The Effects of the Bosman Ruling on National and Club Teams in Europe

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Abstract

The Bosman ruling allowed soccer players within the European Union (EU) to move more easily between clubs. This study examines the performance of national and club teams in Europe before and after Bosman. Some national teams improved after Bosman while others became weaker, but the overall effects are small. At the club level, there is little evidence that the competitive balance of the domestic leagues in Europe was harmed, although in the Champions League the top clubs appear to have become noticeably stronger.
“It is pointless having the best league in the world if our national team is going to suffer in the long run.” Steven Gerrard, captain of the Liverpool Football Club and sometime captain of the English national team.

“Should we let the rich become richer and say nothing?” Joseph Blatter, FIFA president.

1. Introduction

In December 1995, the Bosman ruling changed the face of soccer within the European Union (EU). It eliminated transfer fees for players out of contract with their teams who wished to change clubs within and between European Union countries. It also made quotas on the number of foreigners playing for a club illegal for citizens of the European Union (EU). While some data sources count foreigners in the starting lineup versus those in each squad, there is no doubt that the influx of players from the EU into some countries has been significant. In 2008 63 per cent of players registered in the top division in England were not English. This figure was 36 per cent in Italy, 41 per cent in Spain and 51 per cent in Germany. Non-English players started only 28.9 per cent of the league matches during the 1994/1995 season, but this figure rose to 45.8 per cent during the 1998/1999 season and 57.6 per cent in 2003/2004.1,2

Although academic research on the ruling initially focused on the market for players, recent work investigates the impact on club and national teams.3 Kesenne (2007) theoretically examines the effects of Bosman on club teams within and across countries. His model predicts that post-Bosman more talent will flow to the countries with the bigger markets for club soccer, increasing the disparity between club teams across countries. The competitive balance within countries, defined as the variability in strength across clubs within a country, is not affected, however.

Regarding national teams, Maguire and Pearton (2000) conjecture that an influx of top foreign players to a given country will hurt its national team because it limits the development of domestic players.4 Symmetrically, this may improve the national teams of countries exporting players to the top European domestic leagues because their skills will improve by playing against better competition.5
Outside of academia, it is generally claimed that the stratification between clubs within each EU country as well as across clubs in Europe has increased since the Bosman ruling. FIFA president Joseph Blatter believes that “[t]he gap between football’s rich and poor is widening, as is the imbalance between associations and leagues.”

He likens it to a battle between the “haves”, who compete with nuclear warheads, and the “have-nots”, who rely on spears. Regarding the English Premier League, Kevin Keegan states “[t]his league is in danger of becoming one of the most boring . . . in the world. The top four teams this year will be the same next year.”

Non-academic observers largely agree with Maguire and Pearton (2000) on the impact of Bosman on national teams. For example, Gerry Sutcliffe, Minister for Sport for Britain argues “we have the best league in the world and it's great that we have got the talent. But obviously we need to see how that . . . affects the national team.”

Similarly, England’s Football Association (FA), in a report on the national team, concludes that “it is no longer possible to consider the success of the senior men’s national team without acknowledging that the number of eligible players for it is declining” due to the number of foreign players in England. FIFA’s Blatter has called for a limit of five foreigners playing for a European club during any match. According to Blatter, having more foreigners “is not good for the development of football, for the education of young players.”

Although the discussion to date focuses largely on the negative effects of Bosman on the national teams of the major footballing countries, the ruling may also have had positive effects. For example, an influx of top players into a country may increase the quality of the domestic league and the domestic players, improving the country’s national team. Furthermore, a country whose best players move to stronger leagues may see an increase or a decrease in the quality of its national team. The team would deteriorate if the players are dispersed around Europe and they no longer “understand” each other. This would be especially true if before Bosman the team was block built, i.e., its core players came from one or two clubs in the domestic league. Or if many of the country’s best players move to clubs in the English Premier
League, the grueling schedule may leave them exhausted or unfit for international matches.

These effects could occur immediately and/or over the longer term. For example, if the equilibrium placement of players was reached quickly and the quality of soccer improved immediately in a domestic league, an improvement in the national team would occur immediately. On the other hand, if an influx of foreign players limited the opportunities for young domestic players, the effect on the national team would not be fully realized for some time. The current national players are fully developed and the team would weaken only as they were replaced by lower caliber players.

Interestingly, while some blame the Bosman ruling for the failures of the English national team, many hail the current English players as a “golden generation” of great ability. David Beckham, Steven Gerrard, Frank Lampard, Michael Owen, John Terry and Wayne Rooney are among the players England has produced post-Bosman. Similarly, Germany has produced Michael Ballack, Miroslav Klose and Lukas Podolski, to name a few, since the Bosman ruling, while Spain has recently moved to the top of the world rankings.

Empirical work on these issues has been somewhat limited. To our knowledge, there has been no careful empirical analysis of the effects of the Bosman ruling on the variance of club quality within countries. In terms of the competitiveness of club teams across countries, Kesenne (2007) examines the percentage of semi-finalists in the Champions League from the four strongest domestic leagues in Europe, England, Germany, Spain and Italy, over time. He finds that from 1994 to 1998 55 per cent of the semi-finalists were from the Big Four while from 1999 to 2003 the figure increased to 95 per cent. On the surface, these statistics support his hypothesis that there will be an influx of strong players from around Europe into the major domestic leagues after Bosman. However, this test does not hold everything else equal. First, the inflow of foreign players to many European leagues began in 1995, which is during Kesenne’s control period. Second, starting with the 1997 to 1998 season the Champions League changed its format to include second place finishers from the top eight leagues. All else equal, the number of semi-finalists from the four strongest
leagues would have increased due to this.\textsuperscript{14}

Frick (2009) investigates the effect of Bosman on national teams, using data from matches at the European championships and the World Cup from 1976 to 2006. He finds no evidence that team performance, i.e., whether the national team made the semi-finals/final match of the tournament, is correlated with how many of the country’s players were rostered by club teams abroad. Similarly, he can not reject the hypothesis that individual match results (measured by goal difference) were closer after Bosman. However, these tests may not be very powerful because the dependent variable, based on individual match or tournament outcomes, is quite noisy. Secondly, if some national teams improved and others declined due to Bosman, the average effect may be indistinguishable from zero even though the ruling had important effects on individual countries.

