

Hooliganism and demand for football in Italy: Attendance and counter-violence policy evaluation

Raul Caruso

Marco di Domizio

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Raul Caruso, Catholic University of the Sacred Heart
Marco di Domizio, University of Teramo

Abstract

This paper investigates the effect of counter-violence measures, adopted by Italian Government in 2007, on Italian Serie A gate attendance. Starting from the evidence of a negative trend in the average stadium presences, experienced by Italian football since the first 80s, an econometric analysis is proposed to investigate short period determinants of tickets sale at single match level. In the light of the potential detrimental role of football violence, we focus on recent counter-hooliganism policies. These measures, grounded on a 'fidelity card', were designed to keep out the violent part of committed fans in favour of the uncommitted. According to our econometric investigation the expected substitution effect failed, and the 'fidelity card' strategy did not turn to be successful if evaluated on the average attendance perspective.

Keywords: Hooliganism, Stadium attendance, Italian Serie A, Demand for football

Jel codes: D12, K42, L83.

Introduction

This paper analyse the relationships between hooliganism, counter-violence policies and stadium attendance in Italian *Serie A*. Football is the most followed sport in Italy, and if considered in terms of fans, active footballers, TV audience, and spin-off revenues, Italian professional football seems to be healthy.¹ The numbers relating to Italian football's economic performance, social importance and active participation are impressive. More than 1.1 millions of active footballers are engaged in about 570,000 official matches. Between the ages of 8 and 12 years, one boy out of four plays football in one of the 14,451 clubs affiliated to the Italian Football Federation (FGCI). The aggregate value of the professional football in Italy (2,660 mln/€ in 2011/12)

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¹ On Italian organization of professional soccer see Baroncelli and Caruso (2011).

is the 14% of the European aggregate production, and more than 80% is produced by *Serie A*.² Moreover, the business around football has increased exponentially since the early 90s, when private media corporations started to broadcast football matches for the first time ever.

In spite of such success, if we take into consideration the figures of stadium attendance, an opposite scenario seems to take shape. After an increase of about 25% and 4% in the 70s and 80s, gate average attendance in *Serie A* reduced in the following two decades by 7% and 22%, respectively.³ The negative trend of stadium attendance translated into a declining percentage of stadium occupation and decreased gate revenues whereas leagues in other European countries showed an opposite trend.⁴ As pointed out by Di Domizio (2007) several factors may have contributed to this phenomenon: structural inadequacy of old stadiums; competing TV coverage; loss of credibility because of match-fixing and betting scandals.⁵ In addition, football is often perceived to be associated with a violent and risky environment because of hooliganism.

Violent behaviour in sport environments is not a modern phenomenon [see Dunning (1999)]. In particular, football-related violence does fit well with the idea of a multi-shaped definition of sport as expounded in Caruso (2008, 2011, p.456): «*a joint indivisible good, which is produced and consumed by different agents at a certain place and time. It can have multiple shapes. In fact, it is a combination of: (i) a market good, (ii) a relational good and (iii) an expression of threat, power and coercion*». ⁶ As a consequence it is possible to interpret hooliganism into a framework of rational behaviour. This is also done in order to identify the optimal counter strategy of government and policies.⁷

Our paper investigates the relationships between hooliganism, related counter strategies and stadium attendance. On one hand, we are able to measure the impact of the perceived risk on stadium attendance. On the other hand, we are also able to investigate the impact of counter-hooliganism policies on stadium attendance from season 2007/08 to 2011/12. The paper is structured as follows: in the next section we present a long-run overview on stadium attendance in Italy and a brief outline of the Italian strategies against football violence in the last two decades. Section two describes data and empirical strategy. Section three discusses the results and section four concludes the paper.

² See Report Calcio 2012 and 2013 published by Federazione Italiana Giuoco Calcio (FIGC) available on line at www.figc.it (April 2013).

³ For seasonal aggregate data on stadium attendance see Almanacco del Calcio Panini and www.stadiapostcards.it.

⁴ On economic performances and financial differences between European and Italian top clubs see Deloitte (2013).

⁵ On economics of match-fixing see Caruso (2009).

⁶ Such a definition extends that presented in Downward and Riordan (2007) and builds on Boulding (1973/1978).

⁷ See Poutvaara and Priks (2009), Marie (2011), Leeson, Smith and Snow (2012).

1. Facts on Italian stadium attendance and hooligan violence

Stadium attendance in Italy is surprisingly low compared with the relevance that football retains in Italian socio-economic context. To confirm, Figure 1 shows time series data on the average attendance for Italian professional top divisions (*Serie A* and *B*) from season 1962/63 to 2011/12. Table 1 displays the main features of aggregate data.

