The Impact of Participation in pan-European Competition on Domestic Performance in Association Football

Abstract

Research question: This paper empirically examines whether participation in the group stage of the UEFA Europa League has a causal impact on the performance of teams in national leagues. An appropriate methodology is adopted to address the selection bias that arises because Europa League participants tend to be stronger than other teams in their league due to the qualification criteria for pan-European competition.

Research methods: Longitudinal data is used consisting of European teams in the top division of their country's national league in the period 2009-10 to 2017-18. In order to address the selection bias, the regression discontinuity design estimator is employed.

Results and findings: The results show no statistically significant effect from participation in the Europa League group stage on performance in national leagues for teams from stronger leagues but a positive and statistically significant effect for teams from weaker leagues.

Implications: The results suggest that the knowledge gained and/or the financial benefits from group stage participation outweigh any negative effects arising from the travel and additional games required by participation in the group stages of the Europa League in weaker leagues. They are therefore supportive of increasing the share of UEFA competition revenues given to non-participating clubs in order to mitigate the negative effect of these competitions on domestic competitive balance.

JEL codes: D22; L1; L83

Keyword: Association football; pan-European competition; regression discontinuity design

The Impact of Participation in pan-European Competition on Domestic Performance in Association Football

Introduction

The simultaneous playing of national leagues and pan-European competition in association football has led to disagreement over the desirability of participation in the latter. While the Union of European Football Associations (UEFA) Champions' League is the most prestigious and lucrative competition in club football (Burke, 2012), the secondary competition, the UEFA Europa League, has received criticism with some team managers suggesting that it would be better for their team if they did not qualify. For example, the former manager of Manchester United, Jose Mourinho, said 'It [the Europa League] is not a competition that Man United wants… It's more difficult, yes [to win the Premier League when you are playing in the Europa League]' (Ducker, 2016). Such views can be explained by strains on playing squads arising from the additional games and travel required by the Europa League (Cox, Gilmore, and Graham, 2017). On the other hand, positive effects may be anticipated from the prize money earned from participation and the opportunities for learning from competing against higher-quality teams. This paper provides evidence on the strength of these effects by empirically estimating the effect of Europa League participation on performance in domestic leagues.

This question has important implications, not only for participants in pan-European competitions, but also for domestic competitive balance. Because the qualification rules ensure that participants are drawn from among the strongest teams in domestic leagues, positive effects would imply that pan-European competitions reduce domestic competitive balance. The uncertainty of outcome hypothesis (Rottenberg, 1956) posits that this will lead to lower attendances although the empirical evidence is not conclusive on this question (Buraimo & Simmons, 2015; Sung & Mills, 2018; Szymanski, 2003). The effects of pan-European

competition have particular contemporary relevance since UEFA has recently announced that a third competition, 'Europa League 2', will be introduced from 2021 (BBC Sport, 2018) which will mean that the effects of pan-European competition extend to more clubs and leagues. The results will also help inform discussion on the appropriate revenue distribution model for UEFA competitions and, more specifically, on whether more money should be disbursed to non-participating clubs to mitigate any reduction in competitive balance caused by these competitions (Bullough, 2018).

Using data on European association football teams covering 2009-10 to 2017-18, this paper uses regression discontinuity design to identify the impact of participation in the Europa League on performance in domestic leagues.[1] The results suggest that participation in the Europa League group stage has a positive and statistically significant effect on performance in national competitions for teams from weaker leagues but no significant effect for teams from stronger leagues.

The next section provides some background information on the organization of domestic and pan-European competitions. The third section reviews the relevant literature. The fourth section describes the data and methodology and the fifth section presents the results. The final section concludes.

[1] A related question that has recently been addressed by Green, Lozano, and Simmons (2015) is whether an increase in the probability of participation in pan-European competition leads teams to exert greater effort in domestic competition. This paper differs from that approach in seeking to establish whether participation is actually beneficial in terms of improving performance in domestic competition.

Background

In order to provide an understanding of the Europa League and the various means of qualification, which are used below to identify the impact of participation, it is necessary to give some background information on the organization of national and pan-European football competitions. Most domestic leagues in Europe have a round-robin format such that all teams play each other a given number of times throughout the season. However, an increasing number of leagues split after a pre-specified number of fixtures with teams in the higher tier playing for the championship and qualification for European competition and teams in the lower tier competing to avoid relegation to a lower division. There is also substantial variation across Europe in the size of leagues: in the period under investigation, the largest league consisted of 20 teams while the smallest league had only six teams. Information on the size and format of European leagues is provided in Table 1. Throughout the period, the number of points awarded for a win, draw and loss were three, one and zero respectively in all leagues.

(Table 1 around here)

UEFA's association club coefficients rankings are used to determine the number of teams from each country that qualify for pan-European competition two seasons later. The coefficients are intended as a measure of league quality and are calculated as the sum of the mean number of points obtained by a country's teams in pan-European competition over the previous five seasons (details on the method used are available from UEFA, 2011). Teams receive two points for a victory and one point for a draw (these are halved for qualifying rounds) and additional points are awarded for advancing to later rounds of the tournaments. In 2017-18, the leagues with the most participants (Spain, Germany and England) entered four teams in the Champions'

League and three teams in the Europa League while most countries entered one team in the Champions' League and three teams in the Europa League.

While qualification for the Champions' League depends on the finishing position of the team in the national league,[2] places in the Europa League are awarded to the highest-placed teams that have not qualified for the Champions' League and the winner of domestic cup competitions, of which there are two in England and France and one in other countries. If the team that wins the domestic cup competition has already qualified for the Champions' League or Europa League by virtue of its league position, an additional place in the Europa League is allocated to the highest-placed team in the league that has not already qualified for European competition. Prior to 2014-15, the position was reallocated first to the runner-up in the domestic cup and, only if that team had already qualified for the Champions' League or the Europa League, was the position given to the highest-placed team in the league that had not already qualified. A further means of entry to the Europa League until 2014-15 was through the UEFA Fair Play Ranking. This awarded an additional place to the three leagues with the best disciplinary record in European competitions over the previous season. These places were then awarded to the team with the best disciplinary record in the national league. There were therefore two means of qualifying for the Europa League, in addition to league position, during the period under investigation.

Having qualified for the Europa League, most teams have to win preliminary rounds, which involve home and away fixtures, before reaching the group stage of the competition. Of the 48

[2] The previous season's winner also qualifies automatically but in only one season (2012-13) in the period under consideration has the club that won the Champions' League failed to qualify by virtue of its league position.

group stage participants, the number that qualifies directly has increased from one in seasons 2009-10 to 2011-12 (the previous year's Europa League winner, if that team had not qualified for the Champions' League), to seven in seasons 2012-13 to 2014-15 and has been 16 since the 2015-16 season. Since 2009-10, there have been four qualifying rounds for the Europa League group stage (UEFA refers to three qualifying rounds and a play-off round). The UEFA coefficient, discussed above, and the league position of the club determine the round at which a team enters.[3] This means that, particularly for teams from weaker leagues, participation in the Europa League usually does not lead to participation in the group stages of the competition. This is illustrated below in Table 2, which shows the number of teams that participated at any stage of the Europa League and the number of group stage participants from each country during the sampling period. Teams may also 'drop down' into the Europa League from the Champions' League. During the sample period, the 15 teams that lost in the Champions' League third qualifying round have played in the Europa League play-off round and the 10 losing teams in the Champions' League play-off round have played in the group stage of the Europa League.

