Cultural Differences, Assimilation and Behavior :
Player Nationality and Penalties in Football

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This version: September 2012

Abstract

We examine the impact of a different cultural background on individual behavior, focusing on penalties in football matches of southern European and northern European football players in the English Premier League. Southern European football players collect on average more football penalties than their British colleagues and northern European football players collect on average less football penalties than their British colleagues. The number of football penalties incurred by southern European players is initially higher but converges towards the local average the longer their experience in the English Premier League.

1. Introduction

In social sciences, culture is a blurred concept, defined and interpreted in many different ways (Hofstede, 2001). In the realm of economics, some scholars argue that culture directly affects behavior via individuals' preferences (see e.g. Rabin, 1993; Akerlof and Kranton, 2000). Others have pointed out that social norms and individual values could systematically interact (see e.g. Bernheim, 1994; Benabou and Tirole, 2006). Even if its effects have been interpreted and defined in various ways, cultural influences and expectations are likely to affect individuals' behavior (see e.g. Berry, 1997; Ferraro and Cummings, 2007). In our globalized society, different cultures repeatedly interact (Swee-Hoon et al., 2007). As a consequence, issues of assimilation and integration of immigrants become salient (Zimmerman et al., 2008).[1] In economics, the degree of assimilation of immigrants is usually examined in terms of human capital accumulation such as education, earnings and labor market experience (Bijwaard, 2007). Economic assimilation might be interwoven with other components of assimilation such as cultural assimilation, which involves changes in the behavior patterns of immigrants (Aleksynska and Algan, 2010).[2] Examples include changes in consumption patterns (see e.g. Wallendorf and Reilly, 1983), language (see e.g. Rosenthal and Auerbach, 1992), ethnic identity (see e.g. Georgiadis and Manning, 2011) and political incorporation (see e.g. Bueker, 2005).

Sports is an interesting sector to study the different behavioral effects of cultural diversity and assimilation of immigrants for several reasons. First, migration is a particularly salient

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[1] Assimilation refers to strong identification with the host culture and a weak identification with the origin culture, while integration refers to strong identification with the host and the origin culture (see e.g. Zimmerman, 2007; Constant et al., 2009).

[2] Gordon (1964) differentiates between cultural and structural assimilation. Cultural or behavioral assimilation is the first step in the process of assimilation, while the final step is structural assimilation or the entrance into organizations and institutions of the host society.

phenomenon. The share of migrants in the main sports leagues in Europe and North America is very large compared to other economic sectors, in particular for the top leagues. Second, the sport sector is one of the few sectors for which objective individual measures are available (Kahn, 2000; Simmons and Berri, 2011). In this paper, we focus on European football (soccer) where migration skyrocketed with the 1995 Bosman ruling which removed restrictions on the number of players originating from other European countries that could be recruited by European clubs.[3]

One behavioral aspect in which the impact of a different cultural background of football players might be reflected is infringements on the football field. These infringements can be measured by the number and severity of sanctions (yellow or red cards) awarded during football games. Such football penalties are granted for many reasons such as committing violent fouls, wasting time, ignoring referee instructions or humiliating the opponent. When serious infringements are committed, the rules stipulate a caution (yellow card) or a dismissal (red card). If a player receives a second yellow card during the same game, he is also dismissed (red card). With a red card the player is obliged to leave the field without the possibility of replacement. In cases of extreme infringements on the field, players can get awarded a red card immediately. A red card may result in exclusion in future games – to be determined by a sports body.

There is a growing literature investigating the relationship between players' cultural background and their infringements on a sport field.[4] Early studies, based on anecdotal evidence,

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[3] For discussions on the implications of the Bosman ruling, see e.g. Simmons (1997), Szymanski (1999), Antonioni and Cubbin (2000), Ericson (2000), Feess and Muehlheusser (2003), Frick (2009).

[4] Numerous empirical studies have shown that player characteristics, game characteristics, team characteristics and referee effects are important determinants of a player's number of football penalties incurred on the field (see e.g. Dawson et al., 2007; Dawson and Dobson, 2010; Buraimo et al., 2010, 2012; Miguel et al., 2011; Reilly and Witt, 2011, Gallo et al., 2012).

suggest that southern European players play differently than northern European players, leading to differences in penalties in football matches (e.g. Giulianotti, 1999; Crolley et al., 2000; Maguire and Pearton, 2000; Stead and Maguire, 2000; McGovern, 2002; Tudor, 2006). Stead and Maguire (2000) argue that increased international migration of players may diminish differences in football playing styles, including the number of football penalties.

Micro-data yield mixed evidence. Gee and Leith (2007) provide empirical evidence that European players committed significantly less aggressive acts in professional ice hockey than North American players. Dawson and Dobson (2010) find that Romanian, Italian and Spanish clubs tend to obtain more yellow and red cards than average in European Cup football (Champions League and Europa League). Miguel et al. (2011) find a positive relationship between the extent of civil conflict in a player's home country and penalties in football matches. They also find that players from Asian countries commit significantly less infringements on the field than the benchmark category of players from OECD countries. However, other studies challenge these findings. Reilly and Witt (2011) find that players' positions on the field exert the dominant influence on infringements on the field and not their geographical origin. Cuesta and Bohórquez (2012) find that cultural background, as measured by nation-wide averages of conflict resolution and interpersonal trust, does not affect the number of yellow or red cards awarded to players in the 2008 Copa Libertadores.

In this article, we use micro-data from the English Premier League, the top league that has experienced the highest immigration flow of football players for many years (see e.g. Poli et al., 2010), to empirically investigate (a) whether there is a difference in football penalties between immigrant football players and local football players, (b) whether immigrant players adjust their behavior on the field the longer they stay in the league to which they migrated, and

(c) whether there are differences in behavior between different types of migrants, in particular southern European and northern European immigrant players.

In contrast to existing cross-sectional evidence, we use panel data which allows to measure changing player behavior in a more accurate way. We use detailed player data covering 14 English Premier League seasons from the 1996/97 season to the 2009/10 season.

We find that the number of football penalties incurred by southern European players is initially higher but converges towards the local average the longer their experience in the English Premier League. Although limited to a specific context, this change in behavior patterns of immigrants suggests cultural or behavioral assimilation: after paying the consequences of playing according to their home set of norms during their early seasons in the English Premier League, migrant football players adapt their behavior to the local standards.

