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Broadcasting Rights and Competitive Balance in European Soccer

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ABSTRACT

Collective sales of media rights are a common practice in sports leagues. Proponents of the system claim that it is a necessary tool for the maintenance of competitive balance. In this empirical paper, I argue that, in European soccer, collective sales do not increase competitive balance as compared to individual sales. Secondly, I demonstrate the negative effect of the UEFA Champions League on competitive balance. Finally, I illustrate the beneficial effect of a larger market size and a more equal distribution of drawing power. These results shed new light on antitrust and solidarity policies in the sports industry.

JEL Classification: L41, L43, L83

Keywords: competitive balance; broadcast rights; antitrust policy; soccer

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INTRODUCTION

European soccer has seen two major financial developments over the last decade. First, the Champions League has emerged as a supranational competition, and second, the value of media rights has risen immensely. In the 2007-2008 season, the Champions League distributed almost 600 million Euros in prize money among 32 participating clubs (UEFA figures). On top of this, participating clubs are able to generate extra income through ticket sales and they enjoy surplus media exposure. Meanwhile, revenues from TV rights sales have become (one of) the mainstay(s) of club finances in all European leagues. In the top leagues, they now far exceed 500 million Euros per season (see TV Sports Markets (2008) for further details). The potentially dramatic impact of these developments on the European soccer industry raises questions about such issues as the financial stability of clubs, player wages and competitive balance. These concerns have resulted in a lively debate among policymakers and people in the industry. A crucial issue in this debate is the manner in which TV rights are sold. Two rivaling sales systems have emerged: one individual, the other collective. Under the individual system, each club owns and sells the rights to its home games; under the collective system, the league sells all the rights as a package and subsequently distributes the revenues among the clubs. Opponents of the collective system point at the potentially negative welfare effects of allowing a cartel or monopolist to operate in the TV rights market. Forrest et al. (2004) provide econometric evidence that collective sales have indeed lead English clubs to restrict the number of televised matches below the competitive level. Clubs even selected an output level below that of a profit-maximizing monopolist. Forrest et al. (2004) identify this as the result of inefficient cartel behavior. On the other hand, the main argument to justify a collective system is that it may encourage solidarity and therefore better maintain the competitive balance within a league. The European Commission (2007) expresses the following view on the issue in its White Paper on Sports:

"The application of the competition provisions of the EC Treaty to the selling of media rights of sport events takes into account a number of specific characteristics in this area […] While joint selling of media rights raises competition concerns, the Commission has accepted it under certain conditions. Collective selling can be important for the redistribution of income and can thus be a tool for achieving greater solidarity within sports."

In other words, the Commission recognizes that collective selling might be an important tool for achieving solidarity and maintaining competitive balance, yet possibly at the expense of reduced competition. Cave and Crandall (2001) state this possible trade-off even more explicitly:

"Do restrictive agreements among a league's teams reflect a desire to increase the "competitive balance" of the league or are they simply a means to limit competition and reduce sports fans' choices?"

In this paper, I investigate exactly this question and, more generally, which other factors might impact on competitive balance. I obtain four main findings. First, I show that the choice for either the individual or the collective sales system has no significant impact on competitive balance. Second, I demonstrate that the UEFA Champions League has a detrimental effect on competitive balance in national competitions. Third, I reveal the important impact of the distribution of drawing power (i.e. the size of a club's local market) on competitive balance. To this end, I introduce an entirely new procedure for measuring drawing power. Finally, I present evidence that a larger domestic market enhances the seasonal competitive balance in a soccer league.

These findings shed new light on competition policy in respect of the sports industry. I find no support for the major argument in favor of collective sales of TV rights. This suggests that competition authorities should be very cautious when granting leagues

permission to monopolize TV rights. Other arguments are required to justify the practice. Second, the European soccer association, UEFA, might want to rethink its solidarity policy. While UEFA claims to safeguard solidarity between clubs and countries, its own Champions League is destroying competitive balance in member countries. A serious overhaul of the manner in which Champions League prize money is distributed may offer a solution. Finally, my results support the notion that smaller countries should strive to create leagues covering a larger market, such as a Scandinavian or a Benelux League. Such mergers would not only expand the target market of the league, but also improve the drawing power distribution. Therefore, there is potentially a twofold positive effect on competitive balance.