Baur and Lehmann (2008) regress the FIFA ranking for national teams in the 2006 World Cup against the number of top players imported into/exported by each participating country. This is a less noisy measure of national team quality. They find that national team strength is positively related to both the number of top players imported into and exported from the country. This indicates that on average an inflow/outflow of top players to/from a given country improved the national team. As noted above, however, there may still be considerable variability around these averages which is hidden within the aggregate effect.

This paper statistically examines the effects of the Bosman ruling on 1) the strength of national teams in Europe and 2) the stratification within domestic leagues in the EU and also in the Champions League. National team strength is measured by the country’s ELO rating, which is a more accurate ranking during the sample period than the one constructed by FIFA. Individual countries in Europe are examined as well as broad groups of countries on average. While various national teams are affected by Bosman, the effects differ across countries and appear to be much less negative than has been hypothesized by many observers. For example, the national teams in the counties with the greatest influx of players have improved since Bosman.
At the club level, the ruling did not noticeably decrease competitiveness within the various domestic leagues. Across countries, evidence from the Champions League indicates that the top European clubs have become relatively stronger due to Bosman. But this has also greatly increased the level of play and interest in the Champions League and some of the domestic leagues, which has been beneficial for the growth of the game worldwide. Overall, the negative effects of the Bosman ruling appear to be fairly minor.

2. National Team Regressions

2.1 Methodology

To test the hypothesis that Bosman affected the strength of national teams in Europe, we examine the major European soccer powers which were EU members at the time of the Bosman ruling. The sample consists of countries which were 1) EU members at the time of the Bosman ruling and 2) among the 20 European countries with the highest average match attendance in their domestic soccer league during the 2006-2007 season. In order from highest to lowest average attendance, these countries are: Germany, England, Spain, France, Italy, the Netherlands, Scotland, Portugal, Belgium, Sweden, Norway, Denmark, Austria and Greece.

We estimate the following equation for these fourteen countries as well as for various groups of countries:

\[ \text{ELO}_t = \alpha_0 + \alpha_1 \text{ELO}_{t-1} + \alpha_2 \text{TREND}_t + \alpha_3 \text{THIRD}_t + \alpha_4 \text{D1991}_t + \alpha_5 \text{D1}_t + \alpha_6 \text{D2}_t + \epsilon_t. \] (1)

Equation (1) is an intervention analysis model of the type discussed by Box and Tiao (1975). It models the stochastic part of the series as a first order autoregressive process and the deterministic part of the series with zero-one and other variables. The variable \( \text{ELO}_t \) is the ELO rating for the country (or the average ELO rating for a group of countries) at time \( t \). The ELO rating, discussed further below, is a measure of national team strength. ELO ratings six months apart are examined in this study. The first two variables control for time.
series behavior of the ELO rating by allowing for an autoregressive process and a linear time trend in it. These variables will capture the influence of other factors which may affect the quality of the national team(s) but are not directly measurable. For example, national team strength might be a function of some variable X which is not observable but whose values persist over time. This will cause the ELO rating to be positively autocorrelated. Similarly, a steady rise over time in national interest in sports or the technical abilities of the country’s players would gradually improve the quality of the domestic league and the national team. This type of effect is captured by the coefficient on the time trend variable $\text{TREND}_t$.

During the estimation period (1984 to 2007) there were two other major changes in world soccer which likely affected the relative strengths, and therefore the ELO ratings, of European national teams. First, countries in what might be described as soccer’s “third world” – that is, outside of Europe and South America – improved dramatically, partly because they adopted the same tactics as the European and South American teams and partly because the technical skills of their players improved. The variable $\text{THIRD}_t$ is the average ELO rating for ten randomly selected countries outside of Europe and South America whose ELO rating put them among the top 50 in the world at some time during the sample period. If third world soccer improved dramatically during this period, as appears to be the case, and the ELO ratings of those countries increased at the expense of the European countries, the estimate of $\alpha_3$ will be negative in at least some of the regressions.

Second, political changes in the Soviet Union around 1991 and the resulting freedom of the former East Bloc countries had various effects on soccer. On the one hand, this was equivalent to a mini Bosman ruling for these countries, with their players allowed to move abroad and foreign players allowed to play for teams in the countries’ domestic leagues (within the bounds of the UEFA limit on foreigners per team effective at the time). Second, the economic changes which occurred in the former East Bloc countries coupled with changes in state sponsorship of sports also changed the level of support for the club and national teams. These factors would have affected the relative strength of the Eastern European countries’
national teams as well as those of the other European countries. For example, if Eastern European national teams improved after 1991, their ELO ratings would increase while the ratings of other Europeans would in some cases decrease. The zero-one variable D1991, which equals one beginning March 1991 and zero before that point, is included in equation (1) to model these changes.\(^{18}\)

The last two independent variables directly examine the effects of the Bosman ruling on the national teams. We allow Bosman to have an immediate effect as well as a longer term effect on the teams in question. D1 equals zero before March 1996 and one afterward and allows for a step change in the ELO rating immediately after the Bosman decision. For example, if an influx of foreign players improved the quality of a country’s national team, the ELO rating would immediately increase by \(\alpha_5\).