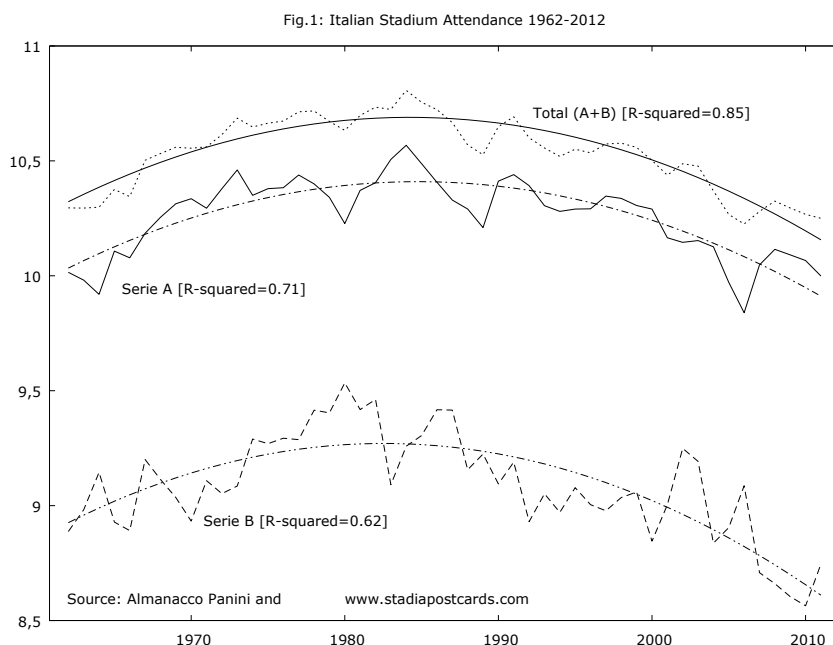


Table 1. Italian stadium attendance - descriptive statistics

<i>Average Attendance</i>	<i>Obs.</i>	<i>Avg</i>	<i>Min</i>	<i>Max</i>	<i>Std. Errors</i>
<i>Total (A + B)</i>	50	37,914	27,592 (2006/07)	49,363 (1984/85)	5,875.7
<i>Serie A</i>	50	28,845	18,756 (2006/07)	38,871 (1984/85)	4,594.6
<i>Serie B</i>	50	9,069	5,241 (2010/11)	13,822 (1980/81)	2,015.5

Apart from peculiar situations, often associated with market size effect of relegations of big teams,⁸ both series present a reversed U-shaped trend with a peak around the middle 80s.

Di Domizio (2007) argues that the decrease in stadium attendance is the consequence of hooliganism as well as the loss of credibility of football organizations. Concentrating the analysis on occasional fans (average attendance net of seasonal ticket holders), the author moves back the turning point of the series from 1984/85 (the peak with almost 50,000 tickets sold) to the season 1979/80, usually known as the «*black year of Italian football*». Two events occurred: first, the death of a fan (Vincenzo

⁸ This is the case for season 1979/80 and 2005/06 when A.C. MILAN, S.S. LAZIO and JUVENTUS F.C. were relegated in *Serie B* by law because of match fixing and referees corruption episodes.

Paparelli hit by a rocket shoot before the derby AS ROMA-SS LAZIO) on 28th October 1979 at the Olympic Stadium of Rome; second, the match fixing scandal involving famous players, managers and owners of top teams who ended up to be relegated in lower divisions.⁹

There are several explanations justifying the non instantaneous reversion of the aggregate attendance precisely in the season 1979/80, and its appearance few years later. As known, in the first 80s, a number of changes occurred in *Serie A*, holding back the attendance from a sudden decline: *a*) the access of quotas of foreign players; *b*) the enthusiasm generated by the success of Italian national team at the World Cup 1982; *c*) the comeback of AS ROMA among the top teams in *Serie A* so challenging the undisputed supremacy of JUVENTUS FC.

All these events concealed the begin of the decline in stadium attendance been effective from season 1979/1980. As emerged in previous empirical investigations, a number of problems arise looking for long run determinants of stadium attendance, difficulties associated to the variables specification (especially for tickets prices), habit persistence and serial correlation.¹⁰ In addition, in the last three decades, the football scenario has experienced structural changes, both at European and Italian level: in TV rights regime and broadcasting,¹¹ in players' mobility because of Bosman ruling, in scoring system, in match schedule, in number of team roster. In Italy the «revolution» took place over a vulnerable system, whose organization is often perceived as inadequate, corrupted and infiltrated by violent actors. Therefore, the declining trend of total attendance could be ascribed largely to such deviant behaviours and in particular to the hooliganism question. In this regard, although the events of season 1979/80 shocked the public opinion, the hooliganism phenomenon did not decrease over time, because of the lack of effective policy measures. During the 80s and 90s a number of violent episodes led the government to implement the first special laws in the 1989. In fact, the Law 13th December 1989 was not effective in limiting the violent attitude of hooligan groups as well as the subsequent law interventions in 1993 (Law 205), 2003 (Decree 24th February n.28 and Law 88), 2005 (Law 17th August n.168 and Law 17th October n.210).