This article consists in seven sections. The first provides an overview of related literature on broadcasting rights sales and competitive balance, and it explains how the present findings contribute to that body of knowledge. The second section considers the different dimensions of competitive balance and how to measure them. The third introduces a new procedure for measuring the distribution of drawing power in a sports league. This is followed in section four by an elucidation of the theoretical framework and specification of the model applied. The fifth section presents the results of the cross-sectional regressions, while panel model results are provided in section six. The final section concludes and puts forward some policy implications.

1. RELATED LITERATURE

The link between competitive balance and revenue redistribution has been a prominent topic in the sports economics literature ever since the emergence of the field. Since the dramatic increase in broadcasting rights revenues, this specific source of club income has come to the attention of several authors. Cave and Crandall (2001) describe the legal and constitutional background of broadcast rights sales in United States and Europe. Important differences between both continents lead them to conclude that efficiency and competition problems are less severe in the United States than in Europe. A growing

literature examines the possibilities for achieving greater competitive balance through the redistribution of broadcasting rights revenue. Szymanski (2001) identifies performance-based redistribution of broadcasting rights as a powerful tool for enhancing competitive balance in a sports league. Falconieri et al. (2004) perform a social welfare analysis of both systems and identify conditions under which a collective system might be preferable. Késenne (2009) argues that decisions on sales mechanisms and the manner in which revenues are distributed should be considered separately. He succeeds in demonstrating that an individual sales mechanism followed by performance-based sharing is the best tool for preserving competitive balance in a league of profit-maximizing teams.

Apart from these theoretical contributions, some empirical research has been conducted into the link between competitive balance and broadcasting rights sales. Andreff and Bourg (2006) perform an empirical analysis of the big five soccer leagues[1], but struggle with a lack of financial data. This obliges them to restrict the analysis to six country-years. They conclude that the individual system leads to a worse competitive balance than the pooling system. Pfeiffer and Hovemann (2007) also produce a dataset on competitive balance in the big five leagues. They identify the Champions League and the distribution of broadcasting rights as factors that might disturb competitive balance.

I contribute to the aforementioned literature by presenting the first empirical analysis that looks beyond the big five soccer leagues. I construct a unique competitive balance dataset on thirty-four European leagues, covering a period of eight years, from 2001 to 2008. This allows me to use econometric tools that are not available for smaller sample sizes. The inclusion of smaller countries leads to greater variation in the participation in the UEFA Champions League, which is necessary for a clear analysis of its impact. On top of this, it enables me to analyze the effect of market size on competitive balance. My analysis not only has a wider focus than previous empirical work, it also yields different results. Contrary to earlier research, I find empirical support for the theoretical skepticism regarding collective sales of media rights in European soccer. Finally, this

paper also makes a methodological contribution by introducing a measure for drawing power distribution. To the best of my knowledge, no such measure has previously been proposed in the sports economics literature.

2. MEASURING COMPETITIVE BALANCE

Competitive balance in European soccer has various dimensions. Although other classifications are possible (see Groot, 2004), Szymanski (2003) distinguishes between three main categories: match, seasonal and championship competitive balance. Match level competitive balance refers to the uncertainty of outcome in a particular fixture during the season. Seasonal competitive balance relates to the amount of tension in the competition as a whole. A good seasonal competitive balance is found when the higher-ranked teams have a small points lead over the lower-ranked teams. Championship competitive balance concerns the degree of domination in a league over multiple seasons. If the same teams continuously achieve the top places at the end of the season, this type of competitive balance is low. I consider only seasonal and championship competitive balance.

Many authors have proposed measures of competitive balance. To gauge seasonal competitive balance, I rely on NAMSI, a measure first proposed by Goossens (2006). NAMSI compares the standard deviation of winning percentages (where a draw is worth half the points of a win) with the standard deviation under the worst possible competitive balance. As a measure, it offers three advantages. First, there is no need to introduce any kind of probability distribution for the win percentages. Second, one can easily establish what the worst competitive balance is, though the optimal competitive balance remains a topic that is often disputed. Finally, it allows comparison between leagues with a different number of teams.

