

Armchair Fans: Demand for Televised Football

Dr Babatunde Buraimo
ULMS370 Football Business

Why Study Television Audience Demand?

In elite leagues, TV audiences contribute more to revenue than stadium goers, e.g. since 2001, revenue from broadcasting has dominated revenue from matchday in the EPL.

In 2019-20, the EPL's revenue was €5.85bn of which 60% was from the broadcast market; matchday was only 13%

Therefore, understanding the preferences of TV audiences is highly relevant particularly on matters such as competitive balance

This understanding is also highly relevant to various stakeholders: broadcasters, advertisers, leagues, clubs, etc

Outline of Presentation

Some insights from the published literature

Motivation

The Data: (re-)defining TV audience ratings and other key variables

Model

Results

Concluding remarks

Insights into the Literature

Buraimo, Forrest & Simmons (2005) was the first paper to explore demand for TV audiences. Since then, there have been numerous follow-ups using the same approach

The proposed model was:

$$\log(\text{audience}) = f(\text{outcome uncertainty, player quality, match significance, controls})$$

A central tenant in the literature has been the uncertainty of outcome hypothesis, the notion that the closer the contest between the two teams, the greater the audience interest

Motivation

Revisit the uncertainty of outcome hypothesis

Demonstrate the core issues that drive consumer preferences for televised football

Offer insights to decision-takers looking to develop policies particularly with reference to competitive balance

