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NEW ISSUES IN ATTENDANCE DEMAND: THE CASE OF THE ENGLISH FOOTBALL LEAGUE

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ABSTRACT

This paper uses an attendance demand model with panel data on over 4,000 games to examine economic problems of fixture congestion in English Football League schedules. We find that televised midweek Champions League matches involving English Premier League clubs have substantial adverse impacts on lower division Football League gate attendance. This suggests that affected clubs may have a case for compensation from the Premier League for loss of gate revenue from this source. Scheduling of home games close to one another also has an adverse impact on attendance. Reorganisation of fixture schedules and/or redistribution of income would help offset adverse impacts on team revenues from midweek scheduling.

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1. Introduction

Lying below the top tier English Premier League, the Football League is the world's largest professional football (soccer) league comprising 72 clubs organised in three hierarchical divisions of 24 teams each, labelled here as Divisions One to Three[1]. The Football League is linked with the separately owned and organised Premier League by promotion and relegation on a three-up, three-down basis. Within the Football League, mobility between divisions is likewise provided by promotion and relegation while exit from the League occurs via a promotion/relegation link with the next tier down, the Conference.

As Figures 1a and 1b reveal, attendance has been increasing in the Football League over the last decade, especially in Division One.[2] However, the extra matchday revenue appears to have been dissipated by higher wages (Deloitte and Touche, 2003). Many Football League clubs report financial positions that place them on the edge of viability. Debts of between £20m and £40m have been reported at Bradford, Darlington, Huddersfield, Ipswich, Leicester and Wimbledon. All these clubs, and a total of 22 over the period 1999-2004, have experienced spells of 'administration', akin to Chapter 11 bankruptcy in the U.S. (Buraimo *et al*.,2004).

[1] The Football League has enjoyed sponsorship over our sample period. The 2004/05 season commenced with new sponsors and re-branding for the Football League Divisions with new names. With sponsors names in parentheses, the Football League divisions are currently the (Coca Cola) Football League Championship/(Coca Cola) Football League One/(Coca Cola) Football League Two. From 1992/93, when the Premiership broke away from the Football League, to the end of the 2003/04 season, the Football League Divisions were called the (Nationwide/Endsleigh/Barclay), according to which of these sponsorships applied, Division One/Two/Three. Hence, a non-promoted and non-relegated team playing in, say, Division Two in the 2003/04 season appeared in League One in 2004-05.

[2] The growth rate of attendance in Division One is slightly less than that of the Premier League, since 1992. The growing divergence of revenues between the Football League and the Premier League reflects increased

In a context of such financial pressure, it is important that Football League clubs make further gains in revenue generation from all sources, including matchday attendance. Attendance gain has been beneficial to the League, even if dissipated in higher wages, to the extent that the quality of its product has improved because clubs are better able to compete in the international market for player talent. Foreign players are now found in significant numbers even in the lowest division.

Attendance demand is more crucial to the Football League clubs than those in the elite Premier League where broadcasting and merchandising revenues are significant sources of finance. In the 2001/02 season the share of club turnover accounted for by television income was 37.8% across the whole Premier League. The corresponding figure for the Football League Division One was 15.1% (Deloitte and Touche, 2003). Division Two and Three teams received negligible sums from TV broadcasting reflecting their rarity of exposure. It is therefore even more important for the Football League than the Premier League that clubs have a good understanding of the nature of attendance demand.

This paper makes a contribution to the analysis of demand conditions facing clubs in the English Football League by examining attendance demand at match level using a large panel data set. Attendance demand studies of sports leagues have looked at a number of themes such as outcome uncertainty and the role of price and income (see Borland and Macdonald (2003) for a comprehensive survey). One popular theme in this literature is the impact of live broadcasting on gate attendance where industry sources in a variety of sports have often expressed concerns that live telecasts could deter gate attendance (Forrest, Simmons and Szymanski, 2004; Harbord and Szymanski, 2004). It is conceivable that a telecast could

differences in revenues from broadcasting, sponsorship and merchandising together with a higher rate of ticket price inflation in the Premier League.

lower gate attendance so much that the reduction in gate revenues offsets any financial benefit from the broadcast[3]. Some studies of European football do find substantial negative impacts of live broadcasting on gate attendance. The English Premier League has games broadcast live by BSkyB on Sunday afternoons and Monday nights. Baimbridge *et al*. (1996) found a negative impact of 15% for games scheduled to provide Monday night televised football in the 1993/94 season but did not separate impacts of broadcasting from Monday night scheduling *per se*. These authors could not find any significant adverse effect for games televised on Sunday afternoons.

The results of Baimbridge *et al.* can be criticised for using ordinary least squares (OLS) estimation and for failing to deal with the capacity constraint problem. The use of a single season also makes inference questionable. Garcia and Rodriguez (2002) did look at four seasons of data from the Spanish top division and found that broadcasting had a large and statistically significant effect on attendance by fans who did not have season tickets. However, an analysis of the English Premier League and Division One of the Football League by Forrest, Simmons and Szymanski (2004) shows for two large panel data sets that there is no systematically adverse impact of live broadcasting in either league. Across seasons 1992/93 to 1997/98 they find that Premier League games were adversely affected by live broadcasting on Sunday afternoons in just three out of six seasons with marginal effects from tobit estimates of the order of 9%. The use of tobit estimation for the Premier League is designed to deal with the problem that approximately two-thirds of clubs have regular sell-out crowds at or near ground capacity, making OLS estimates unreliable. For Division One, adverse effects on attendance from broadcasting were found to be more substantial and more systematic, between 10% and 18% during the earlier period of terrestrial free-to-air coverage

[3] It is conceivable that live broadcasting could *raise* gate attendance in a sports league by careful selection of televised games combined with the role of telecast advertising as promotion for gate attendance. Price and Sen

by Independent Television (ITV) with smaller impacts as coverage was taken over by BSkyB. Overall, though, Forrest *et al*. find that these adverse effects on attendance did not harm clubs because any gate revenue losses from TV broadcasting were generally more than offset by gains to clubs from TV coverage in the form of facility fees.

