

Embedded Play: Economic and Social Motivations for Sharing Lottery Tickets

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Abstract: We ask why people play the lottery in syndicates. Sharing lottery tickets with co-workers, friends or relatives may create agency problems related to opportunism in addition to the fact that playing the lottery in general is tantamount to buying an asset with negative expected value. Although it might be argued that people share lottery tickets in order to maximize their chances of winning a prize, it is also plausible that they engage in this practice to enact, cement or reproduce social ties and interpersonal trust. Using survey data on representative samples of the adult population in Spain and the United States, we adjudicate between these two hypotheses, and show that people play the lottery in syndicates primarily for social reasons.

Introduction

Lotteries are popular, and their appeal is on the increase. Whereas in 1997 worldwide lottery sales amounted to \$115 billion, by 2009 this figure had doubled, and more than 100 countries in all corners of the world operated their own lotteries (La Fleur, 2010). Since it contradicts wealth maximization and risk aversion premises, explaining lottery play has traditionally represented a challenge for economic theory (e.g. McCaffery, 1994; Cohen, 2001). Classical economists pointed out error judgements on the side of the players. Thus, Sir William Petty referred to them as ‘self-conceited fools’ (1667, p. 43), while Adam Smith commented on their self-delusion (1952 [1776], p. 54). Some contemporary economists have also postulated cognitive errors as culprits of lottery play. Survey data, however, have demonstrated that rather than overestimating, lottery players tend to underestimate their probability of winning a prize (Clotfelter and Cook, 1989, p. 76; Garvía, 2008, p. 111).

A different alternative to explain this seemingly irrational behaviour is to advance post hoc variables that change the marginally decreasing shape of the utility wealth function and make it marginally increasing at some intervals, within which the purchase of a lottery ticket becomes rational (McCaffrey, 1994, pp. 93–107),

and approach that has been controversial (Hakansson, 1970; Applebaum and Katz, 1981). A more radical departure from the classic premises of economic theory is to explain lottery play by the thrill or fun of participation, which renders expected utility theory circular, and non-falsifiable (Hartley and Farrell, 2002).

An alternative strategy suggested by Clotfelter and Cook (1989, p. 71), is to approach the question of *why* people play the lottery by exploring *how* they do it. Neoclassical economic theory portrays economic actors in a quite atomistic fashion as if they were in a social vacuum, carefully weighting costs and benefits, and with an eye to promote their self-interests. This approach tends to gloss over social relations. Take, for example ‘conscious selection’ where players chose their numbers according to wedding anniversaries, birthdays, and so on. Conscious selection generates a non-uniform distribution of the chosen numbers, which concentrates on the low ones, and increases the probability of a rollover. Although conscious players decrease the expected value of their tickets, they are not uncommon: 50 per cent of American players, choose their own numbers (Adams, 2001, p. 456), and a similar proportion obtains in other countries (i.e. Roger and Broihanne, 2007). Conscious selection might also negatively affect sales and public revenues, and a well-designed lottery has to take into considerations this practice in order to make it possible

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that rollovers take place with optimal regularity (Walker, 1998; Farrell *et al.*, 2000; Walker and Young, 2001; Roger, 2011). Conscious selection is a good example of the approach to economic behaviour of the new economic sociology because the lottery ticket becomes an 'object infused with symbols meaningful to [the player], and often to members of his or her primary network of social relations' (Adams, 2001, p. 456), and it illustrates that economic action is carried out by actors embedded in networks of social relations (Granovetter, 1985, 2002; Guillén *et al.*, 2005).

