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Freedom of entry, market size and competitive outcome: Evidence from English soccer

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FREEDOM OF ENTRY, MARKET SIZE AND COMPETITIVE OUTCOME: EVIDENCE FROM ENGLISH SOCCER

by

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Abstract: the paper tests, in the context of an open sports league, whether greater success is achieved by clubs in markets with larger populations. The relationship is strong but, to a limited extent, mitigated by more clubs establishing in large markets.

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1. Market size in sports economics

Market size has been accorded central importance in the analysis of professional sports leagues. The two-team-league model of El-Hodiri and Quirk (1971), popularised in Quirk and Fort (1992) and still the framework for contemporary analysis, predicted that the larger market club would achieve a higher win-ratio. It had the incentive to hire more talent than the smaller club because greater success on the field could be more effectively converted to dollars where the customer base was bigger. In equilibrium, the superiority of the big club would be more marked, the wider the discrepancy in populations. Hence the perceived problem of competitive imbalance in sports leagues came to be identified in the economics literature with the dominance of big city clubs.

Fort and Quirk (1997) argued in favour of reform of US major league sport to encourage new entry into large markets. Currently, franchises confer territorial monopoly. Otherwise, multiple franchises would presumably emerge in the largest metropoles, as in open European soccer leagues. With the market divided between competing clubs there would be more chance of even competition in the pursuit of championships.

Here we aim to illuminate the debate by testing how closely playing success is linked to market size in practice. Further, we are able to test whether such a relationship exists in a long established open sports league that conforms to the European rather than American model of sport. This provides relevant evidence on how radically the breaking of territorial monopoly in America would in fact ameliorate competitive imbalance.

In the US, experience appears to be consistent with the notion that size matters (a lot). For example, Sandy et al. (2004), generalising across the four major team sports, remark that "teams that consistently win have been those with access to either the largest markets, revenue sources that are not shared with other teams, or heavily subsidized facilities" (p172). But despite such generalisations, there has been no direct systematic quantification of the relationship between market size and success in American sport. Impediments include that the number of clubs in each sport is small (about 30) relative to the requirements of econometric testing and that it is hard to compare market size across clubs. For example, Schmidt and Berri (2001) suggest that, in the attendance demand literature, "a common proxy for size of a team's market is the size of its metropolitan statistical area" (p158). They accordingly enter this in linear form in a baseball demand equation. But we regard this as a misspecification. If one club is located in an SMSA with twice the population of another, it cannot be considered as having double the market size. The bigger SMSA will cover a wider area and the mean travel cost for residents to reach the stadium will be higher, implying that the ticket demand curve will not pushed as much to the right as the population figures alone might suggest. SMSA population is therefore an inadequate proxy for market size.

2. Evidence from England

Our context for formal testing of the relationship between success and size is English soccer. This has three advantages. First, it has the world's largest professional league structure: with 92 clubs, there is an adequate number of observations for meaningful estimation of the slope of the relationship. Second, it is an appropriately challenging environment in which to test the size hypothesis because it is an open league: teams play in four hierarchical divisions (with the best and worst performing teams moving up or down a tier at the end of each season) and the bottom two of the 92 are replaced each year by the two clubs at the top of the structure of 'minor' (semi professional and amateur) leagues. Third, the richness of UK Census micro data and the availability of suitable GIS software permits precise measurement of both market size and overlap of markets between clubs.

In our regressions, the dependent variable is $POSITION_{it}$ which reflects the ranking of club *i* at the end of season *t,* taking the value 92 for the champion club of the top tier and the value one for the bottom team in the fourth tier.[2] Our data derive from seasons 1997-8 to 2003-4. We restrict analysis to three seasons either side of the 2001 Census so that population measures capturing the market size of each club are based on reasonably contemporary enumeration. Standard errors of coefficients are clustered on clubs because consecutive seasonal outcomes are not independent; for example, a club promoted to the top tier from *POSITION* 72 must finish in the range 73-92 the following year.