The literature on impacts of live broadcasting on gate attendance in sports tends to focus on own-team broadcasting effects, rather than the consequences of broadcasting of rival competitions. Forrest *et al.* searched for, and found, adverse impacts on Division One gate attendance from televised coverage of European Championship matches involving English Premier League clubs alongside midweek evening fixtures. For example, in 1997/98, the last season in their sample, the adverse effect from European midweek games involving English clubs was 13% (*p* value of 0.00). This generates a pure revenue loss at Football League level since there is no compensation at all to Division One teams who play their matches alongside Champions League games[4].

The finding that European Champions League TV coverage cannibalised Football League attendances in the 1990s raises the question of whether or how much such cannibalisation is a problem for the Football League in the new millenium. This question is explored empirically using a new large data set of all Football League attendances over three seasons, from 1999/2000 to 2001/02. A broader objective of this paper is to assess the hitherto neglected role of scheduling in attendance demand. Although some empirical studies of match attendance do report impacts of dummy variables these are usually treated as control

(2003) find such an effect for Division 1-A college American Football in the USA.

[4] Paton and Cooke (forthcoming) show that attendance at English County cricket matches is adversely affected by concurrent scheduling of Test (international) matches. In this case, there are substantial payments to County cricket teams out of revenues from Test matches and these subsidies are much greater than total gate revenues.

variables which are secondary to the main topic of research.[5] Our concern in this paper is to highlight precisely how the placing of midweek and Saturday home games in the fixture programme adversely affects attendance, if at all. Such a concern is merited given the increased availability of both leisure time and of alternative leisure pursuits, where leisure is defined broadly to include home production. Saturday afternoon at 3 p.m. still represents the traditional and majority start time for English Football League matches. But fixture congestion means that not all home games can be scheduled at this time, when availability of leisure time is greater than for midweek evenings. Some games have to be played on midweek evenings[6]. Precisely how scheduling impacts on gate attendance is a highly relevant research question in an era where both leisure time and availability of alternative leisure products is greater than ever before. Improved scheduling should help maximise gate attendances and revenues for clubs.

The paper proceeds as follows. Section 2 describes our data set and establishes our empirical model. Section 3 reports our empirical results and Section 4 concludes.

2. Data and Empirical Model

English Football League clubs play 23 home league games over a period between August and May. They also play matches in up to three knock-out cup competitions but the

[5] For example, it is customary to distinguish midweek from weekend games since the latter are played at times when supply of leisure time is at its highest. Bruggink and Eaton (1996) and Butler (2002) found that Major League Baseball attendances were higher at weekends than in midweek. It is also customary to distinguish particular periods within a season when attendance may be unusually high or low. In Paton and Cooke's study of county cricket (*ibid*.) attendances were unusually low in April at the beginning of the season when the weather is colder and when end-of-season football provides competition for customers.

[6] It is extremely unusual for teams to play on consecutive days and playing two games in three days only occurs in holiday periods (Christmas and Easter) which are regarded as likely to boost attendance considerably. Teams prefer to have fixtures spread out to allow players time to recover from injury and fatigue. Fixture congestion is regarded within the industry as a threat to team performance. When the fixture list is published in July for the upcoming season, some games will be scheduled for midweek. As the season unfolds, other games will be moved in to midweek slots due to weather-enforced postponement or progress by teams in cup competitions. Attendances could respond differently to pre-determined and short-term midweek scheduling. We leave this interesting question to further research.

number of home games varies with the luck of the draw and how long the club stays in the competition.

Football League attendances have enjoyed a rising trend over the last decade (Buraimo *et al*. 2004, Dobson and Goddard, 2001). Hence the growth of active support for English football has not been confined to the more glamorous Premier League. However, ratios of attendance to ground capacity are lower for the Football League than for the Premier League with figures of 0.63, 0.45 and 0.38 for Divisions One to Three respectively in 2000/01 (Deloitte and Touche, 2003). For the econometrician, this carries the advantage that an attendance demand schedule can be identified assuming elastic supply. There is then no need for tobit estimation (Forrest, Simmons and Szymanski, 2004)[7].

Our data set consists of regular season Football League games played in three seasons from 1999/00 to 2001/02. The first three home fixtures of each team are excluded to permit construction of current season form measures. This leaves 20 home fixtures per team per division per season, giving a total of 4,320 games for analysis. Table 1 shows means and standard deviations of attendance by various categories. These raw figures show that attendance is lower as divisional status falls. Compared to divisional means, attendance was higher in April and May and in 2001/02 but was lower for large distances between teams, for midweek games and for games played alongside Champions League fixtures.

In the empirical model, the dependent variable is *LOG ATTEND*, the natural logarithm of recorded home attendance. The model to be estimated is:

LOG ATTEND$_{ijkt}$ = f(***SUPPORT***, ***FORM***, ***PROMOTION CONTENTION***, ***OUTCOME UNCERTAINTY***, ***TELEVISION***, ***SCHEDULE***, ***OTHER DUMMIES***)

This is a cross-sectional time-series, or panel, regression model in which *i* denotes home team, *j* denotes away team, *k* denotes Divisions One to Three and *t* denotes home fixture number in chronological order. Variables are organised under vectors. Each variable is interacted with divisional status to reveal slope coefficients that potentially vary by division.

Included in ***SUPPORT*** are persistence effects on attendance from season to season through *HOME ATTENDANCE LAST SEASON* and *AWAY ATTENDANCE LAST SEASON*. These variables are measures of average home attendance in the previous season for the home and away team respectively. Our hypothesis is that the greater the previous season's home attendance for either home or away team in a match the greater the match attendance.