A more distinctive example of embeddedness, or the impact of social relations on lottery play is syndicate play, a social practice by which a group of people share a lottery ticket. Syndicating is popular: 10 per cent of Germans, 12 per cent of Americans, 22 per cent of Britons and 33 per cent of Spaniards regularly share a ticket with other people. During Christmas, a whopping three in four Spaniards share tickets.¹ Syndicate play does not take place among strangers, but within primary networks of social relations. Thus, 61 per cent of American syndicate players share their tickets with coworkers, 25 per cent with friends, and 9 per cent with relatives, whereas only 5 per cent share their tickets with other, more socially distant people. This pattern is similar in Spain and the UK.²

More significantly, syndicate play can substantially affect participation rates and have a clear impact on the size and composition of lottery markets (Garvía, 2007). This depends on the extent to which sharing lottery tickets is a self-sustaining practice and does not operate as a substitute for individual play. Survey data on Spanish syndicate players clearly show that this is the case. When asked what would they do if their syndicates dismantled, 54 per cent of Spanish syndicate players answered they would stop playing the lottery altogether, 31 per cent claimed that they would keep on playing individually, though spending less money, while only 15 per cent maintained that they would play individually the same amount of money they were currently playing within their syndicates. If we combine the expenses that these players are making solely for the purpose of playing with members of their social networks, and not for the sake of playing itself, they amount to 23 per cent of total lottery sales in Spain.³

Popular and economically relevant as it is, syndicating can hardly be incorporated into classical, let alone contemporary, functionalist, or strain-management sociological explanations of lottery play. Sociologists have also had trouble explaining this phenomenon. Classical sociologists such as Marx (1963, pp. 84–85), Pareto (1980), and Simmel (1990), brushed aside lottery play as a deviant and delusional practice, while current

sociological explanations based on social structure, economic or social strain, mobility barriers, or religious values (Bloch, 1951; Tec, 1964; Devereux, [1949] 1980; Nibert, 2000) have neglected the embedded dimension of lottery play, and focused on the characteristics of players rather than on playing practices (see, however, Adams, 1996, 2001; Light, 1977; Beckert and Lutter, 2007).

Sharing a lottery ticket with other people also reduces the expected value of a bet, since this practice is always open to opportunistic behaviour. In March 2004, for example, an engaged British couple won a jackpot of £3-million, and after learning about their luck, the man cancelled the wedding, moved out, and took off with the winnings. Similarly, after being challenged by one of her coworkers, an administrative head of a British company admitted that she had been pocketing the syndicate's weekly shares of her colleagues for 5 years. In another example, the members of a Spanish syndicate who had been playing together for 20 years ended up suing the syndicate's collector, who refused to share the prize claiming that the winning ticket was his and not the syndicate's.⁴ In other words, if in purely mathematical terms, the expected value of a lottery ticket is exactly the same whether it is shared or played individually, this is only true if the probability of deception is zero. However, syndicates are mainly composed of members of primary social networks, where trustworthiness can be better checked and the probability of deception reduced.

In this article, we use survey data to explore the economic and social factors behind syndicate play. Given that syndicating is a social practice subject to opportunism, it can be argued that the risk syndicate players take when playing with members of their social networks is the price they pay for obtaining something else in return.

Syndicate versus Individual Play: Social and Economic Motivations

From the point of view of economic sociology it can be argued that sharing a lottery ticket with relatives, friends or coworkers is much more than an impersonal or monetary transaction; it becomes a socially constructed practice that conveys social bonds, transforming, in terms of Zelizer's (1994, 2002) terminology, a lottery ticket from a purely economic asset, into a symbolic carrier of interpersonal ties.

We expect people who place a greater value on socializing with friends, family or coworkers to be more likely to engage in syndicate play. People are heterogeneous in terms of their propensity to engage in social intercourse and to attach a high value to it (Durkheim,

1973, p. 149–163). Focus-group evidence on gambling among Spaniards can illustrate the social motivations leading people to syndicate.⁵ In the words of one regular player, sharing a lottery ticket is ‘an excuse for getting together with friends or family’. Another participant noted that it is a way of ‘bonding’; yet another remarked ‘It is a matter of sharing, of friendship. If I win, I also want you to win... (as well as) the mother of that guy, and that other guy too...’. Sharing a lottery ticket might thus become part of the chain of interaction rituals, a social encounter repeated periodically which is filled with symbolism and contributes to the coalescing of individuals into either social groupings of equals (e.g. friends, coworkers) or stratified arrangements like those present in the family or the employment relationship (Collins, 2004).