(Table 2 around here)

The group stage involves 12 groups of four teams playing home and away fixtures in a round-robin format (further detail on the Europa League group stage is provided by Krumer, in press). In order to qualify for the knockout phase of the tournament, teams must finish in first or second

[3] For example, in 2016-17, the English teams finishing fifth and sixth in the national league entered the Europa League at the group stage and the team that finished seventh entered at the third qualifying round. By contrast, all three qualifiers from Northern Ireland entered at the first round.

position in their group. All subsequent rounds of the tournament except the final also involve home and away fixtures. Teams that progress to the final will therefore play nine games, in addition to the six played in the group stage (and potentially more in the qualifying phase). Given the number of fixtures and distances involved (the current record is 3,700 miles for a match between Girondin de Bordeaux and Kairat Almaty), the potential for fatigue and hence a negative effect on performance in domestic leagues due is clear.

Literature Review

Much of the research on the effects of travel on performance has been motivated by a desire to explain the sources of home advantage (Carmichael & Thomas, 2005). In an early example, Pollard (1986) documents that in football matches involving London clubs where the opponent had travelled less than 200 miles, the home team won 64.3% of matches and in matches where the opponent had travelled more than 200 miles, the home team also won 64.3%, suggesting no disadvantage associated with greater distance travelled. Since then, the research on football has been rather limited. One recent example is Oberhofer, Philippovich, and Winner (2010) who investigate the performance of away teams in the German Bundesliga between 1986-87 and 2006-07. They show that larger travel distances are associated with a higher probability of defeat. The effect is non-monotonic with the largest effects observed at shorter distances.

In American sports, Nichols (2014), using data on National Football League (NFL) games between 1981 and 2004, finds that the probability of a home victory is a positive but decreasing function of the distance travelled by the visiting team. Carter (2017) examines the performance between 1998 and 2010 of teams participating in the National Collegiate Athletics Association (NCAA) Men's Basketball Tournament, which is played at a neutral venue. She finds that teams have a higher probability of winning if they have traveled a much shorter distance than

their opponent but that no advantage is evident for smaller travel disparities. By contrast, Nutting (2010) finds little effect of distance travelled in the previous 28 days on the probability of victory and the score of home and visiting teams using data on National Basketball Association (NBA) seasons from 1990-91 to 2001-02.

In relation to the effect of additional games, Scoppa (2015) finds a positive effect of extra days of rest on performance in Fédération Internationale de Football Association (FIFA) World Cup and UEFA European Championship matches before 1993 but no significant effect afterwards. The author attributes this to better preparation and hence a smaller effect of fatigue in more recent tournaments. Evidence from basketball is more supportive of the disadvantages of additional games. Entine and Small (2008) find that fewer rest days are associated with poorer performance and use this to show that a small part of the home-court advantage is explained by the fewer days of rest that visiting teams have between games. Similarly, Nutting (2010) finds that fewer rest days have a negative effect on the probability of winning, particularly for visiting teams, in the first half of the NBA season and that a larger number of games played in the previous 14 days by visiting teams lowers their probability of winning in the second half of the season.

However, previous research shows that team managers, despite variations in efficiency (Frick & Simmons, 2008; Hall & Pedace, 2016), generally produce improved sporting outcomes from increased revenues (Dobson & Goddard, 1998; Hall, Szymanski, & Zimbalist, 2002; Kringstad & Olsen, 2016). This suggests that the money awarded for participation in pan-European competition may mitigate or wholly offset any fatigue effects by allowing teams to invest in additional or higher quality players. In 2017-18, teams that reached the group stages of the Europa League received €2.6 million while a win and draw in the group stages were rewarded with €360,000 and €120,000 respectively (UEFA, 2017). Additional sums were awarded for further progression in the competition and a total of €160 million was allocated to participants

based on the value of their country's television market (a discussion of the UEFA distribution model is provided by Bullough, 2018). Given large variations in the availability of finance across countries (e.g. Deloitte, 2017), these sums are likely to be of greater importance to teams from weaker leagues.

In addition to the financial benefits of participation, pan-European competition also allows teams to play against higher quality opposition than they would ordinarily encounter in domestic competition, which may improve their performance in the domestic league. The idea that players benefit from encountering higher quality opposition has spurred a number of papers showing that national football teams benefit from the migration of their players to play for clubs in stronger leagues (Allan & Moffat, 2014; Berlinschi, Schokkaert, & Swinner, 2013; Solberg, 2008). Similarly, a recent paper by Gong, Sun and Wei (2018) finds that young footballers benefit from the relegation of their team from the English Premier League because it gives them the opportunity to play more matches for the first team. Such results indicate that players receive knowledge benefits from competing at a higher level. This is consistent with a resource-based view of the firm (Barney, 1991; Gerrard, 2003; Wernerfelt, 1984) in which firms derive a competitive advantage from assets that cannot be replicated by other firms or easily substituted, one of which may be the tacit knowledge or experience of team members (Berman, Down & Hill, 2002; Franck, Nüesch & Pieper, 2011). However, teams in stronger leagues are less likely to benefit from such knowledge effects because the difference in standard between opponents in national and pan-European competitions will be smaller.

Previous literature has therefore provided evidence of negative effects on performance from travel and additional games and positive effects from increased revenues and knowledge transfer. However, there has been little analysis of the effects of competitions such as the Europa League that potentially affect performance through all of these channels. As well as being of intrinsic interest, this will provide an insight into the relative importance of these

determinants of performance. The discussion of the effects of the Europa League has so far mostly taken place in the media and been limited to individual countries (BBC Sport, 2016; Honigstein, 2015; Hope, 2013; Wright & Nagle, 2015). An exception is Poli, Besson, and Ravenel (2015) who report that, between 2009-10 and 2014-15, 69.1% of teams that qualified for the Europa League group stage qualified for European competitions in the next season. However, since such teams will, as a result of the qualification criteria, tend to be among the strongest in their domestic leagues, they will have a higher probability of qualifying, regardless of their participation in European competition. This selection bias means that the higher probability of future qualification cannot be attributed to participation in European competition. Cox, Gilmore, and Graham (2017) provide a comprehensive analysis of the effects of participation in the Europa League for English teams. They show that teams tend to experience a fall in position in seasons in which they participate in the Europa League but acknowledge that 'the relationship of the measurements analyzed between Europa League participation and non-participation reflects a correlation, not causality' (p. 6). It is the aim of this paper to provide such a causal analysis.

Data and Methodology

Data have been collected for all European football leagues for seasons between 2009-10 and 2017-18. The website of the Rec.Sport.Soccer Statistics Foundation (http://www.rsssf.com/) provides the necessary information on performance in domestic leagues while information on participation in European competitions is obtained from UEFA (www.uefa.com). However, only a sub-set of countries are used in the estimation sample for reasons that are outlined below.