Separately, there may be longer term effects of the Bosman ruling. If foreign players inhibit the growth of domestic talent in the longer term, the full effect of this would probably not be felt for years as current national players are replaced gradually from the smaller pool of talent. For the same reason, this effect may not begin immediately after Bosman. D2 equals zero before March 1998 (two years after Bosman) and .05 in March 1998.\(^{19}\) It increases by .05 every six months until it reaches a value of one in September 2007. This variable allows for a gradual change in the ELO rating, starting two years after Bosman and continuing for 10 years. That is, D2 has twenty step changes from September 1997 to September 2007 with the longer term effect of Bosman on the ELO rating, equal to \(\alpha_6\), fully realized starting in September 2007. Virtually identical results are obtained in an alternative specification where D2 equals one beginning March 1998 and increases by one through September 2007.\(^{20}\)

The ELO ratings at the beginning of March and September for each year in the sample are collected from the ELO website, as are the ratings for the ten randomly chosen countries outside Europe and South America.\(^{21,22}\) Some discussion of the ELO data is in order. This rating system was developed by Bob Runyan in 1997 by adapting the system used by the international chess federation (FIDE) to rate players, which was created by Dr. Arpad Elo.\(^{23}\) The ELO soccer ratings have been calculated back to 1872 when the
first international match, between England and Scotland, took place. After every match, a country’s rating is revised through an exchange of points between it and the opposing country. The number of points exchanged depends on the relative pre-match ratings of the two countries and the importance of the match, with major tournaments receiving a higher weight than friendly matches. The winning country can not lose ELO points, but if it is rated much higher than its opponent it may gain only a few (or zero) points despite winning the match. Thus, ELO ratings are a measure of national team strength based on longer term match results, as opposed to the opinions of a survey group (as in some college sport ratings in the United States). They are similar to the FIFA rankings used by Baur and Lehmann (2008), which are discussed further below, and suggested for use by Frick (2009, ftnt. 9). On April 24, 2008, Brazil’s national team ranked first in the world with an ELO rating of 2062. Mexico was ranked number 10 (ELO rating of 1874), Paraguay was ranked number 20 (1778), Ireland was ranked number 30 (1736), Norway was ranked number 40 (1705) and Peru was ranked number 50 (1614). At the other end of the spectrum, Palau in the Northern Pacific ocean was ranked number 229 with a rating of 488.

The important question in this study is how accurately the ELO ratings measure the strength of the various national teams. The forecasting ability of the ELO ratings, compared to FIFA’s own ratings and bookmaker odds, is evaluated with data from World Cup matches. In the last four World Cup finals a probit model using the ELO ratings correctly forecast the winner in 145 of 188 matches which did not end in a draw as opposed to 135 correct forecasts using the FIFA rating. In the last two World Cup finals, for which pre-tournament bookmaker odds are available, the ELO rating correctly forecast the winner in 78 of 96 matches compared to 77 correct forecasts using the bookmaker odds (which in an efficient capital market are the best possible forecasts). Therefore, the ELO rating system provides very accurate assessments of national team strength.

The average ELO rating for the fourteen European nations is examined along with the averages for two subgroups. Group 1 consists of the so-called “Big Six” countries with the strongest domestic leagues,
the highest average attendance and apparently the greatest percentage of foreign players – Germany, England, Spain, France, Italy and the Netherlands. Group 2 contains the remaining eight countries in the sample. Table 1 reports various statistics related to the ELO ratings of each country and the average ELO rating for all fourteen European countries (labeled Europe in the table), the two groups of European countries and the average for the 10 third world countries (labeled Third World in the table), including the first order autocorrelation of the ELO rating $\rho(1)$. The average ELO rating for the Big Six (Group 1) countries during this period, 1925, is 170 points greater than the Group 2 average ELO rating and about 100 points above the fourteen country average. France’s average ELO of 1955 is the highest among these countries while Austria’s average rating of 1659 is the lowest. The individual country ELO figures are, in some cases, quite volatile. For example, Portugal’s ELO rating ranges from 1685 to 1983 during this time period. This variation is measured by the standard deviations of the ELO ratings, which range from 78 for Portugal to 42 for England.

The averages for the fourteen countries and the two subgroups are much less variable than the individual country ELOs, indicating that tests with the European and group average data should be powerful. For example, the European average ELO has a minimum value of 1799 and a maximum value of 1863 during this period, with a standard deviation of only 17. The standard deviation of the Group 1 average is somewhat greater than that of the European average but the Group 2 average is as variable as the European average. The average rating for the 10 third world countries is as variable as the Group 1 average and ranges from 1526 (the first observation in the time series) to 1629 (the last observation). This reflects the increase in the quality of soccer outside Europe and South America during this time period. As expected, the ELO ratings are highly positively autocorrelated, with all first order autocorrelations greater than .50.

2.2 Empirical Results

The coefficient estimates and related statistics from equation (1), when the dependent is the average rating for a group of countries, are reported in Table 2. The figures in parentheses are the absolute values
of the t statistics and coefficient estimates which are statistically significant at the .05 level in a two tailed test are denoted by two asterisks. In each case the adjusted R-squared of the regression is greater than .60, consistent with the models having substantial explanatory power. All the Durbin-Watson statistics are close to two, indicating that the residuals are not first order autocorrelated. The average ELO rating for the 14 European countries and the two group averages are, controlling for other factors, significantly positively correlated with their lagged value. Two of the average ELO ratings show a noticeable upward trend over time, although the latter effect (an increase of two to three points per year) is fairly small. The Group 1 average ELO rating is significantly negatively affected by the rise in the quality of soccer outside Europe and South America and both the European average and the Group 1 average are significantly negatively impacted by political change in Eastern Europe.