Another important aspect of the embedded dimension of syndicating is that it may generate pressure for people to conform to the practice when it is institutionalized and becomes value laden (Zuckerman, 2004). In the words of a young, occasional player: ‘at Christmastime, you feel almost obligated to play with your coworkers’. To the extent that social pressures are internalized as part of the individual’s value system (Simmel, 1950, pp. 379–395), then individuals are acting on their internalized norms attaching value to interactions with others who also see value in the practice of sharing a lottery ticket. Thus, we predict that:

Hypothesis 1 (H_1): The more people place value on socializing with friends, family or coworkers, the greater the likelihood of playing the lottery in groups versus individually.

From an economic perspective, however, syndicate play can be postulated as rational response to incentives and risks, and syndicate players as relatively risk-averse lottery players who combine their bets in order to improve their chances of winning a prize, although a smaller one. In this case, syndicating is tantamount to transforming a lottery with large prizes and small odds, into another one with smaller prizes but long odds (Cohen, 2001, p. 718). It is in particular this kind of economic rationale that lottery agencies employ to promote syndicate play. Thus, the UK National Lottery defines a syndicate as ‘group of enlightened lottery players who know the huge benefit of swapping a share of the winnings for massively better chances of actually winning’.⁶ Given these economic incentives favouring syndicate play, we predict that:

Hypothesis 2 (H_2): The more people see value in combining their bets in order to increase their odds of

winning, the greater the likelihood of playing the lottery in groups versus individually.

Data and Methods

We test the social and economic motivations for sharing lottery tickets with public opinion survey data from Spain and the United States. The Spanish data survey, *Euronet_06*, was conducted in June 2006 by a private pollster on behalf of the Spanish lottery administration. In order to obtain a representative, random sample of the Spanish population ($N=1,205$, with sampling error ± 2.8 per cent, and confidence interval of 95.5 under $p=q=0.5$), the sample was stratified according to the size of the population of the 17 Spanish regions plus Ceuta and Melilla, and respondents were randomly selected by random digit dialing (RDD), according to the distribution of age and gender in the Spanish population. From the original 1,205 observations, we lose 167 due to case-wise deletion of responses with missing values. There are no significant differences between these observations and the remaining 1,038 observations in terms of socio-demographic variables. Of the 1,038 remaining respondents, 802 play the lottery, and 236 do not, which enables us to analyse potential self-selection biases.

The questionnaire was designed and distributed by the Spanish National Lottery agency for market research purposes. We translated into Spanish the target questions about motives and attitudes towards gambling included in the American survey (see below) and persuaded the Spanish National Lottery agency to add them to the Spanish questionnaire. In order to ensure the comparability of the US and Spanish surveys, the latter does not include questions regarding the Christmas lottery, when, as we mentioned above, three quarters of the Spanish population share lottery tickets. Finally, whereas the Spanish survey lets us test both social (H_1) and economic (H_2) motivations, the American questionnaire does not include any item that could be used as an indicator to test H_2 .

The American data come from the *Gambling Impact Study, 1997–1999*, available from ICPSR.⁷ The RDD section of the individual survey focuses on the participation in, and social effects of, all kinds of gambling in American society. The RDD section comprises a total of 2,417 individual responses corresponding to a representative sample of American households. We lose 325 observations due to case-wise deletion of responses with missing values. There are no significant differences between these observations and the remaining 2,092 observations for analysis in terms

of socio-demographic variables. Of the 2,092 respondents, 876 play the lottery, and 1,216 do not, which enables us to analyse potential self-selection biases.

Variable Definitions: Spanish Survey

In the Spanish sample, the dependent variable, *SYNDICATE*, is dichotomous, taking a value of 1 if the interviewee plays with other people at least half of the lotteries he regularly plays, and 0 if the interviewee plays the lottery individually more often than as part of a syndicate.