To measure championship competitive balance, I follow Dobson and Goddard (2001), who apply a points system on the basis of top-three classifications. The championship

winner is awarded 3 points, the runner up 2 points and the third-placed team 1 point. By adding up these points over several seasons, I obtain a distribution of scores among teams in the league. Subsequently, I calculate a Gini coefficient on this cumulative distribution. If the number of teams in the league has changed during the sample period, I calculate Gini using the average number of teams over the seasons considered, controlling for the number of years in which the league consisted of this number of teams.

Another important issue in competitive balance measurement is how to deal with the presence of playoff systems. Under a playoff system, teams first play a qualifying stage. Only the best-placed teams advance to a second stage to decide the championship or, as the case may be, qualification for the European competitions. If a playoff system is applied, I calculate championship competitive balance on the basis of the playoff results. For seasonal competitive balance, this is impossible in most cases. Therefore, I make use of the results of the preliminary round to establish NAMSI. If the first stage of the competition is played in different groups, this approach is again not feasible. In such cases, winning percentages of the final stage are taken into account. The existence of a playoff system might lead to changes in the effort the top teams choose to put into the qualifying stage. More specifically, I expect them to settle for second-stage qualification and not to go all out for first place. Hence, they are assumed to put less effort into the qualifying stage and consequently to obtain a smaller points total. This will be controlled for in the regression results by the introduction of three dummy variables accounting for different types of playoff systems.

In order to explain the appropriateness of the sample period, it is necessary to consider recent developments in European soccer. The first development is the strong increase in TV rights revenues. As mentioned before, countries in my sample have reacted to this in two distinct ways. Up until 1996, all thirty-four countries applied a collective sales system. Between 1997 and 2001, four countries (Spain, Portugal, Greece and Italy)

deviated from this approach and moved towards an individual model[2]. All others remained faithful to the collective scheme. No further changes have occurred in broadcasting rights sales systems since 2001. The second development was the introduction of the Champions League. In the Champions League, reaching the group phase is essential, as this opens up the possibility of obtaining substantial amounts in prize money. Since its foundation in 1991, the league has seen various format changes. Currently, thirty-two teams participate in the group phase, with a maximum of four per country. These quotas were fixed in the 1999-2000 season and have not changed since. With these facts in mind, I chose for a sample period from 2001 onwards. Hence, there has been no change during the sample period in the number of participants in the Champions League and none of the countries considered was in a transitional period towards a new broadcasting rights sales model. In order to calculate NAMSI and Gini coefficients, I made use of data from the RSSSF archives.[3]

3. MEASURING DRAWING POWER DISTRIBUTION

In this section, I propose a new procedure for determining the distribution of drawing power in a league, as no suitable measure was found in the existing literature. This procedure uses attendance data, which were obtained from European Soccer statistics.[4] First I take the average attendance over the period 2001-2008 for each club, with only seasons spent in the top league being taken into account. By relying on averages over the entire period, I eliminate the effect of exceptionally good or bad seasons for any given club. The omission of any seasons played in a lower league is inspired by the fact that, during such seasons, the club in question will inevitably have played fixtures against commercially less interesting opponents. The inclusion of these seasons would therefore have held a danger of the club's drawing power being underestimated. Subsequently, I examine for each season which clubs participated in the top league. From the averages for these clubs, I calculate the standard deviation. As I wish to obtain a measure that allows comparison between leagues, I divide by the average attendance in the league over the sample period. Thus,

$$dp_{it} = \text{stdev}_{it}\,[\text{Club Average}^{01\text{-}08}(\text{attendance})] \,/\, \text{League Average}^{01\text{-}08}(\text{attendance})$$

It is clear that a lower value of this measure indicates a more equal distribution of drawing power. The procedure aims at avoiding endogeneity in two ways. First, season averages might be influenced by the amount of tension during the season (i.e. seasonal competitive balance). However, by taking averages over the entire period, I eliminate this individual seasonal effect. Second, a tenser competition over the entire period could still impact positively across averages. This is resolved by dividing by the league averages for the entire period.

This measure of drawing power can only change through promotion and relegation of clubs. This corresponds to reality, as in practice this is the most important factor impacting on drawing power in European soccer. A possible drawback of relying on attendance data is that this approach may slightly underestimate the variation in drawing power between clubs. After all, large clubs are more likely than smaller ones to experience capacity constraints, as they will tend to sell out more readily. Still, it seems unlikely that, over an eight-year period, a club would not increase its seating if demand was consistently in excess of stadium capacity. In a league where almost all clubs sell out their stadiums, I again find no bias towards the smaller clubs. In those cases, stadium capacity is probably a reasonable measure of local market size.