Given the qualification criteria outlined earlier, teams that qualify for the group stages of European competitions will tend to be stronger than teams that do not qualify and would be

expected to accumulate more points per game, even if they had not participated in European competition. Difference in mean estimates of the effect of participation will therefore be overestimates of the causal effect of participation. To address this, a regression discontinuity design approach is adopted (Imbens & Lemieux, 2008; Lee & Lemieux, 2010). In this context, regression discontinuity design entails a comparison of the performance of teams that narrowly qualified for the Europa League via league position with the performance of teams that narrowly failed to qualify for the European League via league position. The main empirical model is:

$$points_{ict} = \beta_1 + \beta_{RDD} group_{ict} + \beta_2 moq_{ict-1} + \beta_3 moq_{ict-1} \times qualified_{ict} + c_c + t_t + \varepsilon_{ict} \qquad (1)$$

The dependent variable, $points_{ict}$, is the deviation of points per game from the cutoff, measured in points per game, required for a team to qualify for the Europa League via league position in the previous season. Comparisons of the points per game of teams in different leagues would provide valid estimates of the effect of participation if the cutoff required for qualification via league position was the same throughout the sample and the competitiveness[4] of leagues did not vary across country or time. In such circumstances, the points per game of, for example, a Romanian team that met the cutoff could be compared with the points per game of an English team that narrowly failed to reach the cutoff. The likelihood that the English team is stronger than the Romanian team is irrelevant since the focus of the analysis is on performance in national leagues. However, league competitiveness and the cutoffs required to qualify will vary across leagues and time. The model therefore includes country fixed effects

[4] Competitiveness here refers to the difficulty of acquiring points for member teams. It is therefore concerned with the distribution of team quality within a league rather than the quality of the league relative to other leagues.

(c_c) and time fixed effects (t_t) to control for time-invariant differences across countries and changes that are common to all leagues respectively in competitiveness. Subtracting points per game from the cutoff required for Europa League qualification in the previous season controls for variations in the cutoff and country-specific changes in competitiveness, to the extent that the latter are captured by changes in the difficulty of qualifying for the Europa League via league position. The importance of the adjustment is demonstrated by the following example. The number of points per game required to qualify for the Europa League via league position in England was 1.895 in 2012-13 and 1.579 in 2014-15. If a team that met the cutoff in 2012-13 and a team that narrowly failed to achieve the cutoff in 2014-15 obtained 1.7 points per game in the subsequent season, a comparison of the points per game of the two teams would suggest that Europa League participation had no effect. By contrast, a comparison using the deviation of points per game from the cutoff required for qualification via league position captures the fact that the team that met the cutoff in 2012-13 performed poorly relative to last season while the team that missed the cutoff in 2014-15 performed relatively well. This therefore implies a negative effect from Europa League participation.

The treatment variable, $group_{ict}$, is a dummy variable indicating whether team i from country *c* participated in the group stage of the Europa League in season *t*. Teams that played in earlier rounds of the competition, but failed to qualify for the group stages, are therefore considered as untreated. The rationale for this is, firstly, that participation in the group stages guarantees at least six games per season whereas qualification for the Europa League may only involve two fixtures. Secondly, group games take place at the same time as domestic fixtures but, for most leagues with 'winter' seasons, qualifying fixtures take place before the start of the season. The problems of fatigue associated with European football (discussed in the literature review) are therefore less likely to apply. Champions' League participants are excluded from the estimation sample to facilitate a clean comparison between a treatment group of Europa League

group stage participants and a control group of teams that either failed to qualify for any European competition or were knocked out in the qualifying rounds of the Europa League.

The running variable, moq_{ict-1}, is the margin by which a team qualified for the Europa League in the previous season, measured in points per game. It is therefore zero or positive for teams that qualified by virtue of their league position and negative for teams that did not. Since the cutoff required to qualify differs by team, this is an example of regression discontinuity design with multiple cutoffs. Cattaneo, Keele, Titiunik, and Vazquez-Bare (2016) show that, in this case, β_{RDD} is a weighted average of the local average treatment effect at each cutoff.

$qualified_{ict}$ is a dummy variable indicating whether a team's league position led it to participate in the Europa League competition. The interaction between $qualified_{ict}$ and moq_{ict-1} allows for different linear trends between the running variable and points per game across teams that qualified for the Europa League via league position and teams that did not. In order to reduce the sensitivity of the estimates to functional form, the sample is restricted to observations with values of moq_{ict-1} close to zero. The bandwidth is chosen using the method of Calonico, Cattaneo, and Titiunik (2014). The model is estimated using triangular kernel weights although the results are also robust to the use of uniform weights.

As explained in the second section, participation in the group stage of the Europa League is not determined solely by league position in the previous year. Teams that qualified for the Europa League competition via their league position (i.e. those for which $qualified_{ict}$ equals one) do not participate in the group stages if they are knocked out in the qualifying rounds. Conversely, teams that failed to qualify for the Europa League via their league position (i.e. those for which $qualified_{ict}$ equals zero) may reach the group stages if they qualify for the competition through their domestic cup competition or the fair play rankings and, if necessary, successfully negotiate qualifying rounds. Table A1 in the Supplemental Material summarizes the

relationship between $qualified_{ict}$ and $group_{ict}$ and shows the number of teams that fall into each category. This non-deterministic relationship between moq_{ict-1} and $group_{ict}$ necessitates the use of a fuzzy regression discontinuity design in which $qualified_{ict}$, is used as an instrumental variable for $group_{ict}$. Equation (1) is therefore estimated using two stage least squares as follows:

$$\widehat{group}_{ict} = \hat{\alpha}_1 + \widehat{\alpha_{FS}} qualified_{ict} + \widehat{\alpha_2} moq_{ict-1} + \widehat{\alpha_3} moq_{ict-1} \times qualified_{ict} + c_c + t_t$$

$$points_{ict} = \beta_1 + \beta_{RDD} \widehat{group}_{ict} + \beta_2 moq_{ict-1} + \beta_3 moq_{ict-1} \times qualified_{ict} + c_c + t_t + \varepsilon_{ict}$$

To be a valid instrument, $qualified_{ict}$, must satisfy two criteria. Firstly, it must have a strong effect on the treatment indicator. In order to ensure this, the sample is restricted to leagues for which over 20% of the teams that qualified for the Europa League reached the group stage of the competition. This has the effect of reducing the number of group stage participants that remain in the sample after the application of further restrictions (described below) from 225 to 210 but increases the percentage of qualifiers for the Europa League that reached the group stage from 28% to 58%. The resulting F-statistics for the significance of the instrumental variable in the first stage are over 10 in all samples (Stock, Wright, & Yogo, 2002).