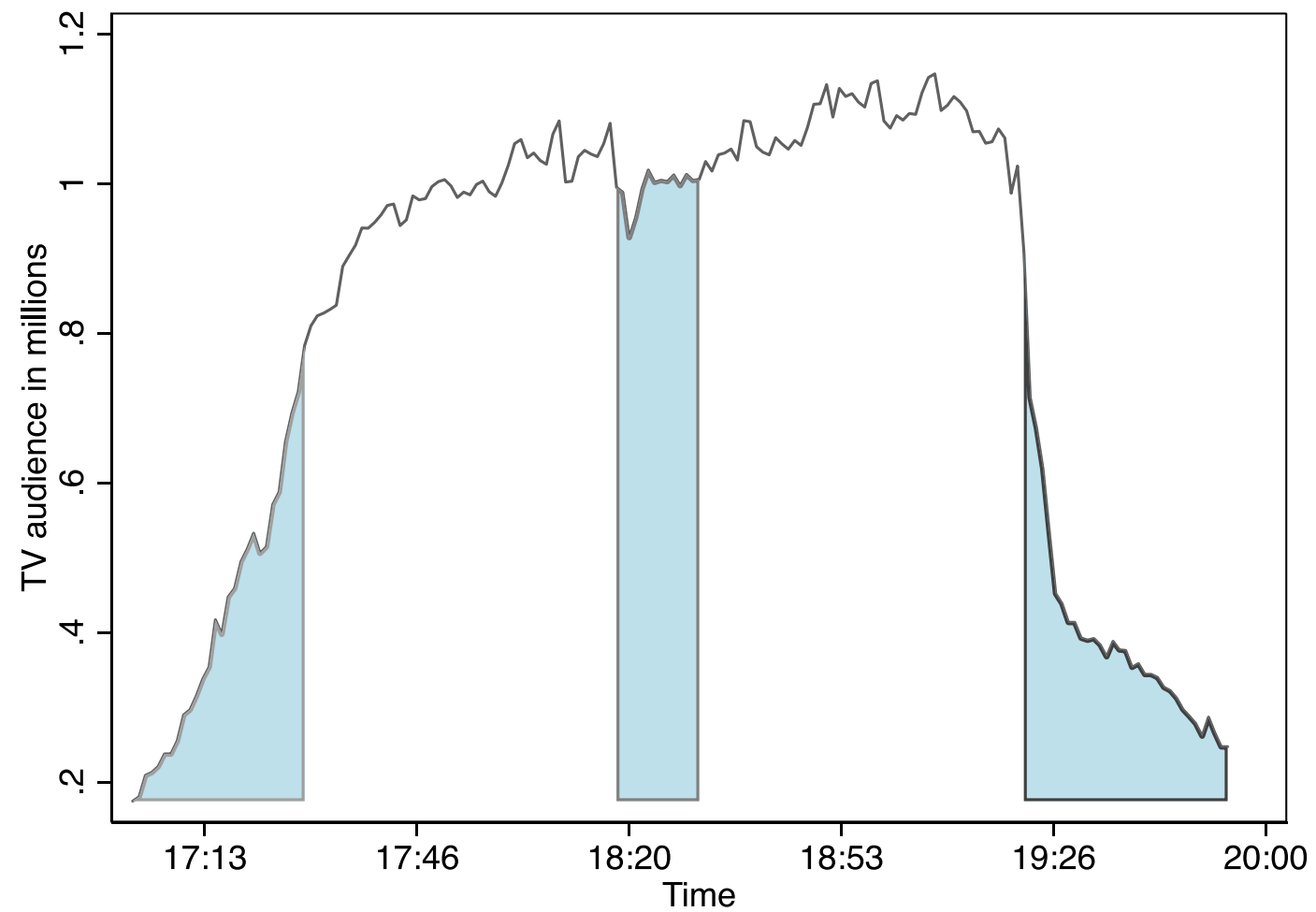
The Data: The Dependent Variable

Audience is the average audience per minute over the match rather than the programme; perhaps an important distinction to made for sports programming versus other form of programming

For each, we calculated the mean audience size for 110 minutes from kick-off (90 minutes game-time, 15 minutes for half-time; and 5 minutes of added time)

Match audience size is higher compared with programme audience size (1.06m versus 830,000) highlighting the effects of pre- and post-match duration

By the way, these audiences are for household viewers and excludes viewership in public spaces such as bars and pubs



Liverpool vs Arsenal on 4th March 2017. The programme started at 17h01 but the match kicked-off at 17h30 and ended at 19h21. The programme duly ended at 19h55.

The Data: Player Quality

The Data: Player Quality. Each player is assigned a rating and the average rating across the starting 22 is used.

Ratings are based on the a player's contribution to a a specified performance output: the change in team output with the player compared with the change in output without the player

Covariates include dummies for each players in the two teams.

The Data: Player Quality

The player ratings regressions uses expected points from the match as the output. The dependent variable is the change in expected points. Expected points offers better information than actual points

The dependent variable is the change in expected points during a segment of a match for which a player is on the field

The player ratings are derived using the plus-minus ratings commonly used in basketball and ice hockey