Positive coefficients would indicate a type of persistence effect; the greater was last season's attendance for a home or visiting team, the greater will be the attendance at a particular match this season compared for a match with teams of lower previous season attendance. These impacts are then additionally interacted with dummy variables to represent whether the home team is playing in a different division from the previous season (because of promotion or relegation) to give *PROM*HOME ATTENDANCE LAST*, *PROM*AWAY ATTENDANCE LAST*, *REL*HOME ATTENDANCE LAST* and *REL*AWAY ATTENDANCE LAST*. The coefficient on the first interaction variable could be positive (promoted teams are now playing at a higher level) or negative (ticket prices may have increased). The coefficient on the second interaction variable is similarly potentially positive (promoted teams have some

[7] A problem with tobit estimation is that estimates are contaminated to the extent that clubs may bundle tickets so that access to the most attractive games is conditional on also buying places at less attractive fixtures. (Forrest

novelty appeal) or negative (promoted teams usually bring lower inherited support with them from the lower division from which they escaped). The predicted coefficients on the relegation interaction terms are likewise ambiguous. We also include promoted or relegated status directly as intercept dummy variables for home teams: *HOME PROM* and *HOME REL*.

Some football games generate larger attendance than others just because they involve local rivals. These games, known as 'derbies', are denoted by *RIVAL*. Their selection is somewhat subjective since short distance between teams is not a sufficient or even necessary condition to be included. We used knowledge of lower divisions to supplement the list of Division One derby matches used by Forrest, Simmons and Szymanski (2004).

Several empirical studies have found distance to be an important variable determining game attendance (Forrest and Simmons, 2002; Forrest, Simmons and Szymanski, 2004; Garcia and Rodriguez, 2002). Longer distances between teams implies lower attendance, *ceteris paribus*, due to higher travel costs. In line with earlier studies we use a quadratic specification with *DISTANCE* (in route miles from the Automobile Association) and *DISTANCE SQUARED*.

FORM could comprise several measures. We initially included home and away team points per game up to the match (*HOME POINTS, AWAY POINTS*) while *HOME FORM* is measured by number of points (three for win and one for draw) in the preceding five fixtures, home or away[8]. The choice of five is rather arbitrary but a smaller number would give undue weight to surprising results due to 'luck' while a larger number would imply, especially for the early part of a season, that form would be highly correlated with points per game.

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and Simmons, 2002).

[8] We decided not to carry over form from the previous season.

In addition we examined the league standings prior to each match to check whether the home team was in the promotion places at the time (***PROMOTION CONTENTION***). Matches involving one or more promotion contenders may well generate additional interest and support on the part of fans. *HOME CONTENDER* denotes that the home team was in the top six of Divisions One or Two or was in top seven of Division Three. This definition reflects the fact that the sixth place team in Divisions One and Two will qualify for the playoff competition to determine the final promotion place while from Division Three there are three automatically promoted teams and places three through to seven vie for the playoff promotion slot. *HOME*AWAY CONTENDER* denotes that both teams in a match are contenders for promotion. These promotion contention effects might well vary through the season, becoming stronger towards the end of the season as matches involving contenders take on greater significance. To test this hypothesis, we interact *HOME*CONTENDER* and *HOME*AWAY CONTENDER* with month dummies. Our prior is that contention effects will be larger, and more significant, in March and April/May compared to earlier in the season.[9]

OUTCOME UNCERTAINTY has been modelled across various dimensions (match, seasonal, championship domination). Promotion to higher status is the primary measure of success. Championship domination is not an issue here since the champion team, along with others at the head of the standings, is automatically promoted out of the division. Here, we confine attention to short-run match outcome uncertainty. The proposition that greater match outcome uncertainty raises attendance has been tested in several sports but with conflicting results (see Borland and Macdonald (2003) and Szymanski (2003) for surveys of the evidence). In part, this reflects the variety of measures chosen to proxy match outcome uncertainty. One approach uses *ex ante* match outcome probabilities derived from bookmaker

[9] We are grateful to a referee for urging us to pursue these time-of-season effects.

betting odds. This approach depends critically on absence of bias in betting markets. Forrest and Simmons (2002) modelled the betting market in the Football League for the 1997/98 season and found evidence of bias.[10] Conclusions on the role of outcome uncertainty were very sensitive to whether they used raw or bias-corrected odds in the attendance demand function.

An alternative procedure to model match outcome uncertainty is to take the differences in points per game between home and away teams and correct this for home advantage. Some correction is necessary since, in the English Football League, home teams win nearly twice as often as away teams. The probability of the home team winning is much greater than the probability of the away team winning when the two teams have similar abilities. A balanced contest will be one where a team low down in the standing is host to a team some way up the standings. Our measure of outcome uncertainty follows Forrest, Simmons and Buraimo (2004). It is the absolute value of: home advantage (measured in points per game) *plus* the home team's points per game in the current season *minus* the away team's points per game. The value of 'home advantage' is the difference between previous season's points per game won by *all* home teams and points per game achieved by *all* away teams.

The set of ***TELEVISION*** variables includes a set of dummy variables for own-team TV coverage by division and by season (*TV*). The impacts on own attendance from Champions League TV broadcasting of Football League matches, normally on Tuesday or Wednesday, are covered by *ITV CHAMPIONS LEAGUE* for games on ITV free-to-air terrestrial channels

[10] The principal source of bias appears to be some distortion of odds by bookmakers designed to take account of fan-bettor preferences.

and *ITV DIGITAL CHAMPIONS LEAGUE* for games broadcast on ITV's subscription channel[11].

The vector of ***SCHEDULE*** variables includes dummy variables for games played on public holidays (last Monday in August, Boxing Day (first weekday after Christmas), New Year's Day, Good Friday, Easter Monday and first Monday in May) denoted by *HOLIDAY*. Games played on Monday to Friday, excluding public holidays, are denoted by *WEEKDAY*.