Second, we also find that the different cultural backgrounds of players matter. More specifically, controlling for a variety of player characteristics and team characteristics, we show that southern European football players in the English Premier League collect on average more yellow and red cards as compared to their British colleagues. In contrast, northern European football players in the English Premier League collect on average less yellow and red cards as compared to their British colleagues. In both cases, there are differences between migrant players and local players, but the nature of the differences is opposite.

2. Data and Descriptive Statistics

The 1995 Bosman ruling had a major effect on migration of European players to England (McGovern, 2002). Hence, we collected data on all "southern European" and "northern European" football players from clubs that featured at least one season in the English Premier League from the 1996/1997 season, the first season after the Bosman ruling, until the 2009/2010 season. We define "southern European" players as players from Portugal, Spain and Italy. We define "northern European" players as players from Denmark, Finland, Iceland, Norway and Sweden. We collected data on a random sample of "British players" that made at least one appearance in the English Premier League. We define "British players" as players from the United Kingdom and Ireland.

Data on the nationality of football players in the English Premier League are taken from MyFootballFacts. Other data are taken from PremierSoccerStats and cross-checked for data accuracy with Racing Post and MyFootballFacts.

Our sample includes 131 southern European players, 160 northern European players and 145 British players. Overall, our dataset includes an unbalanced panel of 1366 observations on 436 players over 14 seasons. The average number of observations (or seasons) available per player is slightly higher than 3, with a minimum of 1 and a maximum of 14. Table 1 provides the descriptive statistics of our sample. Because British players play longer on average observations on British players account for 41.7% of all observations, northern European player observations are 35.6% and southern European player observations 22.8%. The average number of yellow cards per player per season is between two and three. On average, players play around 16 games as a starter and less than four games as a substitute. Players play on average a bit more than four seasons in the English Premier League. Almost nine percent of players' observations are from

veteran players (at least 32 years old). Finally, the average team ranking is around 10, which indicates that our sample is well representative of the English Premier League composed by 20 clubs. Following Dawson et al. (2007), Dawson and Dobson (2010) and Dawson (2012), we measure infringements on the football field by setting up a count variable of "disciplinary points" where we assign one point for a yellow card and two points for a red card.

Descriptive evidence of the effect of a player's cultural background on disciplinary points is illustrated in Figure 1. Over the entire period (from the 1996/97 season until the 2009/10 season), the average number of disciplinary points per season for the British players (2.5) is lower than that for the southern European players (2.8) but higher than that for the northern European players (1.9). Interestingly, when one separates the entire period into 2 sub-periods (from the 1996/1997 until the 2002/2003 season and from the 2003/2004 until the 2009/2010 season), the average number of disciplinary points for British and northern European players is the same. However, the number for the southern European players in the first period (3.1) is much higher than in the second period (2.4). In more recent years, there is no difference with British players.

3. Empirical Specifications

To identify the impact of cultural background on infringements and the assimilation of foreign players we estimate two models. In the next section we will present a series of robustness tests, using different model specifications, different indicators and different datasets.

First, we estimate the following equation:

$$DP_{i,t} = \beta_1 SE_i + \beta_2 NE_i + \beta_3 Started_{i,t} + \beta_4 Substitute_{i,t} + \beta_5 Experience_{i,t} + \beta_6 Gk_i +$$

$$\beta_7 Df_i + \beta_8 Mf_i + \beta_9 Veteran_{i,t} + \beta_{10} Home_{i,t} + \beta_{11} Ranking_{i,t} + \gamma_t + u_{i,t}, \tag{1}$$

where $DP_{i,t}$ is the number of disciplinary points incurred by player i in season t. SE_i and NE_i are dummy variables equal to 1 if player i is of southern European (SE_i) or northern European (NE_i) origin. The coefficients of interest are β_1 and β_2. Since British players are the benchmark category, a positive coefficient of β_1 (β_2) implies that southern (northern) European players collect on average more disciplinary points than British players.

We include a set of variables to control for player characteristics, home advantage and team characteristics. As in Miguel et al. (2011), we include the number of games played as a starter ($Started_{i,t}$) and as a substitute ($Substitute_{i,t}$). Players that play more games are likely to incur more disciplinary sanctions. We use the number of seasons played in the English Premier League to measure experience ($Experience_{i,t}$). We also control for a player's position on the field through an array of dummy variables. In general, defenders (Df_i) and midfielders (Mf_i) commit more fouls than forwards who in turn also commit more fouls than goalkeepers (Gk_i) (Miguel et al., 2011; Reilly and Witt, 2011). We use forwards as the benchmark category. We cannot have a player's age and experience together in the model because of possible multicollinearity problems. Therefore, as Reilly and Witt (2011), the dummy ($Veteran_{i,t}$), equal to 1 if the player was over 32 years old at the start of the relevant season, is included to control for player's age.

The literature on referee behavior in football provides strong empirical evidence of referee bias in favor of home teams due to social pressure from the crowd (Dohmen, 2008; Boyko et al., 2007; Dawson et al., 2007; Buraimo et al., 2010, 2012; Picazo-Tadeo et al., 2011). We control for the effect of home advantage by including the percentage of home games played for each player-season observation in our sample ($Home_{i,t}$). Since disciplinary sanctions may be affected by the quality of the player's team, we control for the league ranking of the player's team at the end of the season ($Ranking_{i,t}$) (Buraimo et al., 2012).

Finally, we include season fixed effects (γ_t) to control for factors such as seasonal changes in football's official rules (see e.g. Boyko et al., 2007; Buraimo et al., 2012; Garicano and Palacios-Huerta, 2005; Witt, 2005; del Corral et al., 2010).

In the second model, we include the interaction terms between a player's experience and the dummy variable for player's origin, $Experience_{i,t} * SE_{i,t}$ and $Experience_{i,t} * NE_{i,t}$, to capture assimilation. Formally, we estimate the following equation:

$$DP_{i,t} = \beta_1 SE_i + \beta_2 NE_i + \beta_3 Started_{i,t} + \beta_4 Substitute_{i,t} + +\beta_5 Experience_{i,t} +$$

$$\beta_6 Experience_{i,t} * SE_{i,t} + \beta_7 Experience_{i,t} * NE_{i,t} + \beta_8 Gk_i + \beta_9 Df_i + \beta_{10} Mf_i +$$

$$\beta_{11} Veteran_{i,t} + \beta_{12} Home_{i,t} + \beta_{13} Ranking_{i,t} + \gamma_t + u_{i,t}. \tag{2}$$

The coefficients of interest are β_6 and β_7. The coefficient of these interaction terms are negative (positive) if foreign players collect on average less (more) disciplinary points the longer their experience in the Premier League.