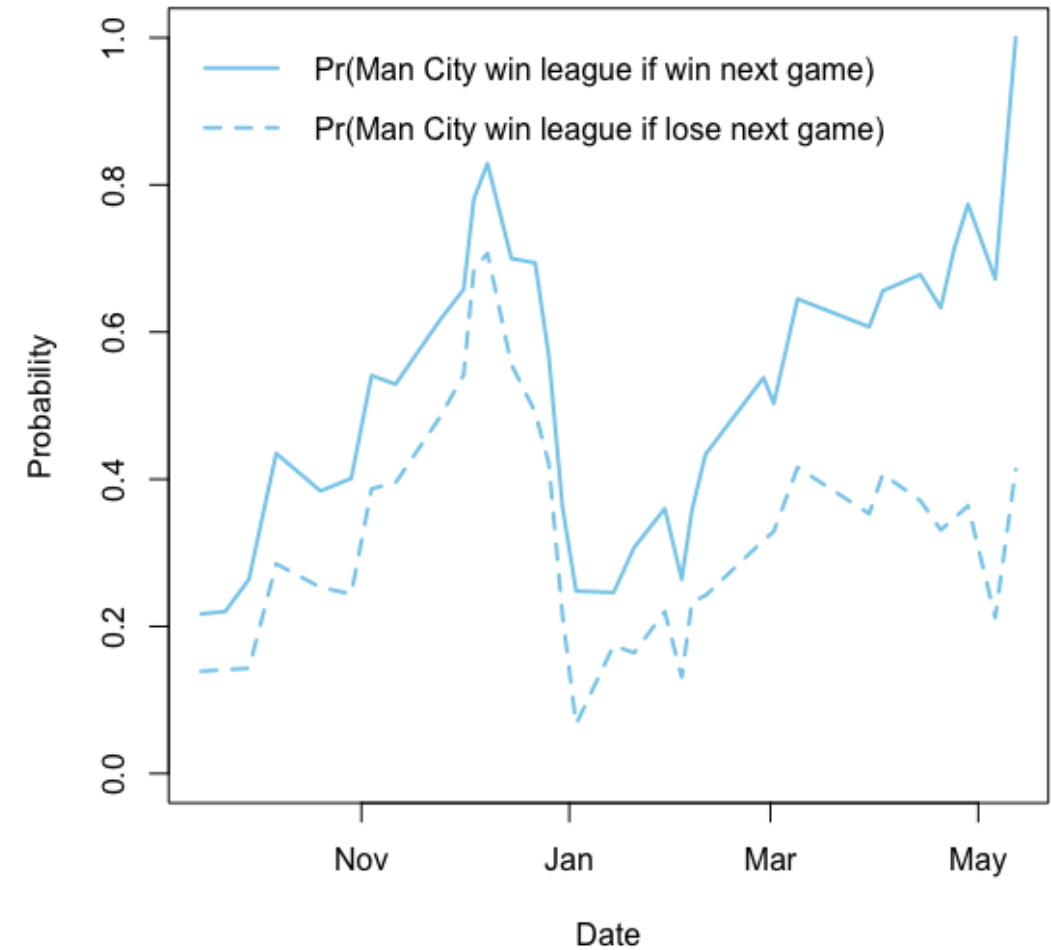
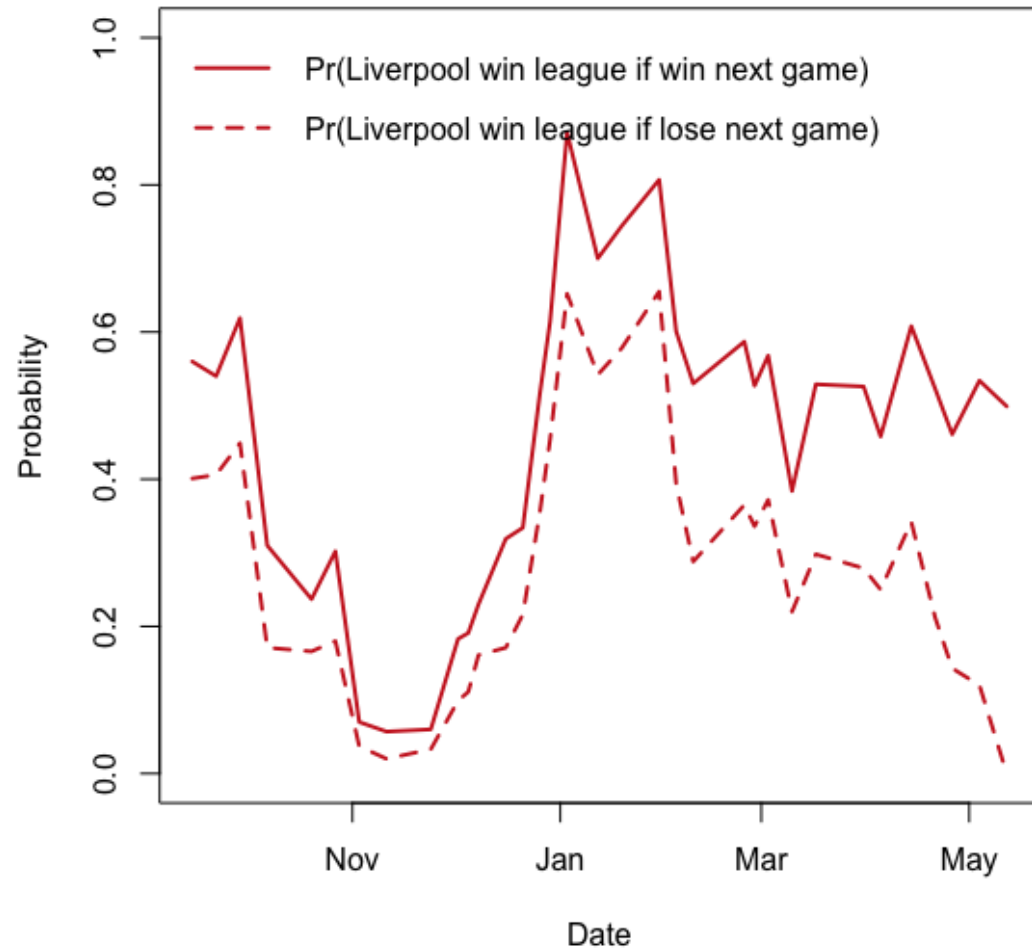
Average player rating, therefore changes according to which players are in the line-up