Regarding the Bosman ruling, the fourteen countries on average are significantly positively affected immediately by the court decision, with the average ELO rating increasing by 10.69. However, over the longer term Bosman significantly decreased the average ELO rating of these countries by 33.83. The overall effect of Bosman on these countries over ten years, which is the sum of the estimates of $\alpha_5$ and $\alpha_6$, is an average decrease in the ELO rating of about 23 points. While the coefficient estimates are statistically significant at well beyond the five per cent level, this is partly due to the power of the tests. However, the overall effect on average for European national teams does not appear to be especially large. Based on recent ELO ratings a team ranked in the top 50 in the world would on average drop two or three places in the rankings -- for example, the number 10 ranked national team in the world would drop to number 12 or 13 over twelve years -- if its ELO rating fell by 23 points during this time period.

The results for the two groups within the fourteen countries provide insight into the behavior of the sample average. The Big Six countries were immediately positively affected by the ruling, with the average ELO rating increasing by more than 21 points. But, there is no significant longer term effect of Bosman on these countries on average. This is consistent with many national teams in the Group 1 countries benefitting
quickly from the influx of quality players. The regression examining the Group 2 average tells a different story. The estimate of $\alpha_5$ is statistically insignificant but there is a significant negative longer term effect of Bosman on these countries on average. This is consistent with the national teams of the Group 2 countries being negatively impacted by Bosman as more of their top players go abroad (including to the Big Six countries). Thus, the immediate positive impact of Bosman on European national teams is driven by the Big Six while the longer term negative effect is due to the other eight countries.

The regression results for the individual national teams are reported in Table 3. The adjusted R-squareds range from .279 to .889 but they are generally above .50 and most of the Durbin-Watson statistics are close to two. The coefficient estimates, including those related to Bosman, vary considerably across the sample countries. The lagged ELO rating has significant explanatory power in all fourteen regressions and there is a significant time trend in the ELO rating in six cases. Regarding the increase in the strength of national teams outside of Europe and South America, only three estimates of $\alpha_3$ are statistically significant at the five per cent level. Germany and Denmark have a negative trend in their ELO rating while Sweden’s ELO is increasing over time during this period.

Political and economic change in Eastern Europe had a very noticeable effect on the national teams of the EU nations as ten of fourteen coefficient estimates on $D_{1991_t}$ are reliably different from zero. Five of the Big Six countries are significantly affected by these events and four of those estimates are negative, which is reflected in the result for the Group 1 countries on average in Table 2. For the remaining eight countries three of the significant estimates of $\alpha_4$ are negative while two are positive. In fact, the fall of the Iron Curtain had, based on the number of countries with significant estimates of $\alpha_4$ versus those with significant estimates of $\alpha_5$ and/or $\alpha_6$, an impact on soccer in Europe at least as large as the Bosman ruling.

Turning to the effects of the Bosman ruling, six of the fourteen countries in the sample were significantly affected immediately by the decision. Four of these countries are in the Big Six and, as evidenced by the Group 1 regression reported in Table 1, three of the four were positively affected. France’s
ELO rating increased immediately by about 93 points, Spain’s increased by 44 points and England’s by 37 points, while Italy’s ELO rating dropped immediately by 27 points. Among the other eight countries, Sweden was immediately negatively affected by Bosman while Austria was positively affected. In the longer term, none of the European countries were positively affected by Bosman. Spain, Italy, Belgium and Sweden were significantly negatively affected, however, with each losing between 90 and 130 points in their ELO ratings over the longer term.

Combining the significant estimates of $\alpha_5$ and $\alpha_6$ to obtain an estimate of the long run (over twelve years) impact of Bosman on European national teams, in total England gained 37 (ELO) points, Spain lost 174 points, France gained 93 points, Italy lost 121 points, Belgium lost 112 points, Sweden lost 189 points and Austria gained 65 points. Sweden, not one of the Big Six, is the country whose national team was the most negatively affected by Bosman. Conversely, there is no evidence that England, the source of the loudest complaints about the elimination of quotas on foreign players, was negatively affected. In fact, the English national team was stronger after Bosman than before. England’s poor results in some matches recently, such as during the qualifying for Euro 2008 and to an extent at the 2006 World Cup, appear to be due to an inability to shine in critical situations as opposed to a lack of talented players. If the Bosman ruling hurt the growth of domestic talent over the longer term anywhere, from these results it was in Spain, Italy, Belgium and Sweden, not in England.

Based on the evidence presented here, what overall conclusions can be drawn about the effects of Bosman on national teams in the EU countries? First, the effects appear to be complex and variable. Some countries are immediately impacted (positively or negatively) while others are negatively affected over the longer term, as opposed to Frick’s (2009) finding of no effect. Second, consistent with Baur and Lehmann (2008), the Big Six countries, which have seemingly had the greatest influx of foreign players, were on average positively affected. However, inconsistent with Baur and Lehmann (2008), the Group 2 countries were negatively affected. Therefore, it is fruitful to examine individual countries as well as the average
effects, because the individual results vary noticeably around the average.

In the big picture, the average effects on the fourteen EU countries, while statistically significant, are fairly small, which is consistent with Frick (2009). Thus any negative impact of Bosman on some European national teams must be weighed against the positive impact on others and the positive effects the removal of foreign player quotas have had on the market for players and the increased quality of soccer played by the top clubs in Europe, as evidenced by the Champions League competition.

3. Domestic League Stratification

To examine whether the Bosman ruling increased the stratification within the domestic leagues in Europe, data are collected on the number of points earned by each team in the top league in the fourteen sample countries for the seasons ending from 1984 to 2007 and the variance of this variable is estimated before and after Bosman. In this analysis each team is awarded three points for a win and one point for a draw, which standardizes the data across leagues and over time. The dispersion of the number of points earned may change over time, however, within a country simply because the number of teams in the league changes. For example, the English Premier League consisted of 22 teams from 1984 to 1987 and from 1992 to 1995, 21 teams in 1988 and 20 teams from 1989 to 1991 and again from 1996 to 2007. To avoid this problem, we use only the years where the number of teams in the league is the same and choose the league size which yields the most years of data. For England, we use the 60 observations for the years 1989 to 1991 to measure the variance of points earned before Bosman and the 240 observations from 1996 to 2007 to estimate the post-Bosman variance.²⁸

The results, along with the F-statistic testing the hypothesis that the variance increased after the Bosman ruling and the associated p value, are reported in Table 4. In four of 12 countries the variance estimate increased after Bosman and in eight countries it decreased. However, only in the case of Greece is there a significant (at the five per cent level in a one tailed test) increase over time in the variance of team

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points at the end of the season. Therefore, there is little evidence to support the claim that stratification within the various domestic leagues has increased, hurting the level of competitiveness. Certainly there is no widespread increase in stratification in the top six European leagues.