Since the number of disciplinary points is a count variable, the appropriate estimation technique for these regressions is Poisson regression (Cameron and Trivedi, 1998). Several

versions of the Poisson regression model can be used, namely the pooled version, the fixed effects version and the random effects version. The pooled version treats the panel data set as a cross-section. In the fixed effects version, no assumptions are made on the individual effects and they are treated as unknown nuisance parameters. In the random effects version, it is assumed that the individual fixed effects are independent of all control variables and follow a specific distribution.[5] The choice of the pooled version versus the random effects version can be tested using Chi-squared tests. The choice of the random effects version versus the fixed effects version can be tested using Hausman tests.[6] The results of model selection tests (Chi-squared and Hausman tests) of model (1) and model (2) – shown in Table 2– suggest that the random effects models are to be preferred.

Poisson regression imposes equidispersion, with conditional variance equal to conditional mean. However, in many applications count data are overdispersed, with conditional variance exceeding conditional mean. The standard alternative distribution used is the negative binomial, with variance assumed to be a quadratic function of the mean. Descriptive goodness-of-fit tests and a more rigorous overdispersion test such as the Likelihood Ratio test show that the negative binomial model is rejected at high degrees of confidence (see Table 2). We therefore adopt a Poisson regression in the remainder of the paper. However, we also estimated our results with a binomial model and found that all our results are robust to using the negative binomial model.[7]

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[5] Throughout the paper, we assume that the distribution of the random effects follows a Gamma distribution.

[6] Since in the estimation of the Poisson-type models a number of fixed effects are inestimable either due to having one player-season observation or zero disciplinary points across all seasons played, the number of useable players is reduced from 436 to 234. This has a disproportionate effect on southern European players with the sample mean of southern European player dummies falling from 0.3 when using the full sample to 0.248 when using the reduced sample. Table 3 presents a full set of player-level sample means of our two different samples.

[7] Results of these regressions are available upon request.

4. Regression Results

The Effect of Cultural Differences

Table 4 reports Poisson estimation results for different specifications based on model (1). The coefficients for the two dummies of interest are always significant when controlling for season fixed effect (columns (4) - (8)) and remarkably stable in magnitude. The positive and statistically significant coefficient for the Southern Europe dummy indicates that southern European players have more disciplinary points than British players. The negative and statistically significant coefficient for the Northern Europe dummy indicates that northern European players incur less football penalties on the field than British players. The coefficient for the Southern Europe dummy increases significantly when we control for the ranking of the player's team in column (8). This can be explained by the fact that Southern European players play on average for higher ranked teams than the other categories of players in our sample.

A commonly used technique to interpret coefficients in Poisson-type regression models is through the incidence rate ratio. The incidence rate ratio is calculated by exponentiating the base of the natural logarithm *e* to the power of the estimated coefficients. Using this technique, the most complete specification displayed in column (8) of Table 4 suggests that holding other factors constant at the sample mean, the rate of disciplinary points per season is 1.3 times higher for southern European players than for the benchmark category of British players. Similarly, the rate of disciplinary points per season is 0.8 times lower for northern European players than for the benchmark category of British players ceteris paribus and 1.6 times higher for southern European players than for northern European players.

The signs and significance of the control variables are in line with the existing literature: the number of games played (as a starter and as a substitute) has a positive and significant

influence on the number of disciplinary points; midfielders and defenders are found to collect more (and goalkeepers less) football penalties than forwards; players from lower ranked clubs get significantly more disciplinary points.[8] Playing a higher percentage of home games does not affect the number of disciplinary points, although the lack of enough variation in this variable is likely to affect the estimation. The veteran player dummy is not significant and neither is the experience variable.

Players with only one observation during the sample period cannot contribute to the research question of assimilation of players (model (2)). In order to make our results directly comparable across the two models, we also run model (1) on the reduced sample where players spending only one season in the English Premier League are excluded. The results, reported in Table 5, are very similar.

Cultural Assimilation

The estimation results of model (2) are presented in Table 6.[9] Controlling for experience there is no significant difference in disciplinary points between northern European and British players. However, southern European players collect significantly more disciplinary points than British players, especially in their initial years in the Premier League. According to our estimates reported in Table 6, a southern European player with no previous experience in the Premier League gathers on average 1.6 times more disciplinary points than a British player.

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[8] Reilly and Witt (2011) also included team fixed effects to capture the role of potentially different playing and coaching styles between teams. We tested for the inclusion of dummy variables representing a player's team in any given season in our sample but they were jointly insignificant.

[9] We only show results of the final specification since adding the interaction terms to model (1) gives similar estimated coefficients for the variables displayed in column (1)-(8) in Table 5.

The negative and significant estimated coefficient of the interaction term between experience and the Southern Europe dummy shows that southern European players collect less disciplinary points the more seasons they stay in the English Premier League. Converting the estimated coefficients into incidence rate ratios, the effect of experience for southern European players is 0.949 times the effect of experience for British players. Hence, one additional year of English Premier League experience reduces the disciplinary points for southern European players by around 5%, as compared to the reference category of British players.

The signs and significance of the control variables are in line with previous results.

5. Extensions and Robustness Checks

In this section, we consider some extensions and robustness checks of model (1) and model (2). For comparability reasons, we only show the results of estimations based on the reduced sample of 234 players who play at least one season in the Premier League during the sample period.[10]

The first robustness check uses alternative measures for disciplinary points. We perform regressions with red cards contributing either zero, one or three disciplinary points instead of two disciplinary points. The results for model (1) and model (2), reported in Table 7 and Table 8, are qualitatively identical. Compared with the main estimates in Table 5 and Table 6, the coefficients of our variables of interest are higher in absolute value when red cards get a higher weight and lower in absolute value when red cards get a lower weight.

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[10] Results of estimations based on the full sample of 436 players are available on request.

The second robustness check uses a different measure of experience: rather than the number of seasons played, we use the cumulated number of games played in the English Premier League. The results, reported in Table 9 and Table 10, remain qualitatively identical.

A potential issue in our data concerns the differences in the Premier League experience between immigrant and local players: on average British players play in their home league considerably longer than foreigners. In order to make sure that this difference in average experience does not drive our results, we trim our sample by considering only the first nine seasons played by each player as a further robustness check.[11] The results of this exercise are shown in Table 11 and Table 12 and confirm our main results.