4. MODEL SPECIFICATION

In this section I identify factors that might explain variation in competitive balance between European leagues. First, the league format may influence competitive balance. Both NAMSI and Gini are constructed in a way as to allow comparison if leagues differ in terms of number of teams, so no additional corrections are required in this respect. As explained in section two, playoff systems may also impact on competitive balance. I introduce three dummy variables to take this into account: *po* takes value 1 if a country

had a conventional playoff system in a given season; *po2* takes value 1 if a country had a competition involving two groups; *efpo* takes value 1 if a conventional playoff system was in place to decide on qualification for the European cup competitions, but not on the title race.

Second, player labor market conditions might affect competitive balance. However, the 1996 Bosman Ruling confirmed free movement of players between European countries and clubs. This led to the abolition of restrictions on the number of foreign players (such as the "3-plus-2 rule") and at once marked the end of the traditional transfer system. Consequently, the player labor market is no longer a very discriminating factor among European leagues. In practice, all clubs operate on a single unified European player market.

Finally, I need to take due account of how club revenue distribution impacts on competitive balance. In this respect, four factors should be considered: the distribution of drawing power, TV rights management, Champions League participation and the size of the leagues' domestic markets. As explained in section three, a new procedure was developed for measuring drawing power distribution. This variable is called *dp* in the regression results. To introduce the effects of TV rights management, I use a dummy variable *br* that takes value 1 for the pooling model and 0 for the individual model. I also need to determine to what extent domestic competitions are affected by the Champions League. To this end I introduce the variable *clpr*. *Clpr* measures the total amount of prize money the teams of a league have received relative to the total amount that was distributed in the Champions League, starting from the group phase. Taking a relative number avoids the difficulty of having a possible trend in the data on total prize money. The relevant timeframe for this variable runs from 2000 to 2007, as it is the prize money earned in the previous season that determines financial power in the league. In order to calculate *clpr* I made use of data provided by UEFA. Finally, I need to take into account the size of the leagues' domestic markets. This is achieved by including the logarithm of

GDP *lgdp* of a given country (or region) into the regression analysis. I take the logarithm to allow for a nonlinear relationship between GDP and competitive balance. All GDP data are taken from the World Bank. In the case of the United Kingdom, these were split up using data from the Office for National Statistics.

A larger market size might be beneficial to competitive balance for at least three reasons. First, I expect to see a higher quality of play across the league, so large teams will enjoy far fewer walkover victories. A related issue is the more secure financial situation of the smaller clubs, which tend to be threatened with financial insolvency more often in smaller leagues. Finally, the effects of the Champions League might be less disturbing to competitive balance in a larger market, as budgets will generally be greater in such a league.

5. CROSS-SECTIONAL MODEL

In this section, I specify and estimate a cross-sectional model of competitive balance. For championship competitive balance this is the only possible model, as it has to be calculated for the entire sample period at once. For seasonal competitive balance I specify a panel data model in the next section.

[*insert table 1 about here*]

Table 1 gives an overview of the data employed in this model. For a complete overview of competitive balance data, I refer to the appendix. I have at my disposal only a limited number of observations (31 for *dp*). Further increasing the sample size, turned out to be infeasible for four reasons. Firstly, the attendance data for Israel, Ireland and Turkey were incomplete, so I choose not to calculate *dp* using them. Secondly, some leagues were split up during the sample period (e.g. Serbia and Montenegro) and were consequently dropped from the sample. Thirdly, I choose not to include leagues of a lower than premier league level, even though I have data for some of these leagues. In secondary leagues clubs compete for promotion, instead of a title or participation in European competitions. Furthermore, they can never be influenced by Champions League prize money and broadcast right revenues are far less significant. These features make

them poorly comparable to the premier leagues. Finally, I have not included leagues that serve an exceptionally small market (e.g. Liechtenstein, Iceland,…), as they are in most cases not employing professional players. Considering these criteria, no other European soccer leagues remain that could be added to the sample. Since the sample size is limited, the usual caveats apply and therefore I choose to limit the number of explanatory variables in the cross-section analysis. I introduce only one variable for playoffs, which takes value 1 if any kind of championship playoff system was in place from 2001 to 2008. All other variables take their average value over the sample period.