Moreover, in the 1999, after the death of four supporters of US SALERNITANA in a train fire, the government had created the National

⁹ Some players of SS LAZIO, for example, were arrested at the end of the match played in Pescara on 23th March 1980 leaving the stadium with handcuffs [Tavella (2006)].

¹⁰ For empirical investigation on stadium attendance in the long period see Bird (1982), Jennett (1984), Borland (1987), Simmons (1996). See *Section B* in Downward and Dawson (2000). On the link between tickets sold and ancillary prices see Coates and Humphreys (2007).

¹¹ On the role of broadcasts and on the presumed cannibalization of TV on stadium live attendance see Baimbridge, Cameron and Dawson (1996), Campbell and Williams (1997), Garcia and Rodriguez (2002), Tonazzi (2003), Forrest, Simmons and Szymanski (2004), Buraimo (2008), Allan and Roy (2008), Di Domizio (2012).

Observatory of Sports Events (Osservatorio Nazionale delle Manifestazioni Sportive) to analyse and counter hooliganism phenomenon.¹²

However, a final turning point was in February 2007 because of the death of the policeman Filippo Raciti, at the Sicilian derby between CALCIO CATANIA and US PALERMO. This event forced the Italian government to introduce sharper counter-measures in order to ban violence from Italian stadiums. The Decree n.8 of 8th February 2007 was centred on: *i*) closed doors for unlawful stadiums; *ii*) prohibition of cumulative tickets selling for away team fans; *iii*) increased punishment for violent fans; *iv*) introduction of penalties for clubs supporting fans organizations involved in violent episodes. A crucial role was assigned to the National Observatory of Sports Events (from now on the Observatory). It was instituted in 1999 by the State Police in order to collect information about violent phenomena and to profile the risk for public order in sports events. In football competitions, the operative role of the Observatory is to rate a risky code to each match and to suggest restrictions to supporters' attendance in match participation, particularly for away team fans. Since 2008 (Decree 15th August) the Observatory activity was supported by the Committee for the Analysis and Safety of Sports Events (from now on the Committee) which has the power to introduce restrictions whose intensity depends on the risky code assigned by the Observatory. The restrictions can be classified by deterrence strength and listed as follows: *a*) no spectators admittance; *b*) admittance restricted to seasonal ticket holders; *c*) closing of away team fans stadium area; *d*) tickets selling limited to the home team area; *e*) no cumulative tickets selling.

Together with rules introducing selling/entry restrictions, the Law 41 (art. 8, comma 4) encouraged clubs to pursue agreements with fans in order to promote the sports culture values of non violence and peaceful coexistence. This opportunity was formalized by the introduction of the *fidelity fan card* project, approved in May 2008. The fidelity card is a badge which recognizes punctually identity and police records of committed football fans and organized supporters groups members. It became compulsory in the season 2010/11 for seasonal ticket subscription, but it met soon strong oppositions, particularly because of the (supposed) profiling process and for its business scheme (Garraffa, 2011). The supreme court of administrative affairs, namely the State Council, outlawed the compulsory association between the fidelity card and a revolving card released by a commercial bank.¹³ In what follows, we study the effect of such counter-violence measures on stadium attendance in Italian *Serie A*.

2. Data and empirical strategy

In this section we analyse Italian stadium attendance for the period 2007/8 – 2011/12. Particularly we concentrate on the effect of counter-violence

¹² On antiviolence measures profiled by Italian governments in the last years see Garraffa (2010a, 2010b).

¹³ See Council State sentence, Section VI, n. 5364 of 7th December 2011, available on www.altalex.com (June 2012).

measures adopted by Law 41, with a special focus on the introduction of the fidelity fan card project. The econometric investigation is performed at single match level using a data panel of about 50,000 observations on *Serie A* matches. Despite the matches played in *Serie A* in the period under investigation (380 matches for five seasons) being 1,900, our sample has been reduced to 1227, because of *a*) missing matches due to relegations in *Serie B*;¹⁴ *b*) the aversion of some team in providing official data on their own home attendance; *c*) their patent inconsistency. The panel is then composed by 289 cross section units with a variable time length from two up to five years.¹⁵

The dependent variable is *Game Tickets* sold; it seizes the number of casual fans attending the match. Each variable observed could be indicated with a subscript, $h-a, t$, where h and a stand for the home and away team respectively, and t indicates the season. We prefer *Game Tickets* rather than total attendance for two reasons: 1) to highlight the effect of independent variables on uncommitted or casual fans; 2) because the government strategy against violence influenced the number of seasonal tickets binding the fidelity fan card subscription to seasonal ticket holders.¹⁶ This also suggests the inclusion of *Seasonal Tickets* among the explanatory variables, in order to identify the potential increase in the sale of *Game Tickets* caused just by a reduction in the seasonal subscribers.¹⁷