The fixture schedule will sometimes bunch home games consecutively rather than in a home-away alternating sequence. Placing home games close together on consecutive weekends could reduce attendance and we try to capture this potential adverse effect by *WEEKEND*HOME LAST WEEKEND* and *WEEKEND*HOME NEXT WEEKEND*[12]. Pressure on both household budget and on available leisure time may mean that a fan is less likely to attend a weekend home game if this is scheduled close to either last or next weekend's home game. We investigate customer response to this situation, asking to what extent aggregate attendance suffers and which game in the sequence is the more affected. The midweek dummy variable is similarly interacted with scheduling terms to give the self-explanatory variables *MIDWEEK*HOME LAST WEEKEND*, *MIDWEEK*HOME NEXT WEEKEND, MIDWEEK*HOME LAST MIDWEEK* and *MIDWEEK*HOME NEXT MIDWEEK*. Once again, we predict negative impacts on attendance from these midweek interaction terms to illustrate the adverse consequences of fixture crowding. Note that the

[11] Selected matches from the domestic F.A Cup competition are also televised live on terrestrial TV (BBC), usually on Sunday afternoons, but in our sample there were very few Football League matches which clashed with the normal televised slots. This form of TV coverage is omitted from analysis.

[12] Baimbridge *et al* (1995), for English rugby league, and Baimbridge *et al.* (1996) for English Premier League football failed to find any significant adverse effects from midweek matches compared to weekend matches (aside from public holidays). In contrast, Carmichael *et al.* (1999) found a significantly negative impact on English rugby league from midweek games as opposed to weekend matches. Each of these studies was limited to single season cross sections and our much larger panel data set has greater power to discriminate between significant and insignificant scheduling effects.

scheduling variables relate purely to League fixtures and does not refer to location of league games vis-à-vis Cup matches.

The fixture calendar leaves space for international matches to be played on selected Saturdays. Matches involving England will usually be televised live. If a team has three or more players from its squad selected for these games then it can ask for its League fixture to be postponed. In practice, the whole Premier League schedule is postponed to make way for international matches but Football League clubs are free to retain or re-arrange their fixtures. Often, Football League clubs opt for re-arrangement by moving games to Friday evening or Sunday afternoon but some fixtures remain alongside international games on a Saturday afternoon, particularly in Division Three. Possible cannibalisation effects from England internationals are captured by *ENGLAND TV* interacted with Division dummies. *ENGLAND TV* is given the value one if a fixture takes place on the same day as an England match televised on a Saturday.

We include a set of month dummies for November, December, January, February, March and April-May combined (since the league season typically extends only a few days into May). Previous work finds that football games played towards the end of season attract higher crowds than games earlier in the season even after controlling for league position, form and promotion contention (Forrest and Simmons, 2002; Forrest, Simmons and Szymanski, 2004). Since some teams may have unusually large support relative to their Divisions, we looked for potential outliers. Teams identified as having particularly large support were Birmingham City, Hull City, Manchester City, Plymouth Argyle, Reading, Stoke City and Wolverhampton Wanderers. Dummy variables were inserted to represent these teams.

Our data base is organised as a panel with home teams as cross-sectional units and match number as the time variable. We have several possible estimation methods to select from. We could adopt a standard fixed effects specification with team specific intercepts and season dummies and estimate this as a pooled Ordinary Least Squares model. Alternatively, we could estimate a random effects model using either Generalised Least Squares (GLS) or Feasible Generalised Least Squares (FGLS).

There are two features of our dependent variable, log attendance, that inspire our choice of estimation method. First, the scale of attendance will vary considerably by team and by division. This opens up the possibility of heteroscedasticity in the residuals giving rise to inflated standard errors and invalid inference. Since we are concerned with inference on groups of variables, some correction for heteroscedasticity would appear warranted. Then standard errors would be robust to each team having a different variance of its disturbance term. The second econometric problem is that team attendance typically displays some persistence through the season. The team disturbances may then be autocorrelated.

An appropriate estimation method in our case is one which allows for the presence of AR(1) autocorrelation within panels plus cross-sectional correlation of errors and/or heterogeneity across panels. One such method is a Prais-Winsten regression model with panel corrected standard errors and common AR(1) autocorrelation parameter[13]. This method delivers consistent estimates where disturbances are heteroscedastic across panels and can be applied to unbalanced panels, as is the case here. Although FGLS would provide more efficient estimates of the model parameters, we reject it on the grounds that the estimates of standard errors are then conditional on the estimated disturbance covariance. Beck and Katz (1995)

[13] Estimated using xpcse in Stata 8.

show that FGLS estimates of standard errors are insufficiently conservative (too optimistic) compared to the Prais-Winsten regression model. We did generalise our treatment of autocorrelation further to estimate team-specific AR parameters but this made little substantive difference to our results.[14]

3. Empirical results

Table 2 displays our estimates from a parsimonious Prais-Winsten regression model with panel corrected standard errors. The R^2 is fairly high at 0.872, showing a good fit to the data. Comparing our results with both FGLS and OLS pooled regression models, we find that standard errors are somewhat higher in our preferred model so that our inferences become more conservative. The estimated *rho* is 0.56, which is indicative of the presence of autocorrelation. The missing cells indicate variables that were deleted through a general to specific specification search. Deleted variables all had coefficients with *p*-values of greater than 0.1.[15]

Control variables

The most striking deletion from Table 2 is that of *OUTCOME UNCERTAINTY* which failed to deliver a significant coefficient at 10% significance level, with or without divisional interaction. This finding of zero influence of match outcome uncertainty is in line with some recent matchday attendance demand studies (e.g., Owen and Weatherston (2004) for New Zealand Rugby Union). In addition to the empty cells in Table 2, variables for *AWAY FORM*, *TV 2000/01* and *TV 2001/02* were deleted. Amongst the month dummies, all months before February could be excluded on the same principle as above. From the remaining month dummies, attendance rises in each Division as the climax of the season is reached in

[14] Beck and Katz (1995) make a strong case for estimating a single AR parameter for all panels rather than panel-specific AR parameters.

April and May, when the crucial promotion, playoff and relegation positions are settled. In Divisions Two and Three, attendances can be ranked by month with those in April and May higher than in March which in turn has larger gates than in February.

From our list of potential outliers, we find significantly positive effects on attendance from *HULL*, *PLYMOUTH*, *READING* and *STOKE* whose unusually large support, relative to their divisions, was not captured elsewhere by our controls.