In the fourth robustness test we extend our sample. Since southern European players are underrepresented in our sample, we include players from other southern European member states of the European Union, i.e. Bulgaria, Cyprus, Greece, Romania and Slovenia. Results of regressions on the extended sample are given in Table 13 and Table 14. The results remain qualitatively identical, although they decrease in magnitude.

Fifth, adopting a Zero-Inflated Poisson regression model or excluding players that did not start at least three games in a season (as implemented by Miguel et al. (2011)) to address a potential concern of excess zeros in the dependent variable does not qualitatively change our main result.[12]

Sixth, although the Hausman test indicated that the random effects estimation method was superior (see Table 2), we present the results of fixed effects regressions as a robustness check.

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[11] We took one half of the maximum number of seasons played by British players as criterion to exclude observations. The results are robust to taking a time frame of one season more or less as well.

[12] Results are available upon request.

We estimate the following equations:

$$DP_{i,t} = \beta_1 Started_{i,t} + \beta_2 Substitute_{i,t} + \beta_3 Experience_{i,t} + \beta_4 Veteran_{i,t} + \beta_5 Home_{i,t} +$$

$$\beta_6 Ranking_{i,t} + \alpha_i + \gamma_t + u_{i,t}. \qquad (3)$$

$$DP_{i,t} = \beta_1 Started_{i,t} + \beta_2 Substitute_{i,t} + \beta_3 Experience_{i,t} + \beta_4 Experience_{i,t} * SE_{i,t} +$$

$$\beta_5 Experience_{i,t} * NE_{i,t} + \beta_6 Veteran_{i,t} + \beta_7 Home_{i,t} + \beta_8 Ranking_{i,t} + \alpha_i + \gamma_t + u_{i,t}. \qquad (4)$$

In these equations we control for player fixed effects α_i rather than controlling for individual specific variables such as a player's nationality and position on the field.

In order to capture the impact of the (time invariant) cultural background, the players' fixed effects are retrieved from the unconditional fixed effects estimation of model (3) and regressed on the origin dummy variables and position dummy variables. The results of mean and median regressions using the fixed effects are reported in Table 15. The estimates of model (4) are presented in Table 16. The fixed effects results are qualitatively identical to the ones obtained with the random effects method.

Finally, all our results are also robust to excluding outliers, to excluding players with a double nationality, to excluding migrant players with experience in the Premier League before the 1996/1997 season and to the use of a different age for the veteran player dummy.

6. Conclusion

We empirically examined the impact of a different cultural background on individual behavior, focusing on infringements on the field of southern European and northern European players in the English Premier League. After controlling for player characteristics, home advantage and team characteristics, we find that southern European football players collect on average more football penalties than British players and that northern European football players collect on average less football penalties than British players.

We observed that the differences in infringements on the field between southern European players and British players are decreasing over time. We claim that the observed patterns are driven by a process of gradual assimilation of players' behavior: the number of football penalties incurred by southern European players is initially higher but converges towards the local average the longer their experience in the Premier League. This change in behavior patterns of immigrants suggests cultural or behavioral assimilation. Hence, although limited to a specific sector and a specific category of male migrants, this study contributes to the debate on integration and/or assimilation of migrants in our globalized society.

References

Akerlof, G.A., & Kranton, R.E. (2000). Economics and Identity. *Quarterly Journal of Economics, 115*(3), 715-753.

Aleksynska, M., & Algan, Y. (2010). Economic and Cultural Assimilation and Integration of Immigrants in Europe. *Working Paper No. 29*. CEPII Centre d'Etudes Prospectives et d'Informations Internationales, Paris.

Antonioni, P., & Cubbin, J. (2000). The Bosman Ruling and the Emergence of a Single Market in Soccer Talent. *European Journal of Law and Economics, 9*(2), 157-173.

Benabou, R., & Tirole, J. (2006). Beliefs in a Just World and Redistributive Politics. *Quarterly Journal of Economics, 121*(2), 699-746.

Bernheim, B.D. (1994). A Theory of Conformity. *Journal of Political Economy, 102*(5), 841-877.

Berry, J.W. (1997). Immigration, Acculturation, and Adaptation. *Applied Psychology, 46*(1), 5-34.

Bijwaard, G. E. (2007). Dynamic Economic Aspects of Migration. In R. Gosh & A.K. Pain (Eds.), *Migration of Labor - Global Perspectives* (pp. 21-31). Hyderabad: ICFAI University Press.

Boyko, R.H., Boyko, A.R., & Boyko, M.G. (2007). Referee bias contributes to home advantage in English Premiership Football. *Journal of Sports Sciences, 25*(11), 1185-1194.

Bueker, C.S. (2005). Political Incorporation Among Immigrants from Ten Areas of Origin: The Persistence of Source Country Effects. *International Migration Review, 39*(1), 103-140.

Buraimo, B., Forrest, D., & Simmons, R. (2010). The 12th man?: refereeing bias in English and German soccer. *Journal of the Royal Statistical Society: Series A, 173*(2), 431-449.

Buraimo, B., Simmons, R., & Maciaszczyk, M. (2012). Favoritism and referee bias in European soccer: Evidence from the Spanish League and the UEFA Champions League. *Contemporary Economic Policy*, *30*(3), 329-343.

Cameron, A.C., & Trivedi, P.K. (1998). *Regression analysis of count data.* Cambridge: Cambridge University Press.

Constant, A.F., Gataullina, L., & Zimmerman, K.F. (2009). Ethnosizing immigrants. *Journal of Economic Behavior & Organization, 69*(3), 274-287.

Crolley, L., Hand, D., & Jeutter, R. (2000). Playing the Identity Card: Stereotypes in European Football. *Soccer & Society, 1*(2), 107-128.

Cuesta, J., & Bohórquez, C. (2012). Soccer and national culture: estimating the impact of violence on 22 lads after a ball. *Applied Economics, 44*(2), 147-161.

Dawson, P., Dobson, S., Goddard, J., & Wilson, J. (2007). Are football referees really biased and inconsistent? Evidence on the incidence on disciplinary sanction in the English Premier League. *Journal of the Royal Statistical Society: Series A, 170*(1), 231-250.

Dawson, P., & Dobson, S. (2010). The Influence of Social Pressure and Nationality on Individual Decisions: Evidence from the Behaviour of Referees. *Journal of Economic Psychology, 31*(2), 181-191.

Dawson, P.M. (2012). Experience, social pressure and performance: the case of soccer officials. *Applied Economics Letters, 19*(9), 883-886.

del Corral, J., Prieto-Rodríguez, J., & Simmons, R. (2010). The Effect of Incentives on Sabotage: The Case of Spanish Football. *Journal of Sports Economics, 11*(3), 243-260.