The independent variables may be classified into five groups.¹⁸ The first includes economics variables: the annual average employment rate in the home team catchment area (*Home Team Employment Rate* – at the province level) as a proxy for its economic scenario.¹⁹ Given the variety of results obtained by the literature on football demand estimation, we are not able to formulate an unidirectional expectation of the income effect on single match attendance. The second variable is a proxy for ticket prices. The ticket price identification is a fundamental and disputed issue in econometric

¹⁴ Teams observed are: ATALANTA BC, BOLOGNA FC*, CAGLIARI CALCIO, CALCIO CATANIA, AC CHIEVO VERONA*, ACF FIORENTINA, GENOA FC, INTERNAZIONALE FCM, JUVENTUS FC, SS LAZIO, MILAN AC, SSC NAPOLI, US PALERMO, PARMA FC*, AS ROMA, UC SAMPDORIA*, AC SIENA* and UDINESE CALCIO; *indicates teams relegated in *Serie B* in one season.

¹⁵ Missing data refers to the home matches played by CAGLIARI CALCIO; the club does not provide official data on single match attendance. Other data are not included in the panel because of several matches were played without crowd or with sole seasonal ticket holders; other data are clearly off beam (for some matches total attendance reported is less than seasonal tickets sold), and in this case the associated match was excluded from the sample.

¹⁶ As known, the seasonal ticket subscription was largely boycotted by the organized fans because of the fidelity fan card combination.

¹⁷ Data on single match attendance are available at www.stadiapostcards.com in section «archivi» (September, 2012). Note that our investigation supposes that all seasonal ticket holders attend matches, since data are not able to seize the number of seasonal ticket holders standing at home.

¹⁸ For details about attendance estimation, see Dobson and Goddard (2001) and Downward and Dawson (2000).

¹⁹ On the use of labour indicators in the soccer demand estimation see Borland (1987), Borland and Lye (1992), Dobson and Goddard (1996), Falter and Pérignon (2000).

investigations on football attendance.²⁰ Bird (1982), Dobson and Goddard (1992), Forrest, Simmons and Feehan (2002), Garcia and Rodriguez (2002), Villa, Molina and Fried (2011) used the minimum admittance price, at single club level, respectively for the British and Spanish contexts.²¹ Avgerinou and Giakoumatos (2009) employed gross ticket revenue of the football club divided by the number of tickets sold, deflated by the Consumer Price Index, for Greek professional football.²² Since data on tickets price are not officially published by clubs or league, we are forced to use an aggregate data provided by Italian National Institute of Statistics (ISTAT) in its monthly report on inflation.²³ We use the *Tickets Price Index* computed as the ratio between *Football Match Price Index* and *Consumer Price Index*. The first summarizes the monthly tickets price index at aggregate level, the second the usual inflation index for all goods and services.²⁴ A second index proxies travel costs (*Fuel Price Index*) as a part of the total cost for the away team fans of live attendance. As well as the *Tickets Price Index* it is obtained by the ratio between *Fuel Price* and *Consumer Price index*. Needless to say, the relationship between both indexes and attendance is expected to be negative.

The second group includes demo-geographic variables: *Home Team Population* and the *Away Team Weighted Population*. As suggested by Cairns (1987) and Buraimo and Simmons (2006), both variables ought to measure the market size effect on attendance. The first seizes the home team catchment area by using data on municipality residents at the middle of the season under investigation (31th December); data are provided by ISTAT.²⁵ The second proxies the away team catchment area together with the distance between home and away team cities, and it is calculated dividing the away team population by the distance in kilometres (*Distance in Kilometres*). The distance is provided by the Michelin Itineraries Guide²⁶ which calculates, on line, the shortest way between cities.²⁷

²⁰ See, among others, Simmons (2006), Feehan (2006), Sandy, Sloane and Rosentraub (2004).

²¹ Forrest, Simmons and Feehan (2002) combined official data on seasonal ticket buyers, single match tickets price information (acquired from the Leicester Survey) and travel cost in order to approximate the real cost of attendance.

²² Price related problems associated to proper price identification and to equations specification procedure are discussed in Noll (2011).

²³ See www.istat.it in the section «prezzi». The proper identification is also bounded by the stadium areas admittance prices diversification, of which there are not official or informal data.

²⁴ Note that the *Tickets Price Index* has not been derived from club sources, and has not club specific component. It only reflects the time component of tickets price with respect to the aggregate inflation trend. This way each match is associated with contemporary *Tickets Price Index* calculated as specified above.

²⁵ ISTAT, Demographic Indicators, available in www.demo.istat.it (July, 2012).

²⁶ Data on distance are promptly available on www.viamichelin.it (March, 2012). For matches played by teams placed in the same town the distance is approximated by 1 for convenience.