The equations I estimate are then given by:

(1) $Gini_i = \beta_0 + \beta_1\, br_i + \beta_2\, dp_i + \beta_3\, lgdp_i + \beta_4\, cl_i + \beta_5\, po_i + u_i$

(2) $NAMSI_i = \beta_0 + \beta_1\, br_i + \beta_2\, dp_i + \beta_3\, lgdp_i + \beta_4\, cl_i + \beta_5\, po_i + u_i$

Table 2 depicts the OLS estimation results for the cross-sectional regressions, with the heteroskedasticity robust standard error estimates provided in parentheses. I find no significant violations of OLS conditions in the data. Seasonal competitive balance is explained better than championship competitive balance, as the R-squared shows. As far as the individual coefficients are concerned, I find them all to be significant at one of the three significance levels, except for *po* and *br*. This implies that the presence of a playoff system does not impact on competitive balance. More importantly, however, I also find that the manner in which broadcasting rights are sold has no effect on competitive balance. The UEFA Champions League has a significant detrimental effect on competitive balance, as its positive coefficient in both equations indicates. On the other hand, it turns out to be beneficial for seasonal competitive balance to have a larger domestic market, since I find *lgdp* to have a significant impact and negative sign. For championship competitive balance this effect is however less important, as is indicated by the insignificant coefficient of *lgdp.* Finally, I find that leagues that have a less equal drawing

power distribution display worse competitive balance. Again, this is an expected result and it supports my measure of drawing power. The fact that I have no coefficients exhibiting an unexpected sign is a further indication of the validity of these results.

[*insert table 2 about here*]

6. PANEL DATA MODEL

In this section, I estimate a panel data model for seasonal competitive balance (measured by NAMSI). Table 3 provides an overview of the panel dataset. As explained in the previous sections, I have at my disposal a balanced panel of thirty-one cross sections over a period of eight years. Using this dataset I conduct a regression analysis of the following model:

(3) $$NAMSI_{it} = \beta_0 + \gamma_i + \beta_1\, br_{it} + \beta_2\, dp_{it} + \beta_3\, lgdp_{it} + \beta_4\, cl_{it} + \beta_5\, po_{it} + \beta_6\, po2_{it} + \beta_7\, efpo_{it} + u_{it}$$

At this point I include all variables mentioned in section 4, as the number of observations for *dp* has risen to 248 and thus allows for this step to be taken.

[*insert table 3 about here*]

When estimating a panel model, I must control for unobserved heterogeneity between cross sections (variable γ_i in (3)). To this end, I estimate the model using the within and first-difference estimators. An F-test on the joint significance of the estimated fixed effects unequivocally confirms the presence of unobserved heterogeneity. Consequently, pooled OLS estimation is inconsistent. I therefore apply fixed or random effects estimators. A necessary condition for these estimators to be consistent is strict exogeneity between the independent variables and the individual effects. In order to test for this, I introduced the lead of the explanatory variables in the within estimator model and the level observations in the differences model. As I found none of the coefficients of the lead or level observations to be significant, I assume the strict exogeneity condition to have been met.

The use of a traditional fixed-effects procedure, either with first differencing or within estimators, does not allow me to determine a coefficient for *br*. Since this is my main variable of interest, I rely on the alternative estimation procedure introduced by Hausman and Taylor (1981) and subsequently adapted by Amemiya and MaCurdy (1986). Table 4 gives the estimation results for three procedures, the within estimator, the procedure by Amemiya and MaCurdy (1986) and the random effects estimator with robust standard errors. In the Amemiya-MaCurdy procedure, I took *lgdp* and *clpr* as the possibly endogenous variables. I find more coefficients to be significant and a higher R-squared when moving from fixed effects to Amemiya-MaCurdy and random effects. This comes as no surprise, as these procedures are more efficient. In general the estimated coefficients appear to be similar over all estimation procedures. This is confirmed more formally by the Hausman test statistic, as presented in table 5. Both the difference between fixed effects and random effects and that between fixed effects and Amemiya-MaCurdy are found not to be systematic. Therefore, preference is given to the random effects estimator, as this is the more efficient procedure.