The other control variables reveal intuitively plausible impacts. In all divisions, a team with higher average home attendance last season, and which was neither promoted nor relegated, has greater attendance in a match this season than a team with lower mean home attendance last season, *ceteris paribus*. This shows an important role for habit persistence across seasons. The strength of these habit persistence effects is shown to decline as one moves down the Divisions, reflecting the greater degree of loyalty attached to the larger market teams located in Division One. Season ticket holders form a much larger proportion of home attendance in Division One compared to Division Three. In Division Three, the standard of football in the latter and fans are more likely to be lured by other leisure pursuits and less likely to commit to season tickets. Hence, Division Three crowds are more transient in character and less responsive to previous season's support in our model.

The influence of previous season's support is modified where teams play in a different division from a previous season. It appears that demoted teams 'keep' at least some part of their support from the higher division while promoted teams enjoy a boost to support through momentum.

[15] Results from the general specification are available from the authors on request.

If a home team in Division Two or Three meets two away teams in its schedule then, *ceteris paribus*, the visitor with the higher mean home attendance last season will help generate a larger gate; essentially, the away team with bigger support last season will either bring more visiting fans or will generate greater interest amongst the home support.

As expected, local derbies boost attendance. It is noticeable that the impact of *RIVAL*, even after controlling for distance, becomes stronger as divisional status is reduced so that the effect of local derbies for Division Three teams is four times as great as for Division One teams. Again, this may reflect that elasticities of attendance will be reduced in Division One because much of the attendance at each game is pre-committed by the purchase of season tickets.

It is well known that long distances are a deterrent to match attendances in football (Forrest and Simmons, 2002; Forrest, Simmons and Szymanski, 2004). In line with these studies we find that longer distance between teams deters attendance at a diminishing rate with relatively few observations (no greater than 15%) beyond the turning points for each division. Distance travelled for Division Three teams is on average higher than for other divisions and the longest journey is to be found there (Carlisle and Plymouth). To some extent Division Three tends to be occupied by small market teams outside conurbations (the minimum distance travelled was 13 miles in Division Three compared to three in Division One). Restructuring Divisions Two and Three by North and South as occurred in the Football League up to 1958 would have the advantage of reducing mean distance, lowering travel costs for fans and teams and would raise attendance levels. Given the positive effects of *RIVAL*, such restructuring would also raise the number of local ‘derbies’ and would generate further gains to attendance over and above those from lower travel costs.

Turning to the form variables, home teams with higher points per game and hence higher league standings make for more attractive fixtures than home teams with lower points per game. This impact is consistent and similar across divisions. Likewise, away teams with higher points per game also generate additional gates. Not surprisingly, the impact of home points per game is stronger than that of away teams for all Divisions. This reflects the stronger attention by home fans given to their team's performance rather than that of the opponent. Short-term variations in home form do matter for attendance in Divisions Two and Three, but not in Division One where fans are perhaps more loyal and less transient. Away team form appears to be irrelevant as a determinant of attendance. Away team quality matters for attendance via league rankings rather than recent form.

Home and away team standings also matter for attendance through contention for promotion. Generally, the impact of promotion contention is stronger towards the end of the season. In Division One, a home team that is contention for promotion obtains 5.9% extra attendance, *ceteris paribus*, in any month of the season with a total gain of 17.1% higher attendance in February, a 17.0% increase in March and a 17.1% increase in April or May. In April and May there is an extra boost to Division One home contender attendance of 6.8% if the away team is also in the promotion places. Hence, being in promotion contention gives a large increase in attendance and gate revenues for Division One teams. In Division Two, a home team promotion candidate generates extra support of 16.6% in March and 20.0% in April and May. If the visitor is also a promotion candidate, there is a boost to support of 15.1% in any month of the season, and a total gain in attendance of 23.1% in April and May. In Division Three, attendances rise by 9.9% for home promotion candidates, at any time in the season and there is a total gain in support of 22.2% for home promotion contenders in April and May.

Broadcasting

Having established plausibility of control variables, we can examine the influence of broadcasting on attendance in the Football League. A general adverse effect of broadcasting of a team's match on its own attendance is not apparent from our results. Indeed, the only significantly negative coefficient is in 1999/2000 for Division One (reduction in attendance of 5.6%). The lack of significant effects in Divisions Two and Three is a simple reflection of the very small numbers of games covered there[16].

In contrast to the limited impacts of broadcasting of own games, substantial losses in attendance of 21.4% and 15.8% were estimated, for Division Two and Three fixtures respectively, that were scheduled in competition with terrestrial ITV coverage of Champions League games involving British clubs (*ITV CHAMPIONS LEAGUE*). A smaller, but still statistically significant, loss of 5.8% was found for Divisions Three teams playing when Champions' League matches involving British clubs were televised by the subscription based ITV coverage on its digital platform (*ITV DIGITAL CHAMPIONS LEAGUE*)[17]. This smaller effect compared to the coefficients on *ITV CHAMPIONS LEAGUE* reflects low rates of household penetration for the digital subscription service.

These adverse impacts on gate attendance from Champions League broadcasts have been largely ignored both by sports economists and by industry specialists. Teams which are alleged to suffer attendance and revenue reductions from TV coverage of their own games are usually compensated. In English League football, BSkyB will pay both participants in a

[16] Live broadcasts of Division One games were typically on Friday evenings and Sunday afternoons over this period.

[17] The ITV subscription channel, ITV Sports, more commonly known as ITV Digital, was only operative during the 2001/02 season. With low rates of household penetration, financial losses led to termination of ITV Sports football coverage at the end of this season. In 2003/04, BSkyB successfully bid for joint coverage, with ITV, of

broadcast match a facility fee which easily outweighs any loss in gate revenue (Forrest *et al*. (2004)). But compensation is not available to Football League teams who face lower gate revenue from what is a negative externality from Champions League broadcasting. Our proposal is that the Football League should press for the Premier League to make some compensation for coverage of Champions League games to a fund to be distributed to Football League clubs according to estimated magnitude of loss of gate revenue[18]. In reaching a settlement on the size of payment, it should be borne in mind that, even without Champions League TV coverage, Football League clubs suffer reduced attendance and gate revenue from being effectively forced to play some games on midweek evenings. The presence of the Champions League competition imposes a further constraint on an already congested schedule.