²⁷ In the case of multiple solutions we prefer the less expensive one. Note that town population of AC CHIEVO VERONA, GENOA FC, INTERNAZIONALE FCM, JUVENTUS FC, SS LAZIO, MILAN AC, AS ROMA and UC SAMPDORIA was corrected (divided by two) to take into account that Milano, Genova, Roma, Torino and Verona host two teams. In addition, even if Chievo is a little neighbourhood

The third group includes match quality variables. In particular they try to capture the uncertainty of outcome and the expected attractiveness. Proxies for the variables are derived from betting odds market as done in an established literature [Peel and Thomas (1988, 1992), Kuypers (1996), Czarnitzki and Stadtmann (2002), Forrest and Simmons (2002, 2006), Forrest, Simmons and Buraimo (2005), Buraimo and Simmons (2008), Coates and Humphreys (2011), Di Domizio (2010, 2012)]. Data are provided by *Football-Data* archive that collects odds associated to the Italian championships since the season 2000/01.²⁸ Given the strong correlation of odds among bookmakers, we selected those proposed by *Bet365* because it has the more inclusive coverage.²⁹ With respect to the closeness of the game, we use the absolute difference in winning probabilities (*Absolute Difference Win Probability*) between home and away team as in Buraimo, Forrest and Simmons (2008).³⁰ In addition, the *Home Team Win Probability* is included in the regression, both in linear and in squared (*Squared Home Team Win Probability*). This in order to meet the empirical evidence, emerged in several football contexts, suggesting a potential inverted U-shaped relationship between attendance and home team winning expectation. Eventually we add a variable for the attractiveness of the match, namely the expected number of goals. In order to do that, we then include the odds associated to the event “*more than 2.5 goals*” (*Over 2.5*).³¹ Another variable about the quality refers to the talents playing the match. Using data on team payroll,³² we divided the amount of the home team gross wages by the sum of the home and away team gross wages. The resultant *Wages Ratio* seizes the related quality of the home team with respect to the away team’s roster.³³ The expected sign is negative because of when the ratio decreases dramatically, in the case of top teams playing away, potential superstar effect emerges shifting up the attendance.

The fourth group of variables focuses on the public order environment in which the match is played, together with the strategic profile pursued by the government in fighting stadium violence. As mentioned above, starting from the season 2007/08 all matches are monitored by the National Observatory of Sports Events to signal matches under public order risk. As

of Verona, having about 4,500 residents according to the local parish, we consider the aggregate town data. No significant differences in estimation results come from the use of the alternative measure.

²⁸ See www.football-data.co.uk/italym.php (June 2012).

²⁹ Odds for matches between AC CHIEVO VERONA-BOLOGNA FC (season 2010/11) and BOLOGNA FC-CALCIO CATANIA (2009/10), not quoted by *Bet 365*, comes from *Bet&Win* and *Blue Square* bulletin board respectively.

³⁰ We also refer to the authors for the shortcomings in using odds as a proxy for the uncertainty of outcome.

³¹ Betting odds on the expectation of the number of goals scored are archived by Football-Data that reports the average value of odds for a number of bookmakers varying from 4 to 47.

³² Data on wages were extracted from *La Gazzetta dello Sport*, an Italian sports newspaper, which provides data at the start of each season for the whole *Serie A*.

³³ Players’ wages have been widely used by sports economics literature in order to evaluate the expected competitive balance within a league; see for example Fort and Quirk (1995) and Vrooman (1995), Szymanski (2003).

a consequence, the Observatory assigns the National Committee for the Analysis of Sports Events the adoption of measures to prevent the risk of disorders. For this reason we went over all the Observatory and Committee calls, from August 2007 up to May 2012. We, then, introduced a dummy variable (*Risky Matches*) equals to 1 for matches identified as highly risky and for which the public authorities introduced entry restrictions. Together with the risky variable we adds a dummy (*Fidelity Card Exemptions*) that signals matches under risk for which Observatory and Committee introduced entry restriction exemptions for fans joining the fidelity fan card program.³⁴

The last group of explanatory variables includes dummies grouping matches for seasons (*2008/09*, *2009/10*, *2010/11* and *2011/12*) in order to recognize potential trend in the dependent variable. In addition, a dummy variable (*Working Day*) identifies matches not been played in the traditional date at the end of the week, but those played from Monday to Friday. Descriptive statistics are listed in table 2.