Secondly, the instrument must be uncorrelated with unobserved factors that determine both group stage participation and the deviation of points per game from the cutoff required for Europa League qualification via league position. For this assumption to be satisfied, all unobserved factors determining points obtained in the domestic league must be continuously related to the points obtained in the previous year's competition, as measured by the running variable. The dummy variable, $qualified_{ict}$, which has no obvious wider significance beyond determining whether the team participated in the Europa League, will then be uncorrelated with the unobserved factors determining performance since the latter will be 'proxied' by the (continuous) running variable.

The crucial role of the running variable in the identification strategy requires the exclusion from the sample of teams from leagues that underwent a change in league structure (either in terms of number of teams or a switch to or from a 'split' structure) between seasons $t-1$ and t. In such circumstances, the previous season's performance will be a weak predictor of the current season's performance because of changes in the difficulty of earning points. Similar reasoning requires the exclusion of teams from countries where the league splits after a given number of games. This is because the running variable is calculated using the post-split number of points in the top group. If pre-split points are used to calculate the dependent variable, the running variable may not be a strong predictor because of the lower quality of teams encountered prior to the split. An alternative is to use post-split points to construct the dependent variable but this is also problematic because teams competing in different post-split groups play different teams and points per game is therefore not a reliable measure of team performance (teams in the 'relegation' group can finish the season with more points than teams in the 'championship' group).

In order to test for heterogeneous effects across leagues of different strength, the model is estimated for the full sample and separately for 'elite' and 'non-Elite' leagues. The rationale for this approach is, as discussed above, that the knowledge benefits from participating in the Europa League will be weaker and the prize money may be less important for teams from stronger leagues. Five leagues are considered 'elite' based on their UEFA coefficients in 2009. These are England, Spain, Italy, Germany and France.

Results

Figure 1 provides a graphical representation of the relationship between the running variable, the margin of qualification, and the participation in the Europa League group stage and the

deviation of points per game from the previous year's cutoff for qualification for the full sample and the two sub-samples. To provide consistency with the results from the regression discontinuity design, the graphs are drawn using only the data that falls within the bandwidth used to estimate equation (1). The graphs on the left-hand side show a non-zero probability of participation in some bins to the left of the cutoff because of the possibility of Europa League qualification through the domestic cup competition or the UEFA Fair Play Ranking. To the right of the cutoff, the probability of participation in the group stage of the Europa League is less than one in a number of bins due to the qualifying rounds that needs to be negotiated before a team reaches the group stage of the competition. Nevertheless, there is an obvious discontinuity in both the full sample and the two sub-samples in the probability of participation in the group stage around the cutoff. The graphs on the right-hand side show that teams that qualified for the Europa League through their domestic league position generally obtained more points per game in the next season. However, there is no clear discontinuity at the cutoff in the full sample, which suggests no significant effect of participation in the Europa League group stage on performance in national leagues.[5] For the 'non-elite' leagues, there is a jump at

[5] If league position was the only way of qualifying for the Europa League and there were no qualifying rounds, it would fully determine group stage participation and the gap at the cutoff shown in the graphs on the right-hand side of Figure 1 would show the estimated effect of group stage participation (as in a sharp regression discontinuity design). In a fuzzy regression discontinuity design with no covariates, the gap represents the reduced form estimate, which is rescaled to calculate the estimated treatment effect by dividing by the first-stage estimate to reflect the non-deterministic relationship between league position and group stage participation. The first-stage estimate is represented by the gap at the cutoff shown in the graphs on the left-hand side of Figure 1.

the cutoff but, for the 'elite' leagues, there is a drop in the deviation of points per game from the previous year's cutoff. It is noteworthy that, while the slope on the left of the threshold is shallower than that on the right of the threshold in Figure 1, this is the result of limiting the sample to observations that fall within the bandwidth: in the full sample, the slopes are similar on both sides of the threshold (see Figure A1 in the Supplemental Material).

(Table 3 around here)

(Figure 1 around here)

Although the results from estimation of equation (1), presented in Table 3, cannot be fully reconciled with those implied by Figure 1 due to the inclusion of country and time effects in the regression model, they are nevertheless consistent. In the full sample, there is no statistically significant effect of Europa League group stage participation (estimates from the reduced form and first stage models, the ratio of which gives the treatment effect estimates in Table 3, are presented in Table A2 in the Supplemental Material). The estimated effect is an increase in points per game of 0.129, which is the equivalent of only four points (one win and a draw) over the course of a 34 game season. The estimated effect for 'elite' leagues is negative but not statistically significant. However, a positive and significant effect is found for 'non-elite' leagues. In these leagues, participation leads to an increase in points per game of 0.380, which is the equivalent of an additional 13 points (four victories and a draw) over a 34 games season. This is consistent with the hypothesis that teams from weaker leagues learn from Europa League group stage participation or that that the prize money obtained is sufficient to allow them to improve their squad, relative to their domestic rivals. Estimation of equation (1) augmented with a set of interactions with a dummy variable that equals one if the team is from an 'elite' league using the full sample confirms that the difference between the estimated effects

of group stage participation for the 'elite' and 'non-elite' leagues is statistically significant at the 5% level.

One possible threat to the validity of the identification strategy is that some teams, particularly in stronger leagues, may deliberately underperform in order to avoid participation in the Europa League. We regard this as unlikely to apply for the vast majority of teams, agreeing with Feddersen, Humphreys, and Soebbing (2012) that the 'Europa League… should be financially attractive enough to generate strong incentives for teams to perform in the domestic league' (p. 11). Moreover, we are unable to reject the null hypothesis of no manipulation of the running variable using the test proposed by Cattaneo, Jansson, and Ma (2017).

A second potential threat to the validity of the regression discontinuity design estimates is that the discontinuity observed in the right-hand panel of Figure 1, and reflected in the coefficient estimates in Table 3, is unrelated to group stage participation. In order to test if there are other discontinuities away from the cutoff, the model is re-estimated using cutoffs to the left of the 'true' cutoff for Europa League participation. Table A3 in the Supplemental Material shows that none of the estimated coefficients from the models using 'placebo' cutoffs are statistically significant. This provides confidence that the deviation of points per game from the previous year's cutoff for qualification for the Europa League is a continuous function of the running variable and that the discontinuity identified in Figure 1 is truly associated with Europa League qualification.

A third possible problem is that the assumed linear relationship between the margin of qualification and the deviation of points per game from the cutoff within the bandwidth is incorrect. Table A4 in the Supplemental Material therefore presents estimates from equation (1) augmented with second order polynomials of the running variable. The estimates remain

the same in terms of both sign and significance as those presented in Table 3. Moreover, the additional variables are jointly insignificant at the 10% level.

The results presented so far have used a treatment variable coded as one when teams qualify for the group stage of the Europa League. An alternative specification is a dummy variable that equals one if teams qualify for the Europa League. As discussed above, the disadvantage of this approach is that some teams considered as 'treated' may only have played one round of European competition. Table 4 shows that all the estimated effects are smaller (in absolute value) lower than those in Table 3 but the estimated effect for the 'non-elite' group remains statistically significant. This weakening of the estimated treatment effects is consistent with a priori expectations that fewer games (i.e. a lower treatment intensity) will lead to smaller effects on domestic performance.