Dohmen, T. (2008). The Influence of Social Forces: Evidence from the Behavior of Football Referees. *Economic Inquiry, 46*,(3), 411-424.

Ericson, T. (2000). The Bosman case: Effects of the Abolition of the Transfer Fee. *Journal of Sports Economics, 1*(3), 203-218.

Feess, E., & Muehlheusser, G. (2003). Transfer Fee Regulations in European Football. *European Economic Review, 47*(4), 645-668.

Ferraro, P.J., & Cummings, R.G. (2007). Cultural Diversity, Discrimination, and Economic Outcomes: An Experimental Analysis. *Economic Inquiry, 45*(2), 217-232.

Frick, B. (2009). Globalization and Factor Mobility: The Impact of the "Bosman-Ruling" on Player Migration in Professional Soccer. *Journal of Sports Economics, 10*(1), 88-106.

Gallo, E., Grund, T., & Reade, J.J. (2012). Punishing the Foreigner: Implicit Discrimination in the Premier League Based on Oppositional Identity. *Discussion Paper No. 02*. Department of Economics, Birmingham.

Garicano, L., & Palacios-Huerta, I. (2005). Sabotage in Tournaments: Making the Beautiful Game a Bit Less Beautiful. *Discussion Paper No. 5231*. CEPR Centre for Economic Policy Research, London.

Gee, C.J., & Leith, L.M. (2007). Aggressive behavior in professional ice hockey: A cross-cultural comparison of North American and European born NHL players. *Psychology of Sport and Exercise, 8*(4), 567-583.

Georgiadis, A., & Manning, A. (2011). Change and continuity among minority communities in Britain. *Journal of Population Economics, 24*(2), 541-569.

Giulianotti, R. (1999). *Football: a sociology of the global game*. Cambridge: Polity.

Gordon, M. (1964). *Assimilation of American Life*. New York: Oxford University Press.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations*. Thousand Oaks: Sage Publications.

Kahn, L.M. (2000). The Sports Business as a Labor Market Labaratory. *The Journal of Economic Perspectives, 14*(3), 75-94.

Maguire, J., & Pearton, R. (2000). Global sport and the migration patterns of France '98 world cup finals players: Some preliminary observations. *Soccer & Society*, *1*(1), 175-189.

McGovern, P. (2002). Globalization or Internationalization? Foreign Footballers in the English League, 1946-95. *Sociology, 36*(1), 23-42.

Miguel, E., Saiegh, S.M., & Satyanath, S. (2011). Civil War Exposure and Violence. *Economics & Politics, 23*(1), 59-73.

Picazo-Tadeo, A., Gónzalez-Gómez, F., & Wanden-Berghe, J.G. (2011). Referee home bias due to social pressure. Evidence from Spanish football. *Working Paper No. 19*. Facultad de Economía, València.

Poli, R., Ravenel, L., & Besson, R. (2010). *Annual Review of the Football Players' Labour Market.* Neuchâtel: PFPO.

Rabin, M. (1993). Incorporating Fairness into Game Theory and Economics. *American Economic Review, 83*(5), 1281-1302.

Reilly, B., & Witt, R. (2011). Disciplinary sanctions in English Premiership Football: Is there a racial dimension?. *Labour Economics, 18*(3), 360-370.

Rosenthal, M., & Auerbach, C. (1992). Cultural and Social Assimilation of Israeli Immigrants in the United States. *International Migration Review, 26*(3), 982-991.

Simmons, R. (1997). Implications of the Bosman ruling for football transfer markets. *Economic Affairs, 17*(3), 13-18.

Simmons, R., & Berri, D.J. (2011). Mixing the princes and the paupers: Pay and performance in the National Basketball Association. *Labour Economics, 18*(3), 381-388.

Stead, D., & Maguire, J. (2000). "Rite de Passage" Or Passage to Riches?: The Motivation and Objectives of Nordic/Scandinavian Players in English League Soccer. *Journal of Sport & Social Issues, 24*(1), 36-60.

Swee-Hoon, C., Hoffmann, R., Jones, M., & Williams, G. (2007). Do cultures clash? Evidence from cross-national ultimatum game experiments. *Journal of Economic Behavior & Organization, 64*(1), 35-48.

Szymanski, S. (1999). The market for soccer players in England after Bosman: winners and losers. In C. Jeanrenaud & S. Kesenne (Eds.)*, Competition Policy in Professional Sports: Europe after the Bosman Case* (pp. 133-160). Antwerp: Standard Editions.

Szymanski, S. (2003). The Economic Design of Sporting Contests. *Journal of Economic Literature, 41*(4), 1137-1187.

Tudor, A. (2006). World Cup Worlds: Media Coverage of the Soccer World Cup 1974 to 2002. In A.A. Raney & J. Bryant (Eds.), *Handbook of Sports and Media* (pp. 232-246). Mahwah: Lawrence Erlbaum.

Wallendorf, M., & Reilly, M.D. (1983). Ethnic Migration, Assimilation, and Consumption. *Journal of Consumer Research, 10*(3), 292-302.

Witt, R. (2005). Do players react to sanction changes? Evidence from the English Premier League. *Scottish Journal of Political Economy, 52*(4), 623-640.

Zimmerman, K.F. (2007). The economics of migrant ethnicity. *Journal of Population Economics, 20*(3), 487-494.

Zimmerman, L., Gataullina, L., Constant, A., & Zimmerman, K.F. (2008). Human capital and ethnic self-identification of immigrants. *Economics Letters, 98*(3), 235-239.