Table 2. Descriptive statistics for dependent and explanatory variables

<i>Variable</i>	<i>Obs.</i>	<i>Avg</i>	<i>Min</i>	<i>Max</i>	<i>Stand. Dev.</i>	<i>Source</i>
<i>Game Tickets</i>	1,227	9,679	3	57,402	10,472	<i>Stadiapostcard</i>
<i>Seasonal Tickets</i> ³⁵	1,274	17,865	4,494	43,140	9,403	
<i>Tickets Price Index</i>	1,330	1.1346	0.9604	1.3386	0.058	<i>ISTAT</i>
<i>Fuel Price Index</i>	1,330	1.1194	0.8413	1.3853	0.156	<i>Consumer Price Indexes</i>
<i>Town Population</i>	1,330	487,794	53,881	1,390,846	390,304	<i>ISTAT</i> <i>Demographic indicators</i>
<i>Distance in Kilometres</i>	1,330	552	1	1,447	353.670	<i>Michelin Itineraries Guide</i>
<i>Absolute Difference Win Probability Home Team</i>	1,330	0.2728	0.0001	0.82377	0.182	<i>Our elaboration on data</i> <i>Football-Data</i>
<i>Win Probability Away Team</i>	1,330	0.4478	0.0472	0.8598	0.1488	
<i>Win Probability Over 2.5</i>	1,330	0.2687	0.0360	0.8435	0.1292	
	1,330	1.9665	1.31	2.45	0.1846	
<i>Home Team Employment Rate</i>	1,330	60.421	36.334	72.423	9.889	<i>ISTAT</i> <i>labour market indicators</i>

³⁴ Note that among 1,310 matches under investigation 410 were signalled as risky, and entry restriction exemptions were adopted for 253 of them. It is worth noticing that risky has a match explicit nature and not a club specific feature. All the Observatory and Committee calls are available on line in the section «determinazioni» at www.osservatoriosport.interno.gov.it/determinazioni (July, 2012).

³⁵ Data on seasonal tickets of SSC NAPOLI for the seasons 2009/10 and 2011/12 was not considered in the descriptive table since the club did not promote any seasonal tickets campaign. Conversely, null values entered in the econometric model.

3. Estimation results

Table 3 shows the results of Random Effect – Generalized Least Squares (REM-GLS) and Fixed Effect Model (FEM).

Table 3. REM-GLS and FEM for Italian <i>Serie A</i> – 2007/08 to 2011/12. 1227 observations in 289 cross section units. Time Series Length: min 2. max 5 Dependent variable: <i>Game Tickets (in log)</i>		
Explanatory variables	REM-GLS	FEM
	Coefficient	Coefficient
<i>Constant</i>	0.986 (1.359)	4.350 (8.551)
<i>Seasonal Tickets (in log)</i>	-0.069*** (0.012)	-0.069*** (0.008)
<i>Home Team Employment Rate</i>	0.002 (0.007)	0.062*** (0.020)
<i>Tickets Price Index (in log)</i>	-1.339*** (0.362)	-1.405*** (0.346)
<i>Fuel Price Index (in log)</i>	0.166 (0.197)	0.189 (0.236)
<i>Home Team Population (in log)</i>	0.673*** (0.089)	0.330 (0.660)
<i>Away Team Weighted Population (in log)</i>	0.176*** (0.050)	-0.244 (0.231)
<i>Absolute Difference of Win Probabilities</i>	0.375 (0.269)	0.382 (0.306)
<i>Home Team Win Probability</i>	-3.667*** (1.134)	-3.049** (1.241)
<i>Squared Home Team Win Probability</i>	3.564*** (1.359)	2.883* (1.496)
<i>Over 2.5</i>	-0.323** (0.129)	-0.329** (0.148)
<i>Wages Ratio</i>	-0.601*** (0.287)	-0.401 (0.460)
<i>Working Day</i>	-0.149*** (0.047)	-0.150*** (0.051)
<i>2008/09</i>	0.227*** (0.067)	0.223*** (0.076)
<i>2009/10</i>	0.268*** (0.063)	0.336*** (0.072)
<i>2010/11</i>	0.649*** (0.057)	0.738*** (0.063)
<i>2011/12</i>	0.361*** (0.054)	0.477*** (0.070)
<i>Risky Matches</i>	-0.206*** (0.061)	-0.243*** (0.064)
<i>Fidelity Card Exemptions</i>	0.117* (0.067)	0.143* (0.079)
\overline{R}^2		0.74
Standard Error Residuals	0.73	0.53
Variance 'within'	0.21	
Variance 'between'	0.24	
F Stat (306, 920)		12.39
Breusch-Pagan test - Chi-Squared (1)	334.2	
Hausman test – Chi-Squared (18)	33.90	

Standard errors in parenthesis. Statistical significance:***>99%, **>95%, *>90%.

The REM-GLS equation is estimated using the Nerlove's transformation. In the FEM we used the Arellano standard error correction because of the presence of heteroscedasticity.