[*insert table 4 about here*]

Looking at the random effects estimation results in table 4, I find that they largely confirm the results obtained with the cross-sectional model. Again, I find the impact of pooling broadcasting rights to be insignificant. The beneficial effect of a larger domestic market is confirmed by the negative coefficient of *lgdp*. Champions League participation is shown to be detrimental to competitive balance, as its positive coefficient is significant at the 5-percent level. I again find that a more unequal distribution of drawing power worsens competitive balance. The only important difference with the cross-sectional model is that I find confirmation of the hypothesis that a championship playoff increases competitive balance in the preliminary round, as indicated by the significantly negative coefficient of *po*. The two other playoff variables remain insignificant.

[*insert table 5 about here*]

7. CONCLUSIONS, FUTURE RESEARCH AND POLICY RECOMMENDATIONS

In this paper I applied an empirical approach to analyze factors impacting on seasonal and championship competitive balance in European soccer. I first constructed a dataset on competitive balance covering thirty-four leagues over an eight-year period. Subsequently I introduced a new procedure to measure the distribution of drawing power in a sports league. Using these data, I first found that the choice for either a collective or an individual sales mechanism for media rights has no significant impact on competitive balance. Secondly, I found evidence of the detrimental effect of Champions League participation on competitive balance. A third observation was that the leagues with larger domestic markets and a more equal distribution of drawing power show higher levels of competitive balance.

These results have important policy implications for the sports industry. First, they do not offer support for one of the major arguments in favor of collective sales of broadcasting rights. This should inspire caution in competition authorities when granting leagues permission to monopolize TV rights. Other arguments are required to justify collective sales from a social welfare point of view. Secondly, UEFA should reconsider the way it organizes the Champions League. If UEFA wants to enhance solidarity and competitive balance in the soccer industry, distributing immense amounts among only the richest clubs would seem a rather counterproductive policy option. A third policy recommendation on the basis of my analysis is that expanding the markets of individual leagues through mergers might lead to an improved seasonal competitive balance in the merged league, as compared to the constituting national leagues.

The empirical exercise performed in this paper raises important questions and creates numerous opportunities for future research. One such question is why collective sales and redistributing revenues of broadcasting rights have not aided competitive balance in

European Soccer. Késenne (2009) sheds some theoretical light on this issue, though – as he himself concedes - a lot of work remains to be done. A crucial issue in this discussion is, in my view, the nature of the distribution schemes adopted by collectively selling leagues. On the other hand, it is necessary to examine whether other arguments in favor of collective sales can justify the practice. A welfare economic analysis, such as performed by Falconieri et al. (2004), seems to be the way forward in addressing this topic. A final question is whether the results obtained in this paper also apply to other sports leagues, such as the North American major leagues.

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APPENDIX

Competitive balance and drawing power distribution in thirty-four European soccer leagues

	Country	NAMSI	GINI	dp
1	Austria	0.368	0.433	0.377
2	Belarus	0.566	0.720	0.289
3	Belgium	0.474	0.826	0.667
4	Bulgaria	0.640	0.796	0.482
5	Croatia	0.502	0.670	0.578
6	Cyprus	0.635	0.732	0.826
7	Czech Republic	0.419	0.737	0.336
8	Denmark	0.460	0.708	0.715
9	England	0.460	0.838	0.353
10	Finland	0.459	0.623	0.323
11	France	0.339	0.739	0.562
12	Germany	0.401	0.762	0.419
13	Greece	0.570	0.836	0.937
14	Hungary	0.470	0.658	0.407
15	Ireland	0.455	0.559	NA
16	Israel	0.429	0.576	NA
17	Italy	0.464	0.798	0.650
18	Latvia	0.753	0.631	0.563
19	Lithuania	0.621	0.630	0.610
20	Luxembourg	0.564	0.633	0.638
21	Netherlands	0.519	0.845	0.699
22	Norway	0.386	0.497	0.513
23	Poland	0.481	0.715	0.511
24	Portugal	0.462	0.824	1.104
25	Romania	0.425	0.799	0.531
26	Russia	0.424	0.747	0.406