Some indication of possible magnitude of compensation can be found by using our estimates to calculate gate revenue losses. Dobson and Goddard (2001) report average admission prices of £8.64 and £6.45 for Divisions Two and Three in the 1998/99 season just before our sample starts. We use these prices, mean attendance figures for midweek games reported in Table 1 and regression estimates from Table 2 to generate lower bound revenue losses shown in Table 3. A typical Division Two team has a revenue loss of £11,545, from a game scheduled alongside a Champions' League game televised by ITV. On average, a Division Three team incurs a loss of £3,925. These figures are conservative lower bound estimates since match ticket prices have risen, in all divisions, far more than the rate of consumer price inflation since 1999.[19] Table 3 also reports upper bound estimates allowing for ticket price inflation of 15 per cent per annum. We find that Division Two midweek games scheduled alongside ITV

Champions' League matches involving British teams. ITV's coverage is now split between two free-to-air channels, one with an analogue signal and the other on a digital platform.

[18] Since the broadcaster pays the full values of TV rights under a sealed-bid auction, it is appropriate that any transfer comes from the Premier League rather than the broadcaster.

Champions' League matches would merit £17,558 compensation per game while similarly scheduled Division Three would warrant a £5,969 fee. These numbers are small compared to broadcast revenues generated by Premier League clubs competing in the Champions' League but Football League clubs, especially those on the verge of bankruptcy, would benefit from financial relief via Champions' League cross-subsidy. If future developments in the FA Premier League involve a reduction in size of league, from 20 clubs to 18 or even 16, the gaps in revenue generation between Football League and Premier League would widen even further. It may well be that the impacts of Champions League telecasts on Football League gate attendance would increase. If so, there is potential for compensation payments to increase. Moreover, televised Champions' League coverage of British teams has expanded since 2002 with the new entry of BSkyB's satellite channel so the problem of compensation for Football League clubs has been magnified.[20]

Scheduling

For Divisions Two and Three, games played on public holidays attract higher attendance than those on ordinary weekends, *ceteris paribus*. These Divisions carry full fixture programmes for all available public holidays with the exception of the early May Bank Holiday and moving fixtures into this slot should raise attendance.

When England, and other UK national football teams, play international games Football League clubs normally react either by postponing fixtures or by rearranging them on the same weekend for Friday, Sunday or at a time on Saturday other than that of the England game.

[19] This also ignores net revenue from complementary goods such as catering and merchandising.
[20] A counter-argument, impossible to quantify here, is that televised coverage of competing competitions raises the profile of football as a whole and Football League clubs might benefit from this in the long-term, even though negative substitution effects may be pronounced in the short-term.

This rescheduling is found to adversely affect Division Three attendances on Saturdays (but not on Fridays or Sundays) with a substantial average reduction of 9.1%, *ceteris paribus*[21].

Overall, we find substantial evidence of adverse midweek scheduling effects. For Division One, midweek games attract lower attendance (6.4% less) regardless of the position of such games in the fixture list while Division Two clubs suffer a smaller, less precisely estimated, 2.8% loss of gate from midweek matches. Table 2 also shows several divisional impacts from particular categories of midweek scheduling, each statistically significant at 5%. The only category of midweek scheduling not associated with reduced attendance is that of games placed before another midweek home game in the following week. In general, the size of adverse effect from midweek scheduling depends on whether home games have been played last week or whether there are immediately upcoming fixtures.

Weekday leisure time is scarcer than weekend leisure. Travel from work and work activity will mean that many fans are less able to attend midweek games than weekend games. Faced with this greater scarcity of midweek leisure time, fans may have to decide which midweek games they can attend and will be less likely to attend if there is another midweek game next week or if they have just attended a weekend or midweek game last week. These effects are apparent in our results with gate reductions (over and above those associated with midweek scheduling *per se*) of 3.9%, 7.0% and 8.5%, respectively, for Division One, Two and Three teams hosting a midweek game preceded by a home game the weekend before. Furthermore, we estimate a gate reduction of 7.5% for Division Two midweek games preceded by a

[21] We only consider re-scheduling of fixtures to accommodate England matches and do not explicitly consider other nations within the United Kingdom (Northern Ireland, Scotland and Wales). However, these other national sides from the U.K tend to be involved in international fixtures on the same weekends as England. Rescheduling of Division Three matches may also warrant compensation from the English Football Association. Using the same methodology as for Champions' League compensation, our lower and upper bound estimates of fees to Division Three clubs are £2,260 and £3,438.

midweek game last week. For midweek games played prior to another home game on the upcoming weekend, there are large estimated crowd reductions of 9.9% and 13.8%, respectively, for Division Two and Three teams. These latter effects reveal a strong element of forward-looking behaviour in that the attendance reduction from a Division Two or Three midweek game with a Saturday home game forthcoming is higher compared to a midweek game placed after a prior Saturday home game. Given a fixed amount of midweek leisure time, less than for weekends, many fans prefer to enjoy Division Two or Three football on weekends rather than in midweek. The stronger response of attendance to scheduling of midweek home games just before a weekend home game suggests many fans prefer to save their scarce leisure time until the weekend.

Our estimates of adverse midweek scheduling effects are particularly notable for their increase in size as one moves down the division hierarchy from One to Three. Division Three clubs have smaller, less persistent and more transient fan base compared to Division One clubs. The latter will have support that is more robust in the face of re-scheduling of matches into weekdays. Clearly, given that some midweek games must be scheduled, League fixture controllers and clubs in Divisions Two and Three should seek to ensure that midweek home games are not scheduled close to each other or close to very recent or upcoming home weekend games.