The variance results are somewhat surprising, at least for England, because the rich (based on casual observation) do appear to have gotten richer there as Arsenal, Chelsea, Liverpool and Manchester United perennially battle for the top three places in the league in the post-Bosman era. The variance may not increase noticeably, however, if the top teams became stronger (earned more points) while the rest of the league remained essentially unchanged. To examine whether the strength of just the top teams has changed, we tabulate how many different teams finished in the top three places in each league before (1984 to 1995) and after Bosman (1996 to 2007). The results are reported in Table 5 for each country and on average for various groups of countries.

The overall average decreases somewhat from 9.71 before Bosman to 8.64 afterward, with the Group 1 average decreasing more than the Group 2 average. The greatest decrease occurs in England, where before Bosman 15 different teams finished in the top three places in the league but afterward only six teams (two outside of Arsenal, Chelsea, Liverpool and Manchester United) cracked the top three. In comparison, the next largest decrease is three, which occurs in both Italy (where the result is partly due to the recently revealed scandal in which referees favored certain top teams) and Greece. The result for England drives much of the behavior of the overall average and the Group 1 average, because the decrease is noticeably smaller when England is excluded. Therefore, while in general the top clubs have not gotten noticeably stronger within the various leagues in the Group 1 or Group 2 countries, the English Premier League is a clear exception.

Returning to the England, most teams have improved by adding players from EU nations since the Bosman ruling, not just the teams at the top, and therefore the poor have not necessarily gotten poorer. This is reflected by the fact that the bottom three teams in the league earned 32.25 points on average after Bosman.
compared to 33.56 points before while, consistent with greater dominance by a few clubs, the average points earned by the top three teams increased from 72.89 to 78.19 after the Bosman ruling.

A few further words on the subject are in order. Casual observation seems to indicate that as in England, other leagues are dominated by a few teams. This is true in Scotland where Glasgow Celtic and Glasgow Rangers have virtually monopolized the top two positions in the league year after year. In fact, since 1985 no other team has won the Scottish league title and only twice have these two clubs not occupied the top two positions in the league. However, this has been true throughout the sample period and is not, therefore, due to the Bosman ruling. Similarly, the Dutch domestic league has for years been dominated by Ajax Amsterdam and PSV Eindhoven. In fact, the number of teams finishing in the top three in these two countries during the pre-Bosman period, six and seven, are among the lowest figures in the table.

Overall, the competitive balance within Europe’s various domestic soccer leagues has not been damaged by the Bosman ruling. This is an important result because it has long been recognized that professional sports fundamentally differs from other industries. In the standard industry it is of little concern if some competing firms are better (more efficient) than others. In fact, this is to be encouraged because societal welfare is maximized by increasing efficiency (lowering production costs), even if it results in the less efficient firms leaving the industry. The degree of interest in professional sporting contests, and therefore the success of a league, is positively related to how competitive the matches are because fans are not interested in continually seeing lopsided contests.

A separate issue is whether the flow of top players to the biggest clubs, many of which are in the Big Six countries, has caused some teams/leagues in Europe to become stronger at the expense of others. Casual observation, based on the domination of the Champions League by teams from the Big Six since the Bosman ruling, seems to confirm that this type of stratification has occurred. This is misleading, however, because (as mentioned above) the format of the Champions League -- probably in response to the effects of Bosman -- was altered for the 1997/1998 season. Previously, only one team from each domestic league, the winner the
preceding year, was entered in the Champions League (along with the winner of the previous year’s Champions League final). In the 1997/1998 competition the runners-up from the top eight leagues the previous year were also included. Currently, some domestic leagues send their top four teams to the Champions League.

To examine the effect of Bosman on the Champions League, we adjust the data to control for the change in the format. That is, from the 1956/1957 season to the 1996/1997 season, we count the number of semi-finalists each year from the Big Six. From the 1997/1998 season through the 2006/2007 season, we first eliminate the semi-finalists who would not have qualified for the competition under the pre-1997/1998 format. That is, they were not 1) champions of their domestic league or 2) winners of the Champions League the preceding year. We then count how many of the semi-finalists who entered the competition in the traditional way are from the Big Six. Prior to the Bosman ruling, 102 of 156 semi-finalists (about two thirds) are from the Big Six, indicating that domination by teams from these countries is not an entirely new phenomena. From 1995/1996 to 2006/2007, 23 of 26, or 88 per cent of the semi-finalists are from the Big Six. Clearly, the influx of top players to these countries has helped their clubs noticeably in soccer’s most prestigious club competition.

This increased stratification across club teams in the Europe is not necessarily bad, however. First, it creates all-star type clubs where the eleven starting players, and in some cases all the rostered players, are outstanding. When these teams meet, just as when national teams meet in the World Cup, spectators see the highest form of the art. Second, its effects are seen only in the Champions League, which is a cup type of competition, like the cups which are standard in the various domestic soccer leagues. One feature of cup competitions which makes them more exciting and increases spectator interest is the fact that they pit the Davids against the Goliaths and the Davids sometimes win. For example, the domestic league cups in Europe include clubs from lower professional leagues as well as amateur clubs. The Bosman ruling, because it has increased the stratification across leagues, has amplified this variability within the Champions League.
Similarly, the creation post-Bosman of some four all-star teams in the English Premier League, while the competitive balance of the league has remained largely unaffected, has made it the world’s most watched sporting league. Although it is fairly predictable who the top four teams will be, it is not clear which one will win the championship. To the extent that the flow of talent to England, the other Big Six Countries and the top teams in the Champions League has increased interest in the game in North America and Asia, the Bosman ruling has been a great success in terms of promoting football in those regions.