No remarkable differences emerge from the two distinct models, with the only exception for the significance of *Home Team Employment Rate*, *Home Team Population*, and *Wages Ratio*, while for the variable *Away Team Town Weighted Population* divergence in sign and significance arise. The null hypothesis that both REM-GLS and FEM are consistent is rejected by the high value of the Hausman statistic. We, then, ought to prefer and comment only the FEM results.³⁶

First, note that all significant variables (in bold font) show the expected signs. Of relevance is the extent of the *Tickets Price Index* coefficient; being the variable expressed in logarithm, the concerning coefficient proxies the punctual elasticity of casual fans demand with respect to the relative price. The magnitude of that elasticity is coherent with the theoretical literature prescriptions for monopolistic firms profit maximization behaviour, suggesting clubs to fix prices in the elastic section of demand. At the same time our result contrasts with many empirical investigations on sports demand in several countries, where team tickets price strategy seems to be far from the maximum profit target.³⁷ The price-elasticity estimated value of about -1.4 also discloses the opportunity for a tickets price reduction policy aiming to increase casual fans attendance together with gate revenues.

With respect to the variables associated to the quality of match, it emerges that, according to our estimation, Italian casual fans are not attracted by more balanced competitions, but they are only interested in their home team's performance. Our opinion is based on the statistical insignificance of *Absolute Difference Win Probability* variable, together with the significance, sign and seize of the *Home Team Win Probability*. Being the coefficients negative on the level term, and positive on the quadratic term, an inverted *U-shaped* relationship appears between the home team expected victory and casual fans attendance. The Italians «approach» is not dissimilar to that emerged in other contexts, such as in the English *Premier League* or in the Spanish *Liga*.³⁸ What is different is the extent of such inclination. While in Buraimo and Simmons (2008) the turning point of the quadratic relationship is at a probability of home team win of 0.35, in our estimation the turning point is at 0.53. This is a remarkable result since about the 70 per cent of observations of the *Home Team Win Probability* are included in the range between 0.047 (minimum) and 0.53. No doubts appear to be on the relevance of expected attractiveness of the match approximated by the odds

³⁶ Fixed Effect model must be also preferred to a traditional Pooled OLS estimation since the last implies a time invariant effect of explanatory variables on *Game Tickets*. The hypothesis is far from being realized - in our opinion - because of each match has a peculiar fixture collocation throughout each championship.

³⁷ See Borland and Macdonald (2003), Villar and Guerrero (2009).

³⁸ Buraimo and Simmons (2007, 2008).

on expected goals. The sign of coefficient associated to the variable *Over 2.5* acts in the expected direction and its impact is not marginal.

With respect to the variables intended to capture the influence of the week collocation of match fixtures, it emerges a strong negative impact on casual fans attendance of about 15 per cent – *ceteris paribus* – when match is played on working days. This implies a loss in casual attendance of about 1,350 when matches are not played on Saturday or on Monday, with a revenue loss of more than €30,000 on average per match.³⁹

Other results to discuss refer to the effect of the Italian counter stadium violence on casual fans attendance. From our point of view, results are of great interest; first, both coefficients of inherent dummies, *Risky Matches* and *Fidelity Card Exemptions*, have statistical significance and show an expected opposite sign. The first dummy, which identifies matches considered under risk by the Observatory and for which entry restrictions were introduced by the Committee, has a negative sign. The entry restrictions, then, influence casual fans attendance negatively, and its detrimental effect may be quantified in more than 2,000 fans. As discussed above, the Observatory and Committee often associate the entry restriction with exemptions ascribed to the fidelity card's owners. This way the dummy *Fidelity Card Exemptions* ought to measure if and how the exemptions based on the fidelity fan card strategy act. According to our econometric investigation, the answer is affirmative, and the positive effect of the fidelity fan card strategy on casual fan attendance may be approximate in about 1,500 units. To conclude, when exemptions to the entry restrictions are allowed to the fidelity card holders, the cumulative effect on attendance is about 500 casual fans less. This result, in absolute value, may be not considered in a negative manner from the fidelity fan card strategy perspective, given the strong reduction in injuries among policemen and fans together with the violent episodes before and during matches.

However, another question takes place. The positive effect of the fidelity fan card strategy must be evaluated taking into account the reduction of seasonal tickets. Effectively, from season 2009/10 – the last when the fidelity fan card was not required for seasonal ticket subscribers – the average of seasonal ticket owners reduced of about 13% in the following two seasons. Our hypothesis is that the increase of casual fans attendance is determined by the reduction in seasonal ticket owners induced by the opposition of organized fans against the commercial profile of the fidelity fan card. The last hypothesis is also supported by the positive coefficients of the seasonal dummies *2010/11* and *2011/12* (together with their magnitude) suggesting that the increase in the casual fans has a strong time component, easily recognizable with the fidelity fan card project.