The Data: Match Significance

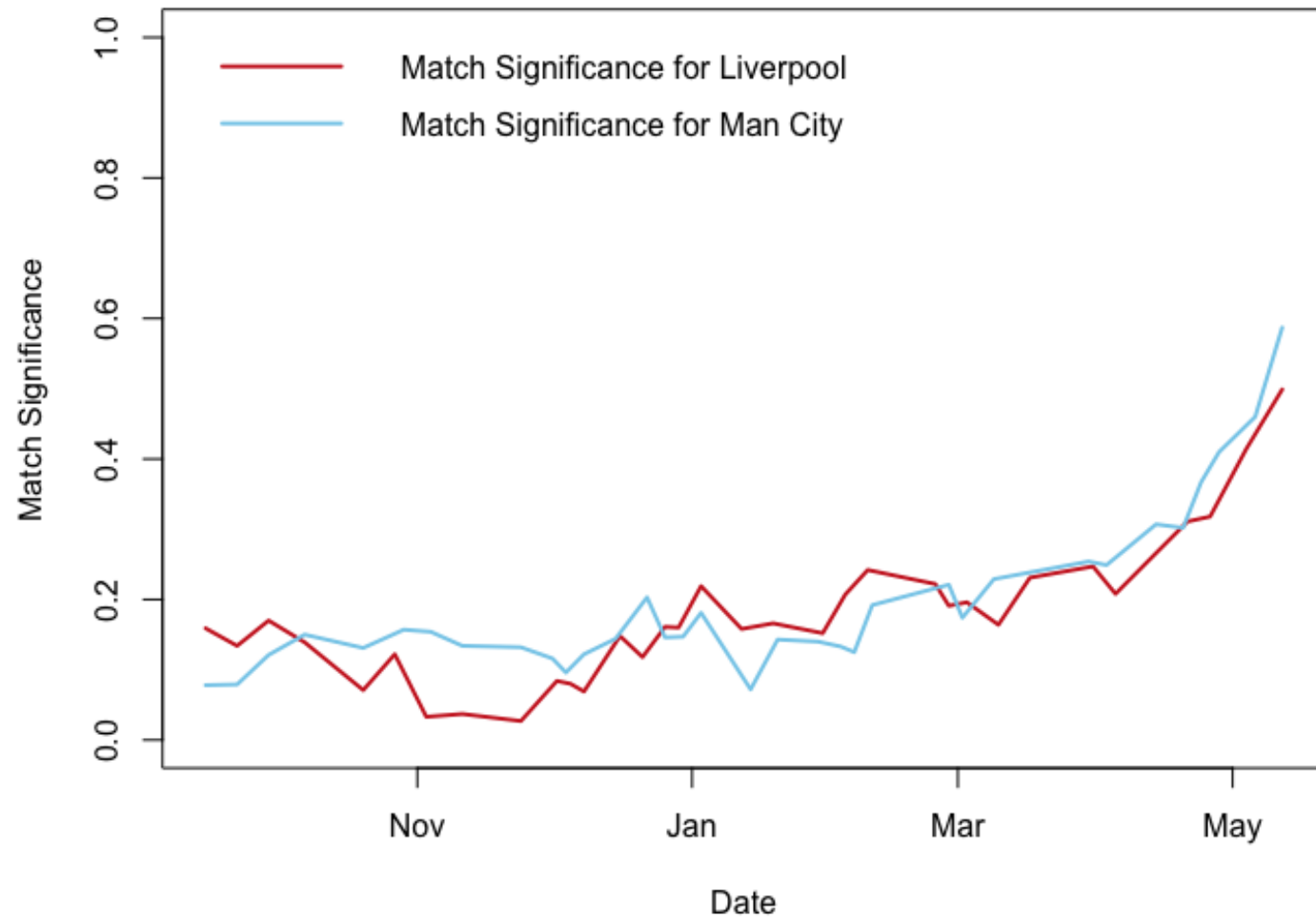
Match significance measures for the three prizes: championship; European qualification; and relegation. For example, match significance for the championship is:

$$\begin{aligned} &\Pr(\textit{home team wins championship}|\textit{home win}) - \Pr(\textit{home team wins championship}|\textit{home loss}) \\ &\quad + \\ &\Pr(\textit{away team wins championship}|\textit{away win}) - \Pr(\textit{away team wins championship}|\textit{away loss}) \end{aligned}$$

The probabilities are based on a forecasting model which uses a Poisson distribution to forecast goals/results; these are then used as inputs for simulating the remaining League fixtures and season end 100,000 time



Season 2018-19 saw a titanic battle between Manchester City and Liverpool. City faltered in the run-up to Christmas but Liverpool dropped points afterwards. Both clubs had long winning streaks to end the season. On the final day, Liverpool could still win the title but only if City failed in its final fixture.