(Table 4 around here)

Conclusion

This paper has investigated the impact of participation in pan-European competitions on performance in domestic leagues. Regression discontinuity design estimates indicate a large and positive effect for teams from weaker leagues. This finding is supportive of the proposition that teams learn from playing against higher quality opposition and, as such, is consistent with previous papers that have found that players benefit from playing at a higher level (Berlinschi, Schokkaert, & Swinner, 2013; Gong, Sun & Wei, 2018). An alternative explanation is that the prize money received from participation allows teams from weaker leagues to invest more in their squad than other teams in the league. Both effects are likely to be smaller in stronger leagues, where the domestic opposition is of a higher standard and other sources of finance are more easily accessible. Although the estimated effect for 'elite' leagues is negative, it is not

statistically significant. The results therefore do not provide evidence in favour of the hypothesis that fatigue from the travel and additional games required by Europa League group stage participation is disadvantageous for clubs over the course of the season. This is consistent with the finding of Scoppa (2015) that fewer rest days no longer have a negative effect on performance at the World Cup.

Although individual teams from weaker leagues may benefit from participation in the Europa League, this does not necessarily mean that their domestic league benefits. In particular, the results imply that the Europa League further strengthens the stronger teams in domestic leagues and hence leads to a decline in competitive balance. This accords with research on the effect of the Champions' League in England, Spain, Italy, Germany, and France (the 'elite' leagues used here) by Pawlowski, Breuer, and Hovemann (2010). This finding is pertinent at a time when UEFA is planning to introduce 'Europa League 2', which will increase the number of leagues with teams participating in pan-European competitions. It also provides support to proposals from the Association of European Professional Leagues (2018) to increase the share of revenues from UEFA competitions that are allocated to non-participating clubs in the form of 'solidarity payments' from the current level of 4% (UEFA, 2018).

A limitation of the approach taken here is the inability to separate the effects of prize money and learning. Future research could address this through the use of information on the amount of prize money received from participation to isolate the effect of learning although such an approach would be complicated by the possibility that teams invest at the start of the season based on expectations of prize money, rather than the amount of money they actually receive. A more promising method may therefore be to construct measures of the quality of opponent encountered in the Europa League in order to measure the potential knowledge gained from participation. The use of individual game data would also provide further insights. In particular, it would allow better tests of whether fatigue has a negative effect on performance since such

effects may be short-term and offset over the course of the season by knowledge or prize money effects.

A further limitation is the neglect of the premier European competition, the Champions' League. Unlike the Europa League, qualification for the Champions' League is generally regarded as a major achievement. As a result, future research could investigate whether the Champions' League differs from the Europa League in having a positive effect on performance among clubs from stronger leagues.

References

Allan, G., & Moffat, J. (2014). Muscle drain versus brain gain in association football: Technology transfer through player emigration and manager immigration. *Applied Economics Letters, 21*(7), 490-493.

Association of European Professional Leagues. (2018). European leagues present proposals for UEFA club competitions Retrieved 09/04/2019 from https://europeanleagues.com/european-leagues-present-proposals-for-uefa-club-competitions/.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

BBC Sport. (2016). Mythbusting: Do teams play worse after European games? Retrieved 11/11/2016 from http://www.bbc.co.uk/sport/football/35146716.

BBC Sport. (2018). 'Europa League 2': UEFA confirms new tournament from 2021 Retrieved 08/04/2019 from https://www.bbc.co.uk/sport/football/46421656.

Berlinschi, R., Schokkaert, J., & Swinnen, J. (2013). When drains and gains coincide: Migration and international football performance. *Labour Economics, 21*(0), 1-14.

Berman, S., Down, J., & Hill, C. (2002). Tacit knowledge as a source of competitive advantage in the national basketball association. *Academy of Management Journal, 45*(1), 13-31.

Bullough, S. (2018). UEFA champions league revenues, performance and participation 2003–2004 to 2016–2017. *Managing Sport and Leisure*, *23*(1-2), 139-156.

Buraimo, B., & Simmons, R. (2015). Uncertainty of outcome or star quality? Television audience demand for English Premier League football. *International Journal of the Economics of Business, 22*(3), 449-469.

Burke, M. (2012). The ten richest sporting events in the world. *Forbes,* Retrieved 14/07/2018 from https://www.forbes.com/sites/monteburke/2012/05/24/the-ten-richest-sporting-events-in-the-world/#5a0910532a94.

Calonico, S., Cattaneo, M., & Titiunik, R. (2014). Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica, 82*(6), 2295-2326.

Carmichael, F., & Thomas, D. (2005). Home-field effect and team performance: Evidence from English Premiership football. *Journal of Sports Economics, 6*(3), 264-281.

Carter, K. (2017). Relative home-court advantage: The impact of travel on team production when one team is closer than its opponent to a neutral game site. *Managerial and Decision Economics, 38*(1), 76-91.

Cattaneo, M., Jansson, M., & Ma, X. (2017). Simple local polynomial density estimators. *Working Paper*. University of Michigan. Ann Arbor. Retrieved from http://www-personal.umich.edu/~cattaneo/papers/Cattaneo-Jansson-Ma_2017_LocPolDensity.pdf

Cattaneo, M., Keele, L., Titiunik, R., & Vazquez-Bare, G. (2016). Interpreting regression discontinuity designs with multiple cutoffs. *The Journal of Politics, 78*(4), 1229-1248.

Cox, A., Gilmore, S., & Graham, A. (2017). The European dilemma: Evaluating the implications of UEFA Europa League participation on English Premier League clubs. *Soccer & Society, 18*(7), 817-835.

Deloitte. (2017). Deloitte annual review of football finance Retrieved 03/10/2017 from https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/sports-business-group/deloitte-uk-annual-review-of-football-finance-2017.pdf.

Dobson, S., & Goddard, J. (1998). Performance and revenue in professional league football: Evidence from Granger causality tests. *Applied Economics, 30*(12), 1641-1651.

Ducker, J. (2016). Jose Mourinho: Man Utd don't want to be in Europa League - it could ruin our title prospects Retrieved 11/11/2016 from

http://www.telegraph.co.uk/football/2016/09/14/jose-mourinho-man-utd-dont-want-to-be-in-europa-league-but-we-wi/.

Entine, O., & Small, D. (2008). The role of rest in the NBA home-court advantage. *Journal of Quantitative Analysis in Sports, 4*(2), 1-11.

Feddersen, A., Humphreys, B., & Soebbing, B. (2012). Contest incentives in European football. *Working Paper No. 2012-13.* University of Alberta, Department of Economics. Alberta. Retrieved from https://sites.ualberta.ca/~econwps/2012/wp2012-13.pdf

Franck, E., Nüesch, S., & Pieper, J. (2011). Specific human capital as a source of superior team performance. *Schmalenbach Business Review, 63*(4), 376-392.

Frick, B., & Simmons, R. (2008). The impact of managerial quality on organizational performance: Evidence from German soccer. *Managerial and Decision Economics, 29*(7), 593-600.

Gerrard, B. (2003). What does the resource-based view "bring to the table" in sport management research? *European Sport Management Quarterly, 3*(3), 139-144.