5. Conclusion

While there has been considerable discussion about the effects of the Bosman ruling, involving academics, club and federation officials and the average spectator, there has been little empirical analysis of its effects. This paper examines the impact of the ruling on national and club teams in Europe. While some national teams are negatively/positively affected by Bosman, the average effects on the Big Six countries (which apparently have had the greatest influx of high quality players) and other European nations are fairly small. Certainly the Big Six as a whole have not been negatively affected.

At the club level, there is little evidence that the domestic leagues have become more stratified. That is, imported players have gone to a variety of clubs, not just the top teams, preserving the competitiveness of the various leagues. The clubs have become more stratified across countries with teams from the Big Six more heavily dominating the Champions League since the decision in Bosman. The free flow of players has, however, turned the Champions League, and some of the domestic leagues, into virtual super leagues, showcasing a number of “all star” teams which has the desirable effect of greatly increasing interest in the game worldwide.

All things considered, the negative effects of Bosman appear to be fairly small. Furthermore, they must be balanced against the ruling’s positive effects, including those on the market for players and interest in soccer around the world. Hopefully this paper and further empirical research on the subject will provide
evidence useful to policy makers in various countries as well as broader governing bodies such as UEFA, FIFA and the EU parliament. Furthermore, if the decrease in the quality of some European national teams is an important concern, it can be addressed without restricting the movement of players (as Joseph Blatter’s “6+5” proposal would do). One alternative is for UEFA to impose a lump sum “tax” on the Champions League and UEFA Cup revenues and transfer this money, based on how many players from each country play their club soccer for a top team abroad, to the countries exporting these players for further training and development of their national teams.
### Table 1

Descriptive Statistics of the ELO Ratings

| Region          | Average | Minimum | Maximum | Standard Deviation | ρ(1) |
|-----------------|---------|---------|---------|--------------------|------|
| Europe          | 1828    | 1799    | 1863    | 17                 | .88  |
| Group 1         | 1925    | 1872    | 1979    | 28                 | .74  |
| Group 2         | 1755    | 1722    | 1786    | 15                 | .82  |
| Third World     | 1587    | 1526    | 1629    | 28                 | .92  |
| Germany         | 1933    | 1815    | 2061    | 67                 | .73  |
| England         | 1908    | 1833    | 1977    | 42                 | .67  |
| France          | 1955    | 1805    | 2106    | 76                 | .74  |
| Italy           | 1927    | 1818    | 2023    | 53                 | .75  |
| Netherlands     | 1927    | 1810    | 2021    | 61                 | .67  |
| Spain           | 1902    | 1791    | 1999    | 58                 | .82  |
| Scotland        | 1720    | 1573    | 1833    | 59                 | .89  |
| Portugal        | 1824    | 1685    | 1983    | 78                 | .94  |
| Belgium         | 1760    | 1616    | 1846    | 48                 | .69  |
| Sweden          | 1834    | 1731    | 1951    | 46                 | .54  |
| Denmark         | 1849    | 1733    | 1928    | 46                 | .72  |
| Austria         | 1659    | 1569    | 1775    | 52                 | .87  |
| Greece          | 1666    | 1557    | 1896    | 77                 | .82  |
| Norway          | 1728    | 1543    | 1897    | 87                 | .92  |
Table 2
Estimates from Equation (1) for Groups of European Countries

| ELO     | $\hat{a}_0$ | $\hat{a}_1$ | $\hat{a}_2$ | $\hat{a}_3$ | $\hat{a}_4$ | $\hat{a}_5$ | $\hat{a}_6$ | $R^2_a$ | D-W |
|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|-----|
| Europe  | 1144**      | .45**       | 1.17**      | -0.09       | -10.37**    | 10.69**     | -33.83**    | .830   | 2.03|
|         | (6.24)      | (4.56)      | (4.86)      | (1.29)      | (3.72)      | (2.75)      | (4.40)      |        |     |
| Group 1 | 1471**      | .52**       | 1.58**      | -0.36**     | -23.33**    | 21.61**     | -28.96      | .610   | 2.18|
|         | (5.27)      | (5.05)      | (3.66)      | (2.41)      | (4.45)      | (3.08)      | (1.82)      |        |     |
| Group 2 | 621**       | .57**       | .61         | .08         | -.25        | .92         | -28.10**    | .677   | 1.98|
|         | (2.57)      | (5.05)      | (1.14)      | (.92)       | (.05)       | (.12)       | (1.98)      |        |     |

The absolute value of the t-statistic is in parentheses below the coefficient estimate. $R^2_a$ is the adjusted R-squared and D-W is the Durbin-Watson statistic.