Figures

Figure 1: Average disciplinary points per season
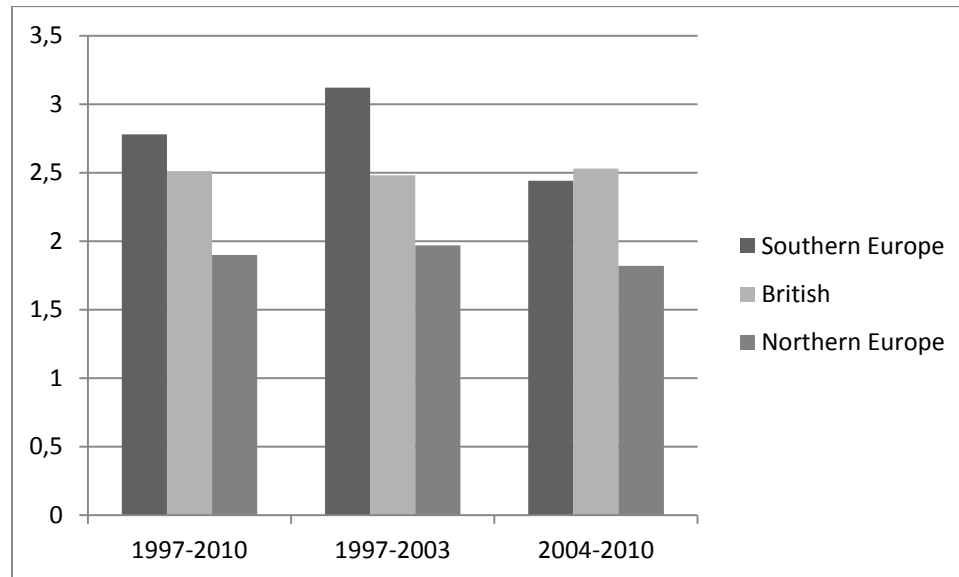
Notes: (i) 'Southern Europe' = Italy, Portugal and Spain; 'British' = England, Northern Ireland, Republic of Ireland, Scotland and Wales; 'Northern Europe' = Denmark, Finland, Iceland, Norway and Sweden. (ii) Analysis focuses on the English Premier League.

Tables

Table 1: Descriptive statistics

Variables	Mean	Max.	Min.	Std. Dev.
Yellow	2.116	13	0	2.349
Red	0.113	2	0	0.346
Disciplinary points	2. 343	14	0	2.572
Southern Europe	0.228	1	0	0.419
Northern Europe	0.356	1	0	0.479
British	0.417	1	0	0.493
Started	16.179	38	0	11.681
Substitute	3.452	23	0	3.973
Experience	4.106	18	1	3.339
Goalkeeper	0.083	1	0	0.276
Defender	0.364	1	0	0.481
Midfielder	0.281	1	0	0.45
Forward	0.272	1	0	0.445
Veteran	0.087	1	0	0.282
Home	0.495	1	0	0.151
Ranking	10.246	20	1	5.871

Notes: (i) See text for variables description. (ii) The total sample of 1366 observations on 436 players over 14 seasons is used in the calculation of the descriptive statistics. (iii) 'Southern Europe' = Italy, Portugal and Spain; 'British' = England, Northern Ireland, Republic of Ireland, Scotland and Wales; 'Northern Europe' = Denmark, Finland, Iceland, Norway and Sweden.

Table 2: Model selection tests

Test	Model (1)	Model (2)
Chi-squared	298.25***	300.71***
Hausman	17.21	18.62
Likelihood Ratio	0.513	0.433

Notes: (i) The Chi-squared test for the presence of random effects is based on a Likelihood Ratio test of a comparison of log-likelihood values for the random effects model and its pooled alternative. The null hypothesis is that the variance of the random effects is zero. (ii) The Hausman test tests the null hypothesis that the random effects assumptions on the individual effects are valid, against the fixed effects alternative without assumptions on the individual effects. (iii) The Likelihood Ratio test tests the null hypothesis of equality of the mean and the variance imposed by the Poisson distribution through a comparison of the log-likelihood values of the random effects Poisson estimation method and random effects Negative Binomial estimation method. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively.

Table 3: Sample proportions at player level

Variables	Sample mean	Sample mean
Southern Europe	0.3	0.248
Northern Europe	0.37	0.385
British	0.33	0.368
Goalkeeper	0.076	0.064
Defender	0.344	0.38
Midfielder	0.305	0.308
Forward	0.275	0.248
Sample Size	1366	1129

Notes: (i) 'Southern Europe' = Italy, Portugal and Spain; 'British' = England, Northern Ireland, Republic of Ireland, Scotland and Wales; 'Northern Europe' = Denmark, Finland, Iceland, Norway and Sweden.

Table 4: Cultural differences between migrant players and local players

Variables	Dependent variable: disciplinary points							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Southern Europe	**0.024**	**0.15**	**0.111**	**0.181***	**0.226****	**0.219****	**0.218****	**0.284*****
	(0.84)	*(0.118)*	*(0.111)*	*(0.076)*	*(0.014)*	*(0.018)*	*(0.019)*	*(0.002)*
Northern Europe	**-0.217***	**-0.258*****	**-0.254*****	**-0.235****	**-0.17****	**-0.175****	**-0.173****	**-0.174****
	(0.061)	*(0.005)*	*(0.007)*	*(0.013)*	*(0.048)*	*(0.043)*	*(0.045)*	*(0.043)*
Started		0.064***	0.064***	0.065***	0.065***	0.065***	0.065***	0.066***
		(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Substitute		0.045***	0.045***	0.047***	0.048***	0.048***	0.048***	0.052***
		(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Experience			0.003	0.009	0.01	0.007	0.007	0.01
			(0.747)	*(0.365)*	*(0.307)*	*(0.498)*	*(0.5)*	*(0.303)*
Goalkeeper					-1.041***	-1.056***	-1.056***	-1.03***
					(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Defender					0.423***	0.42***	0.424***	0.433***
					(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Midfielder					0.438***	0.44***	0.443***	0.456***
					(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Veteran						0.08	0.08	0.044
						(0.36)	*(0.358)*	*(0.618)*
Home							0.153	0.123
							(0.518)	*(0.61)*
Ranking								0.021***
								(0.000)
Season Fixed Effects	No	No	No	Yes	Yes	Yes	Yes	Yes
Observations	1366	1366	1366	1366	1366	1366	1366	1366
Players	436	436	436	436	436	436	436	436
Log-likelihood	-2717.822	-2328.307	-2328.256	-2315.211	-2274.71	-2274.294	-2274.086	-2262.213

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (v) Benchmark categories: British, Forward.

