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League Quality and Attendance: Evidence from a European Perspective*

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Context

- Are less fashionable soccer leagues in European soccer under supported?
  - Annual revenues generated by the 20 teams in the League of Ireland's top two tiers was estimated to be about £10 million in the 2014 season Vs £3.3 billion in English Premiership

- What influences attendance? Most research focused on prestigious leagues
  - See Borland & McDonald (2003); Garcia & Rodriques (2009) – for reviews

- Can we assess whether leagues are under or over supported?

Previous Research

- Rothenberg (1956); Neal (1964), suggest *differences* in 'quality' of rivals should not be too great to produce a successful product.
  - Highlights importance of competitive balance in sports (teams should not eliminate market competition)
- Early studies on demand for football focussed on price and income
  - Garcia & Rodrigues (2009), Borland & McDonald (2003), Simmons (1996), Bird (1982)
- Recent research on league attendance has highlighted the probability of a win
  - Hart, Hutton & Sharot (1975), Peel & Thomas (1988; 1992; 1996), Forrest & Simmons (2002)

Previous Research

- Influences on attendance:

- Probability of a win
  - Hart, Hutton & Sharot (1975), Peel & Thomas (1988; 1992; 1996), Forrest & Simmons (2002)

- Distance, weather and TV broadcast
  - Bird (1982), Bainbridge, Cameron & Dawson (1986), Iho & Heikilia (2008), Forrest & Simmons (2006), Forrest, Simmons & Szymanski (2004)

- Competitive imbalance (domination of league by a small number of clubs) – can adversely (inversely) affect attendance
  - Humphreys (2002), Buzzachi, Szymanski, & Valetti (2003), Reilly (2013)

Data

- Consists of a (unbalanced) panel of 48 top tier divisions drawn from 48 countries affiliated to the Union of European Football Association (UEFA) over 16 soccer seasons from 2000 to 2015

- The analysis exploits data averaged over this period

- The country provides the unit of observation

- The dependent variable is the natural logarithm of attendance

- Four explanatory variables: country population (market size); unemployment rate (economic activity), league quality (UEFA's league coefficient, and competitive balance of league (Herfindahl index)

Data

- Summary statistics:

Variable	Variable Description	Mean
ln(ATTEND)	The average log attendance in the country's top league.	8.1356 (1.2976)
ln(POP)	The average log of the population of the country.	15.7874 (1.3644)
UR	The average unemployment rate in the country.	10.1355 (6.0656)
COEF	The average UEFA coefficient for the country's league.	4.3235 (3.9679)
HICB	The average Hirfindahl index for the country's league.	1.1244 (0.0467)

Notes: The data are country averages over 16 years and the sample size is 48; standard deviations are reported in parentheses.

$$HI = \sum_{i=1}^{n} \text{points\_share}_i^2$$

- points_share$_i$ denotes the ith team's share of the total points won in a given season and n is the number of teams competing in the league

- The HI lies between 0 (competitive) and 1 (monopoly) – thus a rise in the index implies a rise in competitive *imbalance*

- In applying the index to sports leagues we standardise the HI for competitive balance

$$HICB = \frac{HI}{1/n}$$

Econometric Methodology

Between Estimator

- Econometric model:

  - $\text{Ln(ATTEND)}_i = \gamma_0 + \gamma_1 \text{UR}_i + \gamma_2 \text{ln(POP)}_i + \gamma_3 \text{HICB}_i + \gamma_4 \text{COEF}_i + \xi_i$

  - where $i = 1, \ldots 48$ and $\xi \sim (0, \sigma^2)$

EMPIRICAL RESULTS

Variables	OLS Estimates	OLS Estimates* (includes impulse dummies)
Constant	12.1743*** (3.5195)	12.3349*** (3.5195)
UR	−0.0229* (0.0123)	−0.0249* (0.0099)
Ln(POP)	0.2967*** (0.0819)	0.3179(*** (0.0648)
HICB	−8.1444*** (2.3310)	−8.4852*** (1.4000)
COEF	0.1544*** (0.0286)	0.1358*** (0.0230)
Adjusted-R^2	0.8469	0.9047
Standard Error of Regression	0.5078	0.4005
N	48	48
Diagnostic Tests:	Prob-values	Prob-values
Heteroscedasticity	0.2368	0.2642
Skewness	0.3635	0.5012
Kurtosis	0.0114	0.5113
Normality	0.0369	0.6318

EMPIRICAL RESULTS

- The point estimates are generally well determined - consistent with prior intuition.

- A country's population is found to exert a positive effect on average attendance

- Unemployment rate impacts negatively

- The estimated effect for the Herfindahl index confirms an inverse relationship between competitive balance and attendance
  - 1 point improvement in CB increases average attendance by 8.1%

- The playing standard of the league (UEFA coefficient) exhibits a positive effect
  - 1 point increase yields a 15.4% increase in average attendance

EMPIRICAL RESULTS

- The kurtosis and normality diagnostic tests suggest the presence of outliers (confirmed by a box plot of residuals)

- Two residuals feature as outliers
  - Scottish Premier League and Welsh Premier League

- This issue addressed with impulse dummies

Impulse Dummies:	
SCOTTISH PREMIER LEAGUE	1.3707*** (0.4801)
WELSH PREMIER LEAGUE	−1.6981*** (0.4125)
LEAGUE of IRELAND PREMIER DIVISION	−0.2077 (0.4106)

An Application to league of Ireland

- Advocates for the League of Ireland concerned that Irish soccer fans shirk from supporting Irish clubs in favour of mostly English ones

- Football Association of Ireland commissioned the Genesis Report (2005) to investigate why the league underperforms in terms of attendance

- Average attendance for premier division over last 16 years was about 1,750

- Genesis report suggested a minimum attendance of 3,120 by 2010 (never achieved: attendance about 50% of this target 2005-10)

An Application to league of Ireland

- Our estimates suggest that to meet this target
  - league quality would need to increase by 2.135 points,
  - and degree of competitive imbalance would have to fall by 0.03 points
- Ambitious??
  - Over the 16 years covered league of Ireland was 38th in UEFA ranking (never raked more than 33rd
  - To achieve target League of Ireland would have to improve ranking by 15 places to 23rd
  - Competitive Balance of league needs to be about 1.09 (rarely achieved by league over 16 years)
- Is Irish league under supported – No : impulse dummy insignificant

Concluding comments

- *This study used data from 48 European top flight soccer leagues over 16 recent seasons.*

- *We find evidence* that *competitive balance and league quality impact on league attendance*

- *The empirical approach permits an investigation of whether the League of Ireland fares less well than it should in terms of attendance. We find no persuasive evidence that the League of Ireland is under-supported.*

- *The Irish league operates in a challenging environment due to the nearness of alternative leagues (English/Scottish premierships) and competing sports (e.g. rugby and hurling)*