** = statistically significant at the five per cent level in a two tailed test.
Table 3

Estimates from Equation (1) for Individual Countries in Europe

| ELO  | $^\hat{a}_0$ | $^\hat{a}_1$ | $^\hat{a}_2$ | $^\hat{a}_3$ | $^\hat{a}_4$ | $^\hat{a}_5$ | $^\hat{a}_6$ | $R^2_a$ | D-W |
|------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|-----|
| Germany | 2579**   | .61**        | 2.71**       | -1.17**      | -44.27**     | 13.28        | -35.60      | .524    | 2.25|
|      | (2.48)    | (3.56)       | (1.98)       | (2.31)       | (2.54)       | (.42)        | (.72)        |         |     |
| England | 1224**   | .60**        | -2.10        | -.28         | 4.07         | 37.27**      | 62.49        | .421    | 1.93|
|      | (2.06)    | (6.40)       | (1.59)       | (.70)        | (.25)        | (2.41)       | (1.66)       |         |     |
| Spain  | 912      | .39**        | 3.95**       | .13          | -66.41**     | 44.07**      | -129.51**    | .725    | 1.91|
|      | (1.91)    | (5.09)       | (2.21)       | (.45)        | (2.84)       | (4.28)       | (3.44)       |         |     |
| France | 1218     | .46**        | 5.60         | -1.0         | 76.67**      | 92.58**      | 119.65       | .570    | 2.06|
|      | (1.68)    | (4.82)       | (1.96)       | (.21)        | (2.82)       | (2.00)       | (1.83)       |         |     |
| Italy  | 1244**   | .56**        | 4.70**       | -.29         | -37.86**     | -27.12**     | -93.55**     | .565    | 1.87|
|      | (4.39)    | (6.88)       | (3.97)       | (1.65)       | (3.48)       | (2.15)       | (2.66)       |         |     |
| Netherlands | 1342   | .46**        | 7.03         | -.23         | -90.64**     | -24.35       | -127.46      | .469    | 1.98|
|      | (1.71)    | (2.96)       | (1.72)       | (.62)        | (2.04)       | (.73)        | (1.79)       |         |     |
| Scotland | 316     | .77**        | -2.73**      | .07          | 36.33**      | 3.10         | 49.84        | .777    | 1.67|
|      | (.67)     | (6.40)       | (2.82)       | (.29)        | (2.91)       | (.23)        | (1.62)       |         |     |
| Portugal | 381     | .78**        | 1.82         | -.01         | -.18         | 3.94         | -40.38       | .889    | 2.00|
|      | (.81)     | (11.46)      | (1.71)       | (.02)        | (.02)        | (.23)        | (1.34)       |         |     |
| Belgium | 996**    | .52**        | 2.95**       | -.10         | -36.80**     | -19.64       | -112.10**    | .547    | 2.20|
|      | (2.04)    | (4.56)       | (2.62)       | (.43)        | (2.40)       | (1.60)       | (3.84)       |         |     |
| Sweden | 139      | .34**        | 4.59**       | .67**        | -44.91**     | -74.48**     | -115.00**    | .279    | 1.80|
|      | (.26)     | (5.92)       | (2.81)       | (2.01)       | (2.25)       | (3.32)       | (3.25)       |         |     |
| Norway | 11       | .68**        | 1.15         | .32          | 41.61**      | -16.33       | -68.55       | .867    | 1.79|
|      | (.03)     | (8.72)       | (.56)        | (1.15)       | (2.12)       | (.57)        | (1.17)       |         |     |
| Denmark | 1566**  | .64**        | -.50         | -.57**       | 5.37         | 4.41         | 34.65        | .503    | 1.93|
|      | (3.66)    | (10.00)      | (.39)        | (2.12)       | (.29)        | (.34)        | (1.09)       |         |     |
| Austria | 820**    | .44**        | -1.51        | .09          | -42.02**     | 65.37**      | -28.53       | .836    | 2.35|
|      | (2.46)    | (4.99)       | (1.25)       | (.44)        | (4.15)       | (3.05)       | (1.06)       |         |     |
| Greece | 449      | .55**        | .86          | .17          | -7.53        | -2.00        | 45.62        | .688    | 1.96|
|      | (.81)     | (5.18)       | (.57)        | (.40)        | (.41)        | (.11)        | (1.11)       |         |     |

The absolute value of the t-statistic is in parentheses below the coefficient estimate. $R^2_a$ is the adjusted R-squared and D-W is the Durbin-Watson statistic.

** = statistically significant at the five per cent level in a two tailed test.
Table 4

Analysis of the Variance of Points Earned in Each League Before and After Bosman

| Country   | Teams | Variance (before) | Variance (after) | $F(N_2, N_1)$ | $N_1$  | $N_2$  | p-value |
|-----------|-------|-------------------|------------------|--------------|--------|--------|---------|
| Germany   | 18    | 147.66            | 153.11           | 1.0369       | 197    | 215    | .3985   |
| England   | 20    | 163.20            | 223.42           | 1.3690       | 59     | 239    | .0757   |
| France    | 20    | 148.06            | 141.98           | .9590        | 239    | 99     | .5883   |
| Italy     | 18    | 200.93            | 174.43           | .8681        | 125    | 161    | .8014   |
| Netherlands | 18   | 227.82            | 269.18           | 1.1815       | 215    | 215    | .1111   |
| Spain     | 20    | 199.81            | 157.68           | .7891        | 159    | 199    | .9433   |
| Scotland  | 12    | 478.86            | 385.57           | .8052        | 59     | 83     | .7990   |
| Portugal  | 18    | 216.23            | 208.61           | .9648        | 89     | 197    | .5875   |
| Belgium   | 18    | 219.71            | 216.08           | .9834        | 215    | 197    | .5469   |
| Sweden    | 14    | 110.45            | 92.68            | .8391        | 41     | 167    | .7799   |
| Austria   | 10    | 238.05            | 215.63           | .9058        | 19     | 119    | .6442   |
| Greece    | 16    | 165.38            | 249.46           | 1.5084       | 95     | 95     | .0232   |

$N_1$ and $N_2$ are the degrees of freedom in the variance estimates before and after the Bosman ruling, respectively.
| Country   | Before Bosman | After Bosman |
|-----------|---------------|--------------|
| Germany   | 12            | 10           |
| England   | 15            | 8            |
| France    | 9             | 12           |
| Italy     | 11            | 8            |
| Netherlands | 6           | 8            |
| Spain     | 9             | 8            |
| Scotland  | 7             | 8            |
| Portugal  | 6             | 5            |
| Belgium   | 9             | 9            |
| Sweden    | 13            | 11           |
| Denmark   | 11            | 12           |
| Austria   | 8             | 8            |
| Greece    | 8             | 5            |
| Norway    | 12            | 11           |
| Average   | 9.71          | 8.64         |
| Average (no England) | 9.31       | 8.85         |
| Group 1   | 10.33         | 8.67         |
| Group 1 (no England) | 9.40      | 9.20         |
| Group 2   | 9.25          | 8.63         |
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1. See [http://www.majorleaguecharts.com/mlc/index.cfmed](http://www.majorleaguecharts.com/mlc/index.cfmed).