Gong, J., Sun, A., & Wei, Z. (2018). Choosing the pond: On-the-job experience and long-run career outcomes. *Management Science, 64*(2), 860-872.

Green, C., Lozano, F., & Simmons, R. (2015). Rank-order tournaments, probability of winning and investing in talent: Evidence from Champions' League qualifying rules. *National Institute Economic Review, 232*(1), R30-R40.

Hall, C., & Pedace, R. (2016). Do managers matter? Manager effects on organization performance. *Managerial and Decision Economics, 37*(8), 541-551.

Hall, S., Szymanski, S., & Zimbalist, A. (2002). Testing causality between team performance and payroll: The cases of major league baseball and English soccer. *Journal of Sports Economics, 3*(2), 149-168.

Honigstein, R. (2015). Does Europa League participation harm a team's domestic form? Retrieved 11/11/2016 from http://www.espnfc.com/blog/espn-fc-united-blog/68/post/2709321/does-europa-league-participation-harm-league-form.

Hope, C. (2013). Health warning! The Europa League derails domestic campaigns and it will probably be won by a Champions League club anyway... So be careful what you wish for! Retrieved 11/11/2016 from http://www.dailymail.co.uk/sport/football/article-2522055/The-Europa-League-bad-health-Premier-League-clubs-improve-it.html.

Imbens, G., & Lemieux, T. (2008). Regression discontinuity designs: A guide to practice. *Journal of Econometrics, 142*(2), 615-635.

Kringstad, M., & Olsen, T.-E. (2016). Can sporting success in Norwegian football be predicted from budgeted revenues? *European Sport Management Quarterly, 16*(1), 20-37.

Krumer, A. (in press). Testing the effect of kick-off time in the UEFA Europa League. *European Sport Management Quarterly*, Retrieved from https://doi.org/10.1080/16184742.2019.1598456.

Lee, D., & Lemieux, T. (2010). Regression discontinuity designs in economics. *Journal of Economic Literature, 48*(2), 281-355.

Nichols, M. (2014). The impact of visiting team travel on game outcome and biases in NFL betting markets. *Journal of Sports Economics, 15*(1), 78-96.

Nutting, A. W. (2010). Travel costs in the NBA production function. *Journal of Sports Economics, 11*(5), 533-548.

Oberhofer, H., Philippovich, T., & Winner, H. (2010). Distance matters in away games: Evidence from the German football league. *Journal of Economic Psychology, 31*(2), 200-211.

Pawlowski, T., Breuer, C., & Hovemann, A. (2010). Top clubs' performance and the competitive situation in European domestic football competitions. *Journal of Sports Economics, 11*(2), 186-202.

Poli, R., Besson, R., & Ravenel, L. (2015). Impact of UEFA club competitions on domestic league results. Football Observatory, International Centre for Sports Studies, University of Neuchâtel. Retrieved from http://www.uefa.com/MultimediaFiles/Download/competitions/General/02/29/97/46/2299746_DOWNLOAD.pdf

Pollard, R. (1986). Home advantage in soccer: A retrospective analysis. *Journal of Sports Sciences, 4*(3), 237-248.

Rottenberg, S. (1956). The baseball players' labor market. *Journal of Political Economy, 64*(3), 242-258.

Scoppa, V. (2015). Fatigue and team performance in soccer: Evidence from the FIFA world cup and the UEFA European championship. *Journal of Sports Economics, 16*(5), 482-507.

Solberg, H. A. (2008). The international trade of players in European club football: Consequences for national teams. *International Journal of Sports Marketing and Sponsorship, 10*(1), 73-87.

Stock, J., Wright, J., & Yogo, M. (2002). A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business & Economic Statistics*, *20*(4), 518-529.

Sung, H., & Mills, B. (2018). Estimation of game-level attendance in major league soccer: Outcome uncertainty and absolute quality considerations. *Sport Management Review, 21*(5), 519-532.

Szymanski, S. (2003). The economic design of sporting contests. *Journal of Economic Literature, 41*(4), 1137-1187.

UEFA. (2011). How five-year club coefficients are calculated Retrieved 27/11/2017 from https://www.uefa.com/memberassociations/news/newsid=1592815.html.

UEFA. (2017). 2017/18 Europa League revenue distribution Retrieved 16/07/2018 from https://www.uefa.com/uefaeuropaleague/news/newsid=2493323.html.

UEFA. (2018). 2018/19 UEFA club competitions revenue distribution system Retrieved 09/04/2019 from https://www.uefa.com/insideuefa/stakeholders/clubs/news/newsid=2562024.html.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171-180.

Wright, N., & Nagle, B. (2015). Does Europa League football damage Premier League clubs' domestic form? Retrieved 11/11/2016 from http://www.skysports.com/football/news/11960/10099975/europa-league-help-or-hindrance.

Table 1. League Size and Format by Country and Season

Season end	2010	2011	2012	2013	2014	2015	2016	2017	2018
Albania	12	12	14	14	12	10	10	10	10
Andorra	8[b]	8[b]	8[b]	8[b]	8[b]	8[b]	8[b]	8[b]	8[b]
Armenia	8[a]	8[a]		8	8	8	8	6	6
Austria	10	10	10	10	10	10	10	10	10
Azerbaijan	12[b]	12[b]	12[b]	12[b]	10	10	10	8	8
Belarus	12[a]	12[a]	12[a]	12[ab]	12[ab]	14[a]	16[a]	16[a]	
Belgium	16[b]	16[b]	16[b]	16[b]	16[b]	16[b]	16[b]	16[b]	16[b]
Bosnia	16	16	16	16	16	16	16	12[b]	12[b]
Bulgaria	16	16	16	16	14[b]	12[b]	10	14[b]	14[b]
Croatia	16	16	16	12	10	10	10	10	10
Cyprus	14[b]	14[b]	14[b]	14[b]	14[b]	12[b]	14[b]	14[b]	14[b]
Czech Republic	16	16	16	16	16	16	16	16	16
Denmark	12	12	12	12	12	12	12	14[b]	14[b]
England	20	20	20	20	20	20	20	20	20
Estonia	10[a]	10[a]	10[a]	10[a]	10[a]	10[a]	10[a]	10[a]	
FYROM	12	12	12	12	12	10[b]	10[b]	10	10
Faroe Islands	10[a]	10[a]	10[a]	10[a]	10[a]	10[a]	10[a]	10[a]	
Finland	14[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	
France	20	20	20	20	20	20	20	20	20
Georgia	10	10	12[b]	12[b]	12[b]	16	16	10[a]	
Germany	18	18	18	18	18	18	18	18	18
Greece	16	16	16	16	18	18	16	16	16
Hungary	16	16	16	16	16	16	12	12	12
Iceland	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	
Ireland	10[a]	10[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	
Israel	16[b]	16[b]	16[b]	14[b]	14[b]	14[b]	14[b]	14[b]	14[b]
Italy	20	20	20	20	20	20	20	20	20
Kazakhstan	12[ab]	12[ab]	14[a]	12[ab]	12[ab]	12[ab]	12[ab]	12[ab]	
Latvia	10[a]	9[a]	10[a]	10[a]	10[a]	8[a]	8[a]	8[a]	
Lithuania	11[a]	12[a]	10[a]	9[a]	10[a]	10[a]	8[ab]	8[ab]	
Luxembourg	14	14	14	14	14	14	14	14	14
Malta	10[b]	10[b]	12[b]	12[b]	12[b]	12	12	12	14
Moldova	12	14	12	12	12	11	10	11	
Montenegro	12	12	12	12	12	12	12	12	10
Netherlands	18	18	18	18	18	18	18	18	18
Northern Ireland	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]
Norway	16[a]	16[a]	16[a]	16[a]	16[a]	16[a]	16[a]	16[a]	
Poland	16	16	16	16	16[b]	16[b]	16[b]	16[b]	16[b]
Portugal	16	16	16	16	16	18	18	18	18
Romania	18	18	18	18	18	18	14[b]	14[b]	14[b]
Russia	16[a]		16[b]	16	16	16	16	16	16
Scotland	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]
Serbia	16	16	16	16	16	16	16[b]	16[b]	16[b]
Slovakia	12	12	12	12	12	12	12	12	12[b]
Slovenia	10	10	10	10	10	10	10	10	10
Spain	20	20	20	20	20	20	20	20	20
Sweden	16[a]	16[a]	16[a]	16[a]	16[a]	16[a]	16[a]	16[a]	
Switzerland	10	10	10	10	10	10	10	10	10
Turkey	18	18	18	18	18	18	18	18	18
Ukraine	16	16	16	16	16	14	14	12[b]	12[b]
Wales	18	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]	12[b]