Putting together this information, here are championship match significance measures for each club. Both teams played one another on January 3, 2019 and the significance of the match is evident four months from the end of the season.

Model

These new measures are used in the audience model:

$$\log(\text{audience}) = f(\text{outcome uncertainty, player quality, match significance, controls})$$

Controls: derby match dummy; time of week dummies (weekday/weekend/Christmas); season and month dummies; broadcaster dummies (Sky/BT); BT-season interaction; club dummies (ref: AFC Bournemouth)

Sample of 790 televised matches across 5½ seasons up to and including 2018-19

Mean audience match rating is 1.06m (from 181,199 to 2.67m),

Mean programme rating is 829,682, ranging (from 171,500 to 2.43m)

The Results:

match audience		
Covariates	coef.	t
average player rating	3.974***	(2.92)
outcome uncertainty	-0.037	(0.80)
derby match	0.050*	(1.83)
match significance (championship)	0.675***	(5.21)
match significance (European)	0.205*	(1.94)
match significance (relegation)	0.341***	(3.89)
Christmas	0.100***	(2.86)
weekday	0.016	(0.80)
October	0.017	(0.46)
November	0.106***	(3.06)
December	0.121***	(3.58)
January	0.196***	(5.63)
February	0.119***	(3.59)
March	0.053	(1.42)
April	0.047	(1.48)
May	-0.141***	(2.67)
BT	-0.781***	(16.12)
constant	13.416**	(156.93)
observations	790	
adj-R ²	0.717	
aic	32.936	
root MSE	0.239	

Results: Outcome Uncertainty

Match outcome uncertainty (absolute difference home team win probability and away team win probability) is not significant.

Experiments with splines to explore different regions across the range of values did not yield any relationship between outcome uncertainty and match TV audiences

The uncertainty of outcome hypothesis is rejected and the empirical evidence does not support the theory

Results: Quality of Players

Audience size proved sensitive to player quality on show in the match; the coefficient estimate is positive and strongly significant, however, the effect size was relatively modest. A one standard deviation improvement at the mean increases audience size by 4.8% or 51,000 viewers

The player quality metric varies during a season and captures when the quality of team varies from match to match even though player wages remained fixed throughout the season

Hence, we are able to distinguish how quality impacts audience size and separate out this from brand effects represented by club dummies

Results: Match Significance

Match significant variables are strongly significant in the case of championship and relegation significance. Also, match significance for European qualification variable is close to significance ($p=0.053$)

Expected change in audience for the most championship-significant fixture in our data set compared to a 'meaningless match' is +96%

Expected change in audience for the most relegation-significant fixture in our data set compared to a 'meaningless match' is +54%

This highlights the significance of end-of-season 'prizes' (leagues within a league) and the merits of clubs producing matches as part of league.

Results: Controls

For this period, there's a downward trend in audiences as captures by the season dummy variables.

Whilst club managers like to 'moan' about Christmas' demanding schedule, TV audiences have a strong preferences for games during this period. Expected Christmas audiences are 10% higher than weekday or weekend games outside the Christmas period

The BT dummy and its interaction with season highlights the broadcaster's junior position as a new entrant but highlights it increase market penetration

Results: Football Brands (Marginal Effects)

Assume a benchmark of two teams which are no different from our reference team AFC Bournemouth:

Team A versus Team B

What happens to the size of TV audience if either team is or both teams are replaced with teams that are significantly different from the reference team?

Results: Football Brands (Marginal Effects)

Manchester United	0.751	Queens Park Rangers	0.171
Liverpool	0.732	Leicester City	0.164
Arsenal	0.439	Southampton	0.158
Chelsea	0.383	West Ham United	0.145
Tottenham Hotspur	0.346	Sunderland	0.126
Manchester City	0.261	Crystal Palace	0.085
Everton	0.260	Watford	0.081
Newcastle United	0.251		

Recall the European Super Club project and the big six looking to be part of the league?

Concluding Remarks

The study has demonstrated the need to revisit the literature and establish better measures of key metrics

The theoretical support for match outcome uncertainty is rejected but there is strong empirical support for match significance for the end of season prizes

Policies to offer more 'prizes' may improve consumer interest as it is easier for league authorities to improve competitiveness for a range of prizes compared with improving competitiveness for 'the prize'. This idea is broadly supported by our findings on match significance