Weekend home games that follow a home game the previous weekend also suffer from lower gates, although the reductions are not as great, proportionately, as for midweek scheduling. In Divisions One and Two the attendance reductions from the second of two consecutive weekend games are 3.7% and 4.0%, respectively. Weekend home games which precede another home game next weekend only generate statistically significant attendance reductions

in Division Two (4.7%). This suggests that when choosing which matches to attend out of a sequence of two consecutive weekend home games, fans of Division One teams tend to opt for the first of the two. Possibly this reflects a desire of fans to see *some* football at their favoured team. If they plan to attend the second of two consecutive games, there is the greater risk that, having ruled out attendance at the first game, competing home production and leisure pursuits will intrude upon time allocated to watching football on the second weekend. In contrast, Division Two teams suffer similar losses from each of two consecutive weekend home games.

It is clearly desirable to avoid placing home games on consecutive weekends. However, midweek scheduling is the larger problem for Football League clubs as the adverse impacts on attendance from crowded scheduling are somewhat greater than for congested weekend scheduling. This reflects the greater marginal valuation of leisure time on midweek evenings compared to Saturday afternoons.

4. Conclusions

We have applied a standard attendance demand model to the English Football League. Our control variables show that fans exhibit substantial habit persistence through seasons, that they respond to team performance, including points per game and recent form, and that they do not seem to respond to match uncertainty of outcome.

We have added to established work on demand modelling of team sports by highlighting impacts of fixture scheduling and television coverage of rival competitions. The Football League has to construct a fixture list which is constrained by external parameters. For example, there are fixed dates for Cup competitions, for Champions League games and for

England internationals. The conventional, and still most popular, slot of Saturday at 3 p.m. is not always available and clubs have to play games at times when leisure time is less readily available. Teams have to play some games on midweek evenings. Worse, teams may easily find themselves forced to play two or three home games close together e.g. midweek followed by or preceded by a Saturday fixture. Given increased competition for leisure time as the scope of leisure opportunities has widened, these constraints on scheduling have adverse implications for Football League club attendance and revenues.

Our results show that the adverse implications of fixture scheduling on gate attendance vary by Division, being less harmful, though still present, for Division One teams as these have (typically) larger fan base and a greater proportion of season ticket holders in their gate attendance. Division Two and Three teams are particularly sensitive to problems of midweek fixture congestion. Faced with fixture congestion and bunching of home games, consumers (fans) maximise utility over time depending on alternative leisure products and on time needed to undertake home production. Attending a football match is a highly time-intensive activity since game time is nearly two hours and travel time must be added. In this context, midweek scheduling of football matches has to recognise the relatively high marginal valuation of time on weekday evenings compared to weekend afternoons.

A further problem revealed by our results is that television coverage of the elite European Champions League represents real competition for English Football League clubs. Clubs in Divisions Two and Three suffer substantial losses in attendance at midweek games scheduled alongside televised Champions League games. We suggest that this is a form of negative externality which merits compensation to Football League clubs.