[a] denotes 'summer' season. [b] denotes split season. This table shows the number of teams at the start of the season. For example, the Swiss Super League finished with nine teams in 2011-12 due to the expulsion of Neuchâtel Xamax. Shaded cells indicate exclusion from the estimation sample for reasons outlined in Section 3.

Table 2. Number of Europa League Participants by Country and Season

Season end	2010	2011	2012	2013	2014	2015	2016	2017	2018
Albania	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	1 (3)	0 (2)	1 (3)
Andorra	0 (1)	0 (3)	0 (3)	0 (2)	0 (2)	0 (2)	0 (2)	0 (2)	0 (2)
Armenia	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)
Austria	4 (3)	2 (3)	3 (3)	1 (3)	2 (3)	1 (3)	1 (3)	3 (3)	2 (3)
Azerbaijan	0 (3)	0 (3)	0 (3)	1 (3)	0 (3)	1 (3)	2 (3)	2 (3)	0 (3)
Belarus	1 (3)	1 (3)	0 (3)	0 (3)	0 (3)	1 (3)	1 (3)	0 (3)	
Belgium	2 (3)	3 (3)	3 (3)	2 (3)	3 (3)	3 (3)	2 (3)	4 (3)	1 (3)
Bosnia	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)
Bulgaria	2 (3)	2 (3)	0 (3)	0 (3)	1 (3)	0 (3)	0 (3)	0 (3)	1 (3)
Croatia	1 (3)	2 (3)	0 (3)	0 (3)	2 (3)	2 (3)	0 (3)	0 (3)	1 (3)
Cyprus	0 (3)	0 (3)	1 (3)	1 (3)	2 (3)	1 (3)	1 (3)	1 (3)	1 (3)
Czech Republic	2 (3)	1 (3)	0 (3)	2 (3)	1 (3)	1 (3)	3 (3)	3 (3)	3 (3)
Denmark	1 (4)	1 (4)	2 (3)	1 (3)	1 (3)	2 (3)	1 (3)	0 (3)	1 (3)
England	2 (3)	2 (3)	4 (4)	3 (3)	3 (3)	2 (3)	2 (4)	2 (3)	2 (2)
Estonia	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	
FYROM	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	1 (3)
Faroe Islands	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	
Finland	0 (3)	0 (4)	0 (3)	0 (4)	0 (4)	1 (4)	0 (3)	0 (3)	
France	2 (3)	2 (3)	2 (3)	3 (3)	2 (3)	3 (3)	4 (3)	2 (3)	3 (3)
Georgia	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	
Germany	3 (3)	3 (3)	2 (3)	4 (3)	2 (3)	2 (3)	3 (3)	2 (3)	3 (3)
Greece	2 (3)	3 (3)	2 (3)	1 (3)	1 (3)	3 (3)	2 (3)	3 (3)	1 (3)
Hungary	0 (3)	1 (3)	0 (3)	1 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)
Iceland	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	
Ireland	0 (3)	0 (3)	1 (3)	0 (3)	0 (3)	0 (3)	0 (4)	1 (3)	
Israel	1 (3)	0 (3)	3 (3)	2 (3)	2 (3)	0 (3)	0 (3)	2 (3)	2 (3)
Italy	3 (3)	4 (3)	2 (3)	4 (3)	2 (3)	4 (3)	3 (3)	4 (3)	3 (3)
Kazakhstan	0 (3)	0 (4)	0 (3)	0 (3)	1 (3)	0 (3)	0 (3)	1 (3)	
Latvia	1 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	
Lithuania	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	
Luxembourg	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)
Malta	0 (3)	0 (2)	0 (2)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)
Moldova	1 (3)	1 (3)	0 (3)	0 (3)	1 (3)	0 (3)	0 (3)	0 (3)	
Montenegro	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)
Netherlands	4 (4)	3 (4)	3 (3)	2 (5)	2 (4)	2 (4)	3 (4)	3 (3)	1 (3)
Northern Ireland	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	
Norway	0 (3)	1 (3)	0 (4)	2 (4)	1 (4)	0 (4)	2 (3)	0 (3)	
Poland	0 (3)	1 (3)	2 (3)	0 (3)	1 (3)	1 (3)	2 (3)	0 (3)	0 (3)
Portugal	3 (4)	2 (3)	2 (4)	3 (3)	3 (3)	2 (3)	3 (3)	1 (3)	2 (3)
Romania	4 (4)	1 (4)	3 (4)	1 (3)	1 (3)	2 (3)	0 (3)	2 (3)	1 (3)
Russia	0 (3)	2 (0)	2 (3)	2 (4)	3 (4)	2 (4)	3 (3)	2 (3)	2 (3)
Scotland	1 (4)	0 (3)	1 (3)	0 (3)	0 (3)	1 (3)	1 (3)	0 (3)	0 (3)
Serbia	1 (3)	0 (3)	0 (3)	1 (3)	0 (3)	1 (3)	1 (3)	0 (3)	2 (3)
Slovakia	0 (3)	0 (3)	1 (3)	0 (3)	0 (3)	1 (3)	0 (3)	0 (3)	0 (3)
Slovenia	0 (3)	0 (3)	1 (3)	1 (3)	1 (3)	0 (3)	0 (3)	0 (3)	0 (3)
Spain	3 (3)	4 (3)	2 (3)	3 (3)	3 (3)	2 (3)	2 (2)	3 (2)	3 (3)
Sweden	0 (3)	0 (4)	1 (4)	2 (3)	1 (4)	0 (4)	0 (3)	0 (3)	
Switzerland	1 (3)	2 (3)	1 (3)	2 (3)	2 (3)	2 (3)	2 (3)	2 (3)	2 (3)
Turkey	2 (3)	1 (3)	1 (3)	1 (3)	1 (3)	2 (3)	2 (3)	3 (3)	2 (3)
Ukraine	1 (3)	3 (4)	3 (4)	2 (4)	3 (4)	3 (4)	1 (3)	2 (3)	2 (3)
Wales	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)	0 (3)

Numbers in parentheses show qualifiers for Europa League (as opposed to participants in the group stage). Shaded cells indicate exclusion from the estimation sample for reasons outlined in Section 3. Note that group stage participants can exceed qualifiers if teams 'drop down' from the Champions' League (see footnote 6).