2. On December 26, 1999 Chelsea was the first English team to field an entirely non-English starting eleven. Almost six years later, Arsenal FC was the first English club to name an entire squad of sixteen without a domestic player.

3. See, for example, the papers in Jeanrnaud and Kesenne (1999) and the literature surveys in Frick (2007, 2009).

4. A similar argument appears in Milanovic (2003).

5. This argument is also made by Frick (2009).

6. See David Conn, *The Guardian*, October 12, 2005.

7. This quote is from the article “Half-full Blatter” [SI.com](http://www.si.com), October 13, 2005. See also “UEFA to Discuss Bosman Drawbacks” [BBC Sport Football](http://www.bbc.co.uk/sport), December 15, 2005.

8. See Steve Brenner, “Kevin Keegan Claims the Premier League is Boring but Great” *The Sun*, May 6, 2008.

9. See Greg Hurst and Matt Dickinson, “Minister Gerry Sutcliffe Risking Another Own Goal Joining the Debate Over Imports” [Times Online](http://www.timesonline.co.uk), November 11, 2005.

10. Mike Collett, “English FA Set Capello Semi-Final Target” [Yahoo Sports](http://sports.yahoo.com), May 6, 2008.

11. “Blatter Wants Limits on Foreign Talent” [Times Online](http://www.timesonline.co.uk), October 5, 2007.

12. This argument is also made by Baur and Lehmann (2008).

13. See, for example, Jon Bramley, “England’s Golden Boys Turn Out To Be Tin Men” [Manchester Guardian](http://www.manchesterguardian.com), November 22, 2007.

14. Vrooman (2007) also empirically investigates “competitive balance” within the five largest leagues in Europe. However, he defines competitive balance in terms of the stability of team performance from one year to the next, as opposed to how dispersed the outcomes (such as points earned) are across teams each year. By this definition, he also finds little effect of the Bosman ruling on these five domestic leagues.

15. Norway is a member of the European Economic Area, which consists of Norway, Iceland, Lichtenstein and the EU countries. No cross border work permits are required among the EEA countries so Norway is affected by Bosman in the same manner as the EU countries and is included in the sample.
16. The data are from a wikipedia article on attendance at domestic professional sports leagues. Poland and Romania are among the 20 leagues with the highest attendance in Europe but they are excluded from the sample because they joined the EU in 2004 and 2007, respectively. Similarly, Switzerland, which has a bilateral agreement with the EU since 2002 regarding entry and employment, is excluded from the sample.

17. We also estimate a variant of equation (1) which includes two lags of the ELO rating as explanatory variables. Only the coefficient estimates on the first lag of $ELO_t$ are statistically significant.

18. We focus on 1991 because the Soviet Union’s Eastern European satellites, such as Poland and Romania, gained their freedom in 1990 while various Soviet republics, such as the Ukraine, separated from Russia in 1992.

19. Two alternative specifications of equation (1) where $D2_t$ starts to increase right after Bosman (in March 1996) or four years after Bosman (in March 2000) were also used. The results are qualitatively similar to those reported below.

20. In this specification, the value of $D2_t$ is perfectly collinear with the measure which increases by .05 every six month. All the coefficient estimates and standard errors in this alternative regression are the same as those reported in Tables 2 and 3, except for the coefficient estimate on $D2_t$ which is one twentieth of the other figures given the redefinition in the steps in the trend variable.

21. The ratings are available at [www.eloratings.net](http://www.eloratings.net) and were created using data supplied by Advanced Satellite Consulting. The ten third world countries are New Zealand, Angola, Iran, Saudi Arabia, Canada, Honduras, the United Arab Emirates, Morocco, Mexico and Guatemala.

22. Before German reunification, Germany’s ELO rating is that of West Germany. Similarly, the rating for the USSR is used as the rating for Russia before the break up of the Soviet Union. Any change in the series due to these political changes is measured by the coefficient on $D1991_t$.

23. A detailed description of the ELO methodology, including the equation used to revise each country’s rating, is available at [www.eloratings.net/system.html](http://www.eloratings.net/system.html).

24. The highest ELO rating ever, 2165, was achieved by Hungary in 1954.

25. These results are available from the first author on request.

26. The Box-Ljung statistics show little evidence of higher order autocorrelation. Also, the standard errors of the coefficient estimates are corrected in the RATS software package for heteroskedasticity and autocorrelation.

27. On April 24, 2008 Brazil (ranked number one in the world) had an ELO rating of 2062 while Guinea (ranked number fifty-one) had a rating of 1609. Therefore, on average the top 51 national teams were separated from the next highest rated team by about nine ELO points.
28. Denmark and Norway are dropped from the analysis because there are not two or more seasons before the Bosman ruling (the season ending in 1995 or before) where the league has the same number of teams as after the ruling.

29. Due to relegation it is not meaningful to examine how many different teams were in the bottom three of each league.

30. We ignore the initial 1955/1956 season because the sixteen entrants included only seven league champions.

31. Before 1997/1998, if the winner of the Champions League the previous year also won their domestic league, the second place finisher in the latter automatically qualified for the Champions League. We include these teams when tabulating the semi-finalists from Big Six countries beginning with 1997/1998.

32. Dennis Campbell. "United (versus Liverpool) Nations" The Observer, January 1, 2002.