Figure 1a

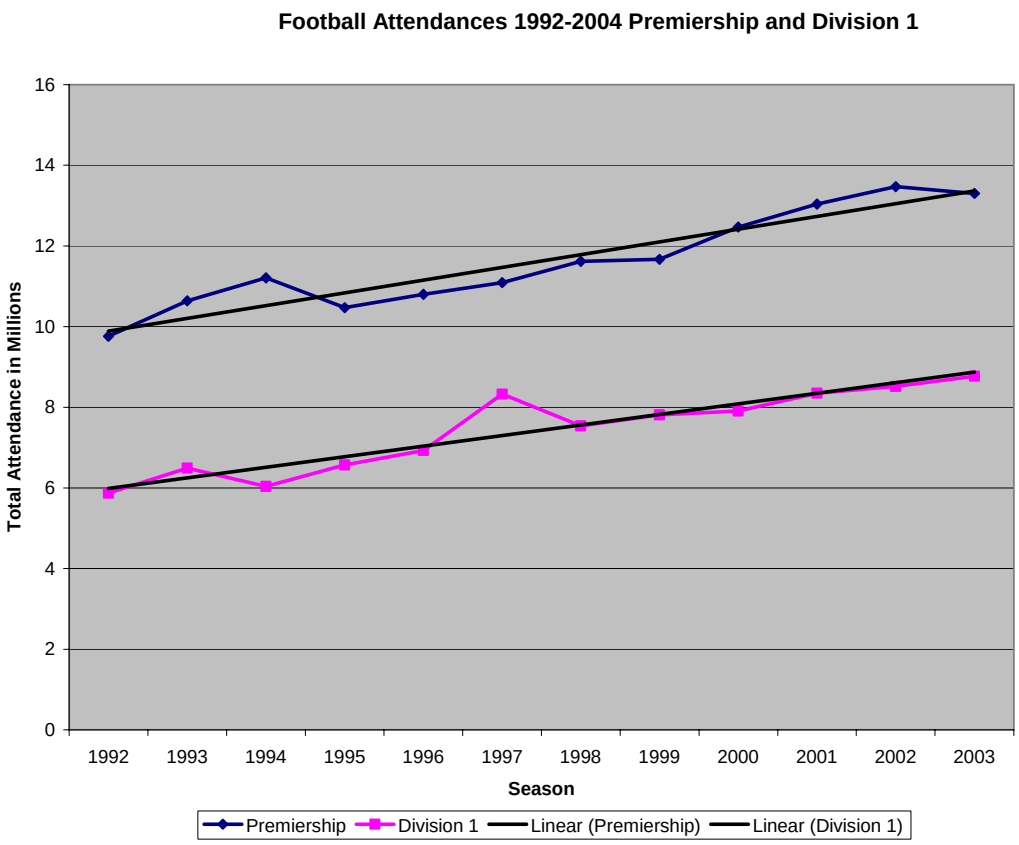

Figure 1b

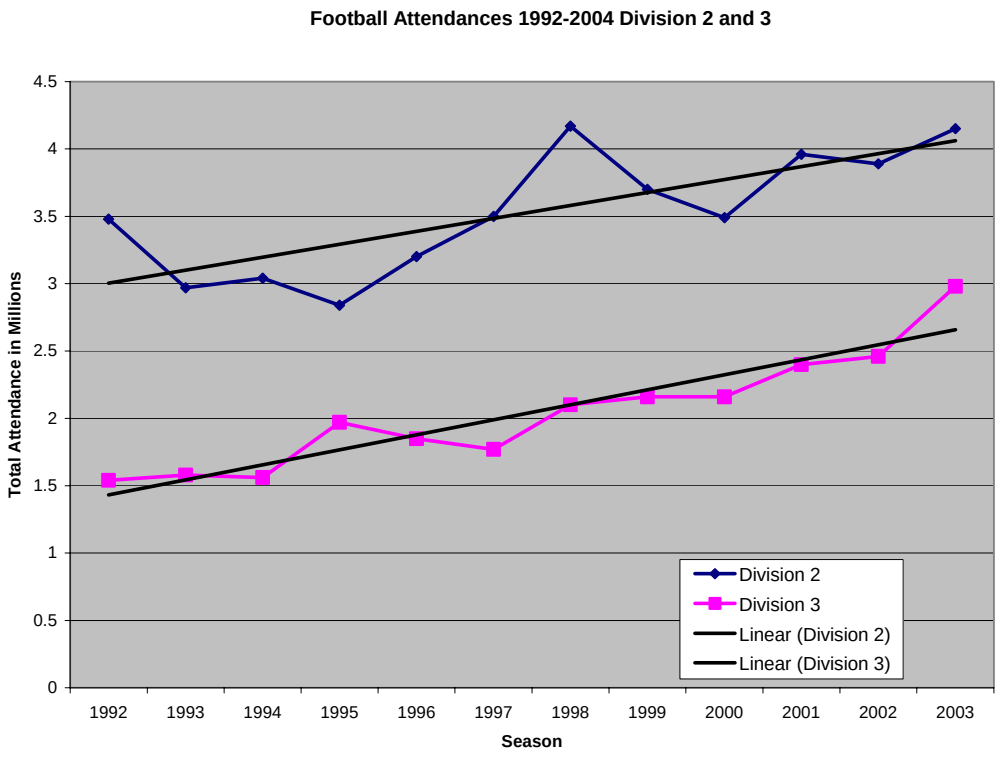

Table 1: Sample Football League Attendances 1999-2002

	Division One mean (s.d)	**Division Two mean (s.d)**	**Division Three mean (s.d)**
All games	14635 (6397)	6768 (3477)	4075 (1972)
April-May games	15365 (7012)	7358 (4143)	4609 (2357)
1999/2000	14176 (6606)	6733 (3354)	3929 (1707)
2000/01	14423 (5329)	6317 (3242)	3916 (1843)
2001/02	15304 (7087)	7253 (3756)	4381 (2288)
Distance > 200 miles	13540 (5941)	6602 (3346)	3922 (1820)
Weekend	14858 (6295)	7088 (3590)	4148 (2005)
Midweek	14077 (6619)	6244 (3218)	3851 (1854)
Champions League	14031 (6551)	5665 (2453)	3650 (1935)

Table 2

Football League attendances 1999/2002

Prais-Winsten regression results with panel corrected standard errors and correction for autocorrelation. Dependent variable is log attendance

Variable	Division 1 coefficient	Division 2 coefficient	Division 3 coefficient
SUPPORT			
Home attendance last season	0.220 (21.33)	0.093 (9.03)	0.053 (4.48)
Away attendance last season		0.028 (6.70)	0.021 (4.27)
Prom*Home attendance last	0.423 (9.23)	0.608 (5.17)	0.016 (2.37)
Prom*Away attendance last	0.003 (1.67)		
Rel*Home attendance last	1.304 (8.85)	0.781 (7.29)	0.958 (9.76)
Rel*Away attendance last	0.0038 (2.74)		
Rival	0.093 (3.79)	0.202 (6.49)	0.374 (9.28)
Distance	-0.0016 (5.11)	-0.0027 (7.66)	-0.0018 (6.85)
Distance squared	3.26E-06 (3.03)	6.41E-06 (5.28)	3.05E-06 (4.70)
FORM			
Home points	0.229 (6.75)	0.341 (9.50)	0.244 (5.58)
Away points	0.082 (6.93)	0.118 (9.11)	0.104 (7.31)
Home form		0.013 (4.35)	0.013 (4.20)
PROMOTION CONTENTION			
Home	0.059 (2.01)		0.099 (3.63)
Home & Away		0.034 (1.75)	
Home*February	0.072 (1.92)	0.151 (2.92)	
Home & Away*February		0.172 (3.50)	
Home*March	0.111 (2.73)	0.166 (4.33)	
Home*April-May		0.200 (4.21)	0.125 (2.76)

Home & Away*April-May	0.068 (1.77)	0.080 (1.67)	
TELEVISION			
TV 1999/2000	-0.056 (1.98)		
ITV Champions League		-0.214 (6.38)	-0.158 (4.50)
ITV Digital Champions League			-0.058 (2.00)
SCHEDULE			
Holiday		0.047 (1.86)	0.060 (2.30)
Midweek	-0.064 (5.17)	-0.028 (1.89)	
Midweek*Home last weekend	-0.039 (1.96)	-0.070 (3.10)	-0.086 (3.76)
Midweek*Home next weekend		-0.099 (3.93)	-0.138 (5.77)
Midweek*Home last midweek		-0.075 (3.24)	
Weekend*Home last weekend	-0.037 (2.30)	-0.040 (2.11)	
Weekend*Home next weekend		-0.047 (2.22)	
England TV			-0.091 (1.93)
OTHER DUMMIES			
February		0.051 (1.98)	0.091 (3.08)
March			0.113 (3.22)
April/May		0.058 (1.83)	0.145 (3.63)
Hull			0.654 (14.50)
Plymouth		0.474 (6.17)	
Reading		0.537 (11.41)	
Stoke	0.548 (9.78)		
Constant	7.077 (74.1)		
No. obs	4320		
Rho	0.556		
R squared	0.872		

Note: t statistics in parentheses. Model also contains dummies for promotion and relegation.

Table 3

Lower and upper bound estimates of match revenue losses to Football League clubs from Champions' League terrestrial ITV broadcasts, £

Division Two	Division Three
11,545 17,558	3,925 5,969

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