Table 3. Estimated Effects of Europa League Group Stage Participation

	All	Non-Elite	Elite
EL Group Participation	0.129	0.380**	-0.092
	(0.111)	(0.169)	(0.161)
Margin of Qualification	-0.162	-0.040	0.209
	(0.575)	(0.586)	(1.597)
Margin of Qualification x	1.477**	0.918	2.307
Qualified	(0.724)	(0.908)	(1.618)
Constant	-0.172**	-0.223**	-0.099
	(0.086)	(0.105)	(0.161)
Bandwidth	0.192	0.207	0.141
Manipulation Test p-value[a]	0.434	0.725	0.527
F-statistic on IV	56.885	26.244	30.219
Total			
Observations	1,385	811	574
Treated	210	103	107
Untreated	1,175	708	467
Right of Cutoff	297	186	111
Left of Cutoff	1,088	625	463
Within Bandwidth			
Observations	430	269	150
Treated	136	61	73
Untreated	294	208	77
Right of Cutoff	225	139	90
Left of Cutoff	205	130	60

Standard errors, clustered by team, are in parentheses. *, **, *** denotes significance at the 10%, 5% and 1% levels.

[a] Teams with a margin of qualification of zero are omitted from the sample used to conduct this test since, by construction, each league has at least one team at this point in each season.

Table 4. Estimated Effects of Europa League Participation

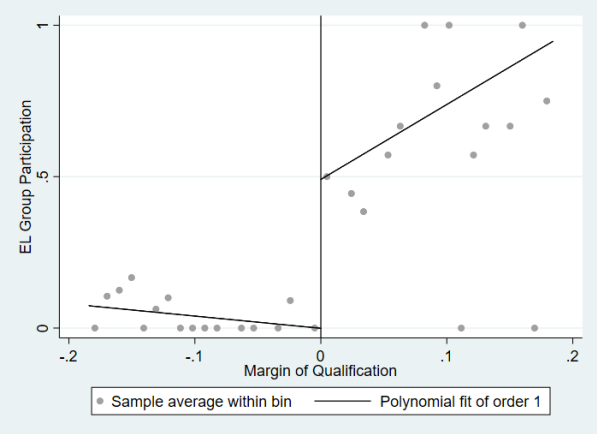
		Restricted Sample	
	All	Non-Elite	Elite
EL Participation	0.051	0.158**	-0.051
	(0.052)	(0.068)	(0.140)
Margin of Qualification	0.086	-0.236	-0.037
	(0.431)	(0.549)	(2.362)
Margin of Qualification x	1.425**	1.377*	1.475
Qualified	(0.613)	(0.808)	(2.706)
Constant	-0.157**	-0.185**	-0.109
	(0.080)	(0.093)	(0.158)
Bandwidth	0.224	0.229	0.110
Manipulation Test p-value[a]	0.434	0.725	0.527
F-statistic on IV	1296.798	560.544	556.098
Total			
Observations	1,385	811	574
Treated	361	230	131
Untreated	1,024	581	443
Right of Cutoff	297	186	111
Left of Cutoff	1,088	625	463
Within Bandwidth			
Observations	494	275	133
Treated	269	161	87
Untreated	225	114	46
Right of Cutoff	245	141	86
Left of Cutoff	249	134	47

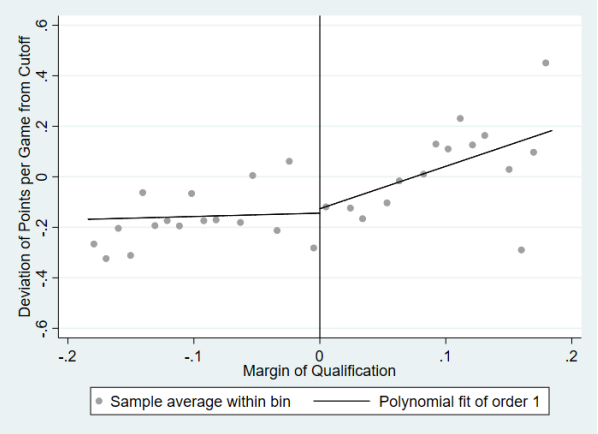
Standard errors, clustered by team, are in parentheses. *, **, *** denotes significance at the 10%, 5% and 1% levels.

[a] Teams with a margin of qualification of zero are omitted from the sample used to conduct this test since, by construction, each league has at least one team at this point in each season.

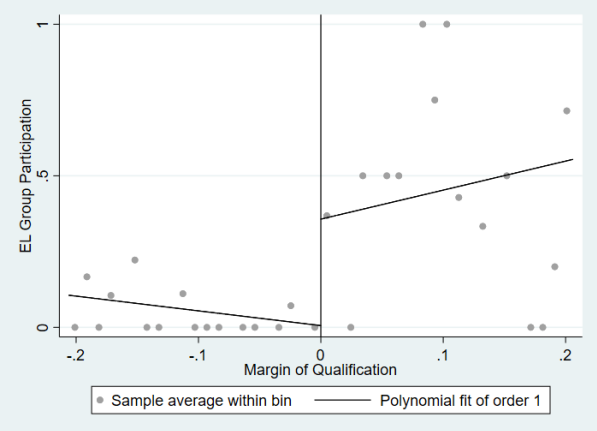
Figure 1. Regression Discontinuity Plot

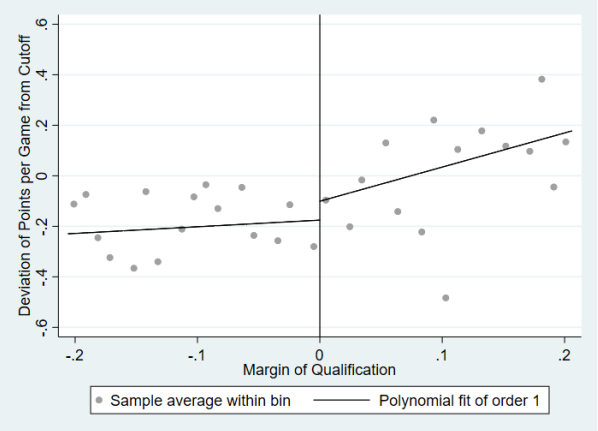
All





Non-Elite





Elite