Using micro Census data for 175,000 enumeration districts, and manipulating them with the aid of stadia Ordnance Survey map references and the MapInfo software package, we constructed and measured the characteristics of two concentric rings, defined by radial distance 0-5 and 5-10 miles, around each stadium. According to data employed in Forrest et al. (2002), the bulk of attendance at soccer games originates

[2] An alternative measure used in some literature on English soccer is minus logit of league rank (-log(rank/(93 – rank)) which gives greater weight to rankings in the tails (Szymanski, 2000). Our results are robust to the use of this alternative measure. We present results from a linear ordering for greater ease of interpretation.

within 10 miles of the ground while the division of the catchment area into two ensures rough homogeneity of travel costs from each zone.

In *Model 1* (Table 1), we regress *POSITION* on (log) population (millions) in the inner/outer zones of a club's catchment area. Additional regressors are the proportion of the catchment area's population aged over 64 (seniors are more likely to suffer mobility restrictions that make attendance difficult) and the number of years since the club first joined the League (support may build up over time because interest is passed between generations). In this specification, only inner zone catchment area is significant though it is strongly so. The point estimate is that a 100,000 population increase from the mean (0.434m.) is associated with an improvement of 2.66 places in *POSITION*. The implication is that the size of community in which a club is located is a factor in determining club ranking, just as the two team model predicted. While it may of course be that we are not observing equilibrium in the study period, the theory appears to hold true even where there are less rigid barriers to entry in heavily populated areas than in American sport.

Does this mean that reducing entry barriers would not in fact weaken the size-success relationship and thereby improve competitive balance? Not necessarily. *Model 2* is more revealing in that it explicitly includes a measure of competition from neighbouring clubs. Again using MapInfo, we constructed a variable, *overlap*. Each club was given a ten mile radial catchment area. *Overlap* is the proportion of the catchment area shared with another club. Where there is more than one neighbouring club, these intersections of population are aggregated: *overlap* may then exceed one. Indeed it often does. Arsenal generated the highest value of *overlap*, 7.88, reflecting the extent to which clubs have found it worthwhile to enter the literally crowded London market.

Model 2 is more precisely determined than *Model 1* because of the inclusion of a measure of competition. Holding this and other variables constant, we now predict an increase in a club's performance when population increases in either inner or outer zones of the catchment area. Adding 100,000 population to the respective means boosts predicted club performance by 3.78 and 1.05 places respectively. These are larger impacts than in *Model 1* because we hold the degree of competition constant whereas in fact the number of clubs will be greater in densely populated areas. *Overlap* attracts a strong negative coefficient, signifying that competition indeed mitigates the advantage of population size. For example, suppose population in both inner and outer zones increases by 100,000 (from mean values) but another club exists in the same location as the subject club. All of the beneficial impact of the higher population is then cancelled out.

Model 2 demonstrates, then, that permitting freedom of entry to large population markets weakens the relationship between size and outcomes. But *Model 1* shows that there is insufficient response in the spatial distribution of clubs to eliminate the importance of market size altogether. Market size remains important across the League structure. Of course, in terms of the identity of the Champion team, market size appears decisive. In only one of the last ten seasons has a Champion emerged from outside the London and Manchester conurbations and that club benefited from substantial subsidy from a benefactor. A clue to why there is insufficient entry is found in the club age variable. Incumbent teams have an advantage over new entrants because fans are reluctant to change allegiance given that much of their utility derives from the feeling of identity with the club they follow. We would predict that, for example, entry into the New York baseball market would indeed weaken the resource base of the Yankees. But any entry would be limited by the difficulty of weaning fans away from their beloved team. Territorial monopoly power would not be eroded completely and deregulation would still leave big city teams with disproportionate resources and playing success

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Table 1: Regression Results

Dependent variable- *POSITION*

	Model 1		*Model 2*	
	coeff.	|t|	coeff.	|t|
log inner zone population	11.54	2.39	16.40	3.30
log outer zone population	1.35	0.49	7.63	2.43
proportion 65+	-106.60	1.23	-176.25	2.17
years of membership	0.26	4.10	0.20	3.07
overlap			-5.61	3.33
constant	55.74	4.19	94.64	7.27
R^2	.38		.43	

number of observations: 644

clusters: 98