Table 5: Cultural differences between migrant players and local players, excluding players spending only one season in the Premier League

	Dependent variable: disciplinary points							
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Southern Europe	**0.152**	**0.214****	**0.194***	**0.194***	**0.229****	**0.223****	**0.222****	**0.297*****
	(0.211)	*(0.048)*	*(0.079)*	*(0.091)*	*(0.026)*	*(0.031)*	*(0.031)*	*(0.004)*
Northern Europe	**-0.213***	**-0.264*****	**-0.279*****	**-0.273*****	**-0.201****	**-0.204****	**-0.204****	**-0.204****
	(0.051)	*(0.007)*	*(0.005)*	*(0.007)*	*(0.029)*	*(0.027)*	*(0.027)*	*(0.027)*
Started		0.058***	0.058***	0.058***	0.059***	0.059***	0.059***	0.06***
		(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Substitute		0.038***	0.037***	0.038***	0.039***	0.039***	0.039***	0.044***
		(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Experience			-0.007	-0.008	-0.003	-0.005	-0.005	-0.004
			(0.417)	*(0.464)*	*(0.767)*	*(0.629)*	*(0.629)*	*(0.725)*
Goalkeeper					-1.008***	-1.015***	-1.015***	-1***
					(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Defender					0.346***	0.345***	0.346***	0.355***
					(0.001)	*(0.001)*	*(0.001)*	*(0.000)*
Midfielder					0.437***	0.438***	0.439***	0.451***
					(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Veteran						0.055	0.055	0.021
						(0.546)	*(0.546)*	*(0.817)*
Home							0.061	0.028
							(0.825)	*(0.92)*
Ranking								0.022***
								(0.000)
Season Fixed Effects	No	No	No	Yes	Yes	Yes	Yes	Yes
Observations	1129	1129	1129	1129	1129	1129	1129	1129
Players	234	234	234	234	234	234	234	234
Log-likelihood	-2351.523	-2045.375	-2045.045	-2032.151	-2003.667	-2003.486	-2003.461	-1991.422

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (v) Benchmark categories: British, Forward.

Table 6: Cultural assimilation of southern European football players

Variables	Dependent variable	Disciplinary points
Southern Europe		0.459***
		(0.000)
Northern Europe		-0.116
		(0.336)
Started		0.06***
		(0.000)
Substitute		0.044***
		(0.000)
Experience		0.006
		(0.599)
*Experience*Southern Europe*		**-0.053****
		(0.035)
*Experience*Northern Europe*		**-0.02**
		(0.331)
Goalkeeper		-0.987***
		(0.000)
Defender		0.358***
		(0.000)
Midfielder		0.456***
		(0.000)
Veteran		0.025
		(0.787)
Home		0.065
		(0.818)
Ranking		0.022***
		(0.000)
Season Fixed Effects		Yes
Observations		1129
Players		234
Log-likelihood		-1989.032

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (v) Benchmark categories: British, Forward.

Table 7: Cultural differences between migrant players and local players, alternative measures of disciplinary points

Dependent variable	Disciplinary points		
Variables	(1)	(2)	(3)
Southern Europe	**0.285*** **	**0.291*** **	**0.302*** **
	(0.006)	*(0.005)*	*(0.005)*
Northern Europe	**-0.194** **	**-0.2** **	**-0.207** **
	(0.034)	*(0.028)*	*(0.028)*
Started	0.061***	0.06***	0.059***
	(0.000)	*(0.000)*	*(0.000)*
Substitute	0.043***	0.043***	0.044***
	(0.000)	*(0.000)*	*(0.000)*
Experience	-0.003	-0.003	-0.004
	(0.757)	*(0.744)*	*(0.7)*
Goalkeeper	-1.078***	-1.037***	-0.966***
	(0.000)	*(0.000)*	*(0.000)*
Defender	0.304***	0.33***	0.379***
	(0.003)	*(0.001)*	*(0.000)*
Midfielder	0.449***	0.45***	0.453***
	(0.000)	*(0.000)*	*(0.000)*
Veteran	0.062	0.04	0.003
	(0.519)	*(0.666)*	*(0.97)*
Home	0.125	0.073	-0.011
	(0.673)	*(0.8)*	*(0.969)*
Ranking	0.017***	0.02***	0.024***
	(0.000)	*(0.000)*	*(0.000)*
Season fixed effects	Yes	Yes	Yes
Observations	1129	1129	1129
Players	234	234	234
Log-likelihood	-1895.799	-1930.237	-2068.477

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) In column (1), red cards are contributing zero points; in column (2), red cards are contributing one point; in column (3), red cards are contributing three points. (iv) Significant variables of interest in bold. (v) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (vi) Benchmark categories: British, Forward.

Table 8: Cultural assimilation of southern European football players, alternative measures of disciplinary points

Dependent variable	Disciplinary points		
Variables	(1)	(2)	(3)
Southern Europe	0.417***	0.439***	0.478***
	(0.001)	(0.001)	(0.000)
Northern Europe	-0.175	-0.144	-0.09
	(0.155)	(0.234)	(0.456)
Started	0.061***	0.061***	0.06***
	(0.000)	(0.000)	(0.000)
Substitute	0.043***	0.044***	0.044***
	(0.000)	(0.000)	(0.000)
Experience	0.002	0.004	0.008
	(0.853)	(0.713)	(0.512)
*Experience*Southern Europe*	**-0.046***	**-0.049***	**-0.056****
	(0.083)	(0.055)	(0.021)
*Experience*Northern Europe*	**-0.002**	**-0.012**	**-0.028**
	(0.921)	(0.581)	(0.174)
Goalkeeper	-1.074***	-1.028***	-0.95***
	(0.000)	(0.000)	(0.000)
Defender	0.303***	0.331***	0.384***
	(0.003)	(0.001)	(0.000)
Midfielder	0.453***	0.454***	0.458***
	(0.000)	(0.000)	(0.000)
Veteran	0.061	0.042	0.009
	(0.527)	(0.654)	(0.923)
Home	0.154	0.106	0.031
	(0.606)	(0.716)	(0.912)
Ranking	0.017***	0.02***	0.024***
	(0.000)	(0.000)	(0.000)
Season fixed effects	Yes	Yes	Yes
Observations	1129	1129	1129
Players	234	234	234
Log-likelihood	-1894.256	-1928.372	-2065.395

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) In column (1), red cards are contributing zero points; in column (2), red cards are contributing one point; in column (3), red cards are contributing three points. (iv) Significant variables of interest in bold. (v) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (vi) Benchmark categories: British, Forward.

Table 9: Cultural differences between migrant players and local players, alternative measure of experience

Variables	Dependent variable	Disciplinary points
Southern Europe		**0.328*****
		(0.001)
Northern Europe		**-0.19****
		(0.034)
Started		0.059***
		(0.000)
Substitute		0.044***
		(0.000)
Experience		0.000
		(0.347)
Goalkeeper		-1.004***
		(0.000)
Defender		0.362***
		(0.000)
Midfielder		0.461***
		(0.000)
Veteran		-0.015
		(0.868)
Home		0.019
		(0.945)
Ranking		0.022***
		(0.000)
Season fixed effects		Yes
Observations		1129
Players		234
Log-likelihood		-1991.041

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Experience is measured by the cumulative number of games played. (iv) Significant variables of interest in bold. (v) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (vi) Benchmark categories: British, Forward.

