelli and Lago, 2006; Buraimo, Simmons and Szymanski, 2006; Gouget and Primault, 2006; Ascari and Gagnepain, 2006; Frick and Prinz, 2006).

17 Significant impacts of experience, performance and peer reputation on salary can also be found in studies of North American sport: see Hamilton (1997) on basketball, Kahn (1993) for baseball, Berri and Simmons (2009) and Simmons and Berri (2009) on American football and Idson and Kahane (2000) for hockey. These papers show that the salaries of professional sport players are influenced systematically by factors such as age, experience and performance in very similar ways to those found in other occupations. Where sport teams differ is in the distribution of salaries, which is even more highly skewed than in standard occupations. Also sport teams apply more stringent selection procedures into occupations. For example, poor performance by a player results in his being dropped from the team squad and very quickly being discarded; there are high levels of mobility within the industry (between teams) and into and out of the industry, with shorter careers than in most occupations. The large skewness of the salary distribution and high degree of player mobility appear to apply to all team sport, including North American major leagues as well as European football.

18 Although the Hausman Test suggests using the results from the fixed effects estimation, the findings of the random effects estimation are reported. The problem is that region of birth is a constant for each player and cannot be used in a fixed effects estimation. However, the differences between the remaining coefficients in the RE and the FE estimations are negligible.

19 Presence of non-normality is indicated by a large kurtosis value and the D’Agostino et al. (1990) test is performed by the sktest command in the econometric software program Stata 10.1. In the panel used by Frick (2010), the p-value for the test statistic of the null hypothesis that kurtosis does not depart from the value associated with a normal distribution is 0.000 and hence the log salary data depart from normality, which justifies the use of these methods.

20 Contrary to the situation in most American team sport leagues with their abundance of performance figures, measurement of individual player performance in (European) football can be problematic, especially for defenders, whose task it is to prevent the opposing team’s forwards from
scoring goals. While counting the number of goals scored, shots on goal and assists is straightforward, it is far more difficult to assess the performance of defensive players. In future work the models should, therefore, be estimated separately for the different groups of players.

21 This unexpected result survives a number of different specifications: interacting the number of career goals with the position dummies leaves the finding virtually unaffected. Moreover, estimating the model separately by position yields the same result for forwards and midfielders, but not for defenders. Estimating the model only for position players (i.e. without the goalkeepers) again yields the strange coefficients.

22 Anecdotal evidence seems to support the argument that some players suffer from homesickness once they are traded to another club.

23 Estimating the models with the lagged annual salary to control for unobserved heterogeneity reduces the same size considerably (from 6,100 player-year-observations to 4,700). Although most of the coefficients retain their statistical significance, their magnitudes are somewhat reduced.

24 This term was first used by Alan Krueger (2005), who analyzes the revenues generated by particularly successful rock bands and musicians.

25 In further research subjective evaluations of a player’s performance (e.g. school grades) will also be used to estimate the hedonic wage equations.

26 Most of the foreign players in each of the five leagues under consideration tend to come from rather homogeneous regions: in Germany, a large portion of foreign players come from Eastern Europe, while in France players from Africa are over-represented among the foreign-born athletes. In England, it is players from the Scandinavian countries while in Italy and Spain South American players occupy a dominant position.

References


The labor market in professional team sport