Therefore, our opinion is that the goal of sports authorities and government of reducing the public order risky profile of matches can be considered

³⁹ This value is obtained considering an average match day expenditure of about €25, as indicated in the annual reports of *Lega Serie A* for the years under investigations.

achieved.⁴⁰ On the other hand, if the target was the one declared in the Decree 15th August 2009, in which the fidelity fan card project ought to create a new and heartfelt relationship between teams and fans, it fails. This failure cannot be attributed simply to the jurisdictional controversy generated by the commercial profile of the fidelity fan card,⁴¹ but to the disputes involving the *Lega Serie A* as a whole, a number of clubs that has never agreed with this project, and the hard core of fans that boycotted the project.⁴² In order to solve the quarrels the government translates the initial idea of the fidelity fan card into a new involving clubs more than before. This is part of the agreement protocol signed by Minister of the Interior, Italian Football Federation, Olympic Italian Committee and the three Italian Professional Leagues on the 21th June 2011. Even if the fidelity fan card was confirmed as a necessary tools to follow the own team away and to subscribe seasonal tickets, the clubs had the opportunity to release special «vouchers» for a number of matches to the non-organized fans, so breaking the framework which has generated the fidelity fan card project.

4. Conclusion

The paper investigates the variables influencing Italian stadium attendance, above all the casual fans component. In particular we isolate the effect of anti-violence strategies introduced by Italian government with Decree n.8 of 8th February 2007. The empirical analysis concentrates on *Serie A* data at single match level. Five seasons have been investigated, from 2007/08 to 2011/12, obtaining information on 1330 matches, included in a data panel set composed by 289 cross section units with time length from 2 to 5. The independent variable – the game tickets net of seasonal ticket share – is estimated using a list of regressors including economic, geographical, demographical, time and sports factors. In addition, two dummies were included in order to profile the Italian strategic behaviour to counter football violence: *Risky Matches* and *Fidelity Card Exemptions*.

Two model are selected, a Random Effect – Generalized Least Squares (REM-GLS) and Fixed Effect Model (FEM). The REM-GLS equation is estimated by means of a Nerlove's transformation, the FEM makes use of the Arellano standard error correction for heteroscedasticity. The robustness of the models specification is confirmed by signs and significance of coefficients associated to the selected explanatory variables. Main results of the econometric investigation could be summarized by the following items:

⁴⁰ In the agreement protocol signed on 21th June 2011 the Observatory of Sport Manifestations claims for a reduction of matches with injuries of 20 per cent between seasons 2009/10 and 2010/11 and of 56 per cent if compared to season 2006/07.

⁴¹ On this issue the State Council declared the fidelity fan card illegal [Garraffa (2010, 2011)]; see Consiglio di Stato, Sez. IV, ord. N. 5364, 7th December 2011 on www.altalex.com.

⁴² For example AS ROMA is going to introduce a new fidelity card – Club Away Card – giving the opportunity to all fans (with the exemption of those banned by public authorities) to buy tickets for the away matches of their own team, without being processed by the Minister of Interior and State Police.

- a) the casual fans attendance is positively affected by the home team probability of win, both in level term and in quadratic term. Given the simultaneous insignificance of the absolute value of win probabilities, the econometric investigation suggests that the Italian fans (of *Serie A*) prefer to attend matches with great expectations of winning for their own team;
- b) a non marginal effect is associated to *Tickets Prices Index* (negative) and *Home Team Employment Rate* (positive). From our estimation it emerges that ticket price imposed by team acts in the elastic section of demand confirming a profit oriented behaviour of clubs. This also discloses the opportunity for a price reducing strategies able to increase both attendance and gate revenues;
- c) a positive effect of the attractiveness of the game measured by the expected number of goals;
- d) a strong negative impact of entry restrictions imposed on away team fans by the Observatory and Committee that can be quantified, on average, in about 2,000 casual fans less per match;
- e) a positive impact of the *Fidelity Card Exemptions* strategy that partially compensates the entry restrictions for about 1,500 casual fans every match. However, the net effect on occasional attendance is negative, and can be quantified in about 500 casual fans.

Points *d*) and *e*) confirm that the expected substitution effect between committed and uncommitted (casual) fans, driven by the fidelity fan card project, failed. The negative net effect of counter violence strategies, introduced by Law 41/2007, must be also interpreted in the light of a reduction of seasonal tickets because of the opposition of organized fans toward the commercial profile of the fidelity card.

Even though the new strategies were able to reduce the perceived risk, they have not reversed the negative trend in stadium attendance that is one the most relevant shortcomings of the Italian professional football. In order to invert this trend, leagues, federation managers, teams and government are called to elaborate new ideas and interventions in different areas:

- A) in restoring credibility of football environment undermined by old and recent referees corruption episodes and match fixing scandals;
- B) in modulating TV coverage of matches introducing black-out rule for matches with low attendance;
- C) in re-distributing TV rights revenues rewarding teams with high percentage of stadium occupation;
- D) supporting new investments on stadium facilities in order to create more commercial opportunities for teams, but also more suitable and fascinating environment for fans' live participation.

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