Table 10: Cultural assimilation of southern European football players, alternative measure of experience

Variables	Dependent variable	Disciplinary points
Southern Europe		0.469***
		(0.000)
Northern Europe		-0.124
		(0.245)
Started		0.06***
		(0.000)
Substitute		0.045***
		(0.000)
Experience		0.001*
		(0.071)
*Experience*Southern Europe*		**-0.002****
		(0.028)
*Experience*Northern Europe*		**-0.001**
		(0.275)
Goalkeeper		-0.984***
		(0.000)
Defender		0.366***
		(0.000)
Midfielder		0.466***
		(0.000)
Veteran		-0.015
		(0.871)
Home		0.052
		(0.854)
Ranking		0.023***
		(0.000)
Season fixed effects		Yes
Observations		1129
Players		234
Log-likelihood		-1988.45

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Experience is measured by the cumulative number of games played. (iv) Significant variables of interest in bold. (v) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (vi) Benchmark categories: British, Forward.

Table 11: Cultural differences between migrant players and local players, excluding observations with more than nine years of experience

Variables	Dependent variable	Disciplinary points
Southern Europe		**0.29***
		(0.006)
Northern Europe		**-0.23***
		(0.024)
Started		0.06***
		(0.000)
Substitute		0.038***
		(0.000)
Experience		-0.008
		(0.522)
Goalkeeper		-1.012***
		(0.000)
Defender		0.324***
		(0.002)
Midfielder		0.439***
		(0.000)
Veteran		-0.108
		(0.355)
Home		0.167
		(0.589)
Ranking		0.022***
		(0.000)
Time Fixed Effects		Yes
Observations		1008
Players		230
Log-likelihood		-1794.532

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (v) Benchmark categories: British, Forward.

Table 12: Cultural assimilation of southern European football players, excluding observations with more than nine years of experience

Variables	Dependent variable	Disciplinary points
Southern Europe		0.461***
		(0.001)
Northern Europe		-0.114
		(0.391)
Started		0.06***
		(0.000)
Substitute		0.038***
		(0.000)
Experience		0.009
		(0.609)
Experience*Southern Europe		**-0.056***
		(0.061)
Experience*Northern Europe		**-0.023**
		(0.373)
Goalkeeper		-1.003***
		(0.000)
Defender		0.326***
		(0.002)
Midfielder		0.443***
		(0.000)
Veteran		-0.072
		(0.542)
Home		0.186
		(0.549)
Ranking		0.023***
		(0.000)
Season fixed effects		Yes
Observations		1008
Players		230
Log-likelihood		1792.748

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (v) Benchmark categories: British, Forward.

Table 13: Cultural differences between migrant players and local players, including players from other southern European member states of the European Union

Variables	Dependent variable	Disciplinary points
Southern Europe		**0.238****
		(0.015)
Northern Europe		**-0.203****
		(0.026)
Started		0.06***
		(0.000)
Substitute		0.043***
		(0.000)
Experience		-0.002
		(0.826)
Goalkeeper		-0.979***
		(0.000)
Defender		0.375***
		(0.000)
Midfielder		0.47***
		(0.000)
Veteran		-0.002
		(0.986)
Home		0.024
		(0.928)
Ranking		0.02***
		(0.000)
Time Fixed Effects		Yes
Observations		1187
Players		249
Log-likelihood		-2091.567

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (v) Benchmark categories: British, Forward.

Table 14: Cultural assimilation of southern European football players, including players from other southern European member states of the European Union

Variables	Dependent variable	Disciplinary points
Southern Europe		0.394***
		(0.001)
Northern Europe		-0.113
		(0.345)
Started		0.061***
		(0.000)
Substitute		0.043***
		(0.000)
Experience		0.008
		(0.482)
*Experience*Southern Europe*		**-0.048**
		(0.037)
*Experience*Northern Europe*		**-0.02**
		(0.326)
Goalkeeper		-0.965***
		(0.000)
Defender		0.383***
		(0.000)
Midfielder		0.476***
		(0.000)
Veteran		0.001
		(0.989)
Home		0.057
		(0.833)
Ranking		0.02***
		(0.000)
Season fixed effects		Yes
Observations		1187
Players		249
Log-likelihood		-2089.236

Notes: (i) In parentheses p-values using observed information matrix (OIM) as the basis of standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (v) Benchmark categories: British, Forward.

Table 15: Cultural differences between migrant players and local players and time invariant variables

Variables	Mean regression	Median regression
Southern Europe	**0.132*****	**0.141*****
	(0.009)	*(0.002)*
Northern Europe	**-0.339*****	**-0.334*****
	(0.000)	*(0.000)*
Goalkeeper	-1.231***	-1.573***
	(0.000)	*(0.000)*
Defender	0.433***	0.434***
	(0.000)	*(0.000)*
Midfielder	0.451***	0.434***
	(0.000)	*(0.000)*
Observations	1129	1129
Players	234	234

Notes: (i) In parentheses p-values based on robust standard errors for the mean regression. (ii) The estimated standard errors for the median regression are based on the bootstrapping technique with 20 replications. (iii) Estimation method: Ordinary Least Squares. (iv) Significant variables of interest in bold. (v) ***, **, * indicate 1, 5 and 10 percent significance levels respectively. (vi) See Table 2 for summary statistics of time invariant variables. (vii) Benchmark categories: British, Forward.

Table 16: Cultural assimilation of southern European football players, fixed effects model

Variables	Dependent variable	Disciplinary points
Started		0.061***
		(0.000)
Substitute		0.047***
		(0.000)
Experience		-0.019
		(0.669)
Experience*Southern Europe		**-0.06*****
		(0.003)
Experience*Northern Europe		**-0.018**
		(0.483)
Veteran		0.03
		(0.737)
Home		0.138
		(0.616)
Ranking		0.025***
		(0.000)
Season fixed effects		Yes
Player fixed effects		Yes
Observations		1129
Players		234
Log-likelihood		-1286.418

Notes: (i) In parentheses p-values based on robust standard errors. (ii) Estimation method: Poisson. (iii) Significant variables of interest in bold. (iv) ***, **, * indicate 1, 5 and 10 percent significance levels respectively.