27 Scotland	0.570	0.764	1.134
28 Slovakia	0.406	0.520	0.327
29 Slovenia	0.419	0.559	0.496
30 Spain	0.363	0.788	0.604
31 Sweden	0.396	0.554	0.426
32 Switzerland	0.429	0.558	0.674
33 Turkey	0.454	0.819	NA
34 Ukraine	0.552	0.815	0.525

TABLE 1: Cross-sectional dataset summary

Variable	Observations	Mean	Stdev	Min	Max
Gini	34	0.697	0.114	0. 433	0. 845
NAMSI	34	0.480	0.092	0.339	0.753
Clpr	34	0.029	0.053	0	0.180
Dp	31	0.570	0.211	0.289	1.134
Br	34	0.882	0.327	0	1
Po	34	0.382	0.493	0	1
Lgdp	33	25.455	1.499	23.070	28.302

TABLE 2: Estimation results for cross-sectional model (robust std. errors in parentheses)

Variable	Gini	NAMSI
c	1.115***	1.733***
	(0.460)	(0.317)
br	0.030	0.059
	(0.043)	(0.050)
dp	0.232***	0.190***
	(0.075)	(0.052)
lgdp	-0.023	-0.056***
	(0.020)	(0.012)
clpr	1.235**	0.777**
	(0.503)	(0.323)
po	-0.066	0.001
	(0.045)	(0.027)
R^2	0.404	0.571
obs.	31	31

* significant at 0.1 level ** significant at 0.05 level *** significant at 0.01 level

TABLE 3: Panel dataset summary

Variable	Observations	Mean	Stdev	Min	Max
NAMSI	272	0.480	0.110	0.271	0.869
br	272	0.882	0.323	0	1
clpr	272	0.029	0.053	0	0.237
Dp	253	0.573	0.208	0.265	1.152
po	272	0.107	0.309	0	1
efpo	272	0.015	0.121	0	1
po2	272	0.007	0.086	0	1
lgdp	264	25.450	1.486	22.782	28.357

TABLE 4: Panel data model results

Variable	Fixed Effects	Amemiya - MaCurdy	Random Effects
c	1.525	1.434***	1.566***
	(1.033)	(0.369)	(0.269)
br	-	0.064	0.059
	-	(0.050)	(0.038)
dp	0.336**	0.228***	0.223***
	(0.144)	(0.065)	(0.065)
lgdp (end)	-0.049	-0.045***	-0.050***
	(0.040)	(0.014)	(0.010)
clpr (end)	0.170	0.435*	0.474**
	(0.324)	(0.264)	(0.231)
po	-0.034*	-0.035*	-0.036**
	(0.019)	(0.018)	(0.016)
po2	0.019	0.014	0.013
	(0.049)	(0.047)	(0.021)
efpo	-0.009	-0.007	-0.005
	(0.039)	(0.037)	(0.022)
overall R^2	0.341	0.411	0.417
obs.	248	248	248

* significant at 0.1 level ** significant at 0.05 level *** significant at 0.01 level

TABLE 5: Hausman test results

Hausman test	Am-MC vs. FE	FE vs. RE
Chi squared (6)	3.29	2.35
Prob > Chi squared	0.772	0.885

NOTES

1 The big five leagues are the five dominant soccer leagues in Europe, i.e. England, France, Germany, Italy and Spain.

[2] Spanish competition authorities forced soccer clubs to sell their rights individually from 1997 onwards. In Portugal the competition council ended collective bargaining between the league and broker firm Olivedesportos on TV rights for summaries in 1997. This marked the definitive introduction of an individual system. Since then, however, SportTV, a private pay-tv channel, has succeeded in obtaining a monopoly position by buying TV rights from all premier league clubs. The Italian league adopted an individual selling system, following the passing of a law by the Italian Parliament on March 29, 1999. Law 2725/1999, also voted in 1999, established that Greek clubs are the sole owners of the broadcasting rights to their home games. As in Italy, this law resulted in the introduction of an individual sales mechanism. This system came into effect after the last collective agreement expired in 2001. Recently the Greek and Italian leagues have made efforts to return to a collective sales mechanism.

[3] The RSSSF is the Rec. Sport. Soccer Statistics Foundation. More information on this organisation and the full archives can be found at http://www.rsssf.org.

[4] These data are retrievable online at http://www.european-football-statistics.co.uk