We measure attitudes towards lottery playing with a series of ordinal variables to which respondents had to indicate the extent of their agreement within the four-point scale: (i) strongly disagree, (ii) disagree, (iii) agree, and (iv) strongly agree: *WASTE* ('playing lotteries is a waste of time and money'); *EXTRAMONEY* ('playing the lottery is a means of making extra money'); *FUN* ('playing the lottery is fun, as it is to participate in any other game'); *IMMORAL* ('playing the lottery is immoral'); and *SOCIABILITY* ('playing the lottery is a means to share something with somebody else'). Per H_1 , we expect *SOCIABILITY* to increase the likelihood of syndicate play, and include the other attitudinal measures as control variables. Finally, in order to test H_2 , we use the variable *RISKAVERSION*, which takes a value of -1 when the interviewee prefers lotteries for small odds and big prizes; 0 if the respondent is indifferent; and 1 if the interviewee prefers lotteries with long odds but small prizes. For H_2 to hold true, *RISKAVERSION* should be positively associated with *SYNDICATE*.

We also include in our analyses the usual socio-demographic variables: gender (*FEMALE*) in order to control for the finding that men display slightly higher levels of generalized social trust than women (Norris and Inglehart, 2003), although in the Spanish case the difference is not statistically significant (Fundación BBVA, 2006, pp. 11–12); *EDUCATION*, given its link to interpersonal trust (Uslaner, 2002, pp. 84–86; Delhey and Newton, 2003); *INCOME*, in order to address the possibility that people are heterogeneous in their response to lottery prices; *AGE*, given the evidence that associational membership and social connections decline with it (Glaeser, Laibson and Sacerdote, 2002); *UNEMPLOYMENT* status, given that it might be associated with social exclusion and psychological distress (Jones and Addams, 1991; Hannan, 1999; see, however, Winkelmann, 2006); and *RETIREMENT* status, since it can be presumed that, once detached from their working community, retired people are comparatively less prone to syndicate than those who are still working. Tables 1 and 2 report the descriptive statistics and correlations, which are generally low.

Table 1 Descriptive statistics (Spain), $N = 802$

	Min.	Max.	Mean (SE)
SYNDICATE	0	1	0.322 (0.017)
FEMALE	0	1	0.479 (0.018)
EDUCATION	1	7	4.531 (0.055)
AGEC	21.5	75	46.539 (0.592)
AGEC2	462.25	5625	2446.411 (58.591)
UNEMPLOYED	0	1	0.046 (0.007)
RETIRED	0	1	0.187 (0.014)
INCOME	1	8	3.733 (0.063)
SOCIABILITY	1	4	2.727 (0.030)
RISKAVERSION	-1	1	0.069 (0.032)
EXTRAMONEY	1	4	2.929 (0.028)
IMMORAL	0	2	0.509 (0.025)
FUN	1	4	2.377 (0.031)
WASTE	1	4	2.363 (0.032)
ECONDEPENDENT	0	1	0.225 (0.013)
NOTLABOR	0	1	0.373 (0.017)
PLAY	0	1	0.773 (0.013)

Note: Mean and SE for *ECONDEPENDENT* and *PLAY* are for $N = 1038$, as in Table 5, Model 3.

Source: EuroNet_06.

Variable Definitions: US Survey

The American survey differs from the Spanish one in that in the latter *SYNDICATE* refers to players who syndicate at least half of the lottery tickets they regularly play, while in the former it refers to players who shared any lotto kind of lottery (i.e. excluding scratch or instant lotteries) at least once in the last month (with a value of 1 if the respondent did, and zero otherwise). Also, whereas in the Spanish case responses regarding attitudinal variables (*SOCIABILITY*, *EXTRAMONEY*, *WASTE*, *FUN*, and *IMMORAL*) are available for the whole sample and exclusively refer to lottery play, in the American survey *WASTE* is not available, and, with the exception of *IMMORAL*, the remaining attitudinal variables (*SOCIABILITY*, *EXTRAMONEY*, and *FUN*) were filtered only to respondents who in the previous year participated in any kind of game included in the questionnaire (lotteries, casino, bingo, sports pools, on/off track betting, and others), and refer to their attitudes regarding their gambling behaviour, but not specifically to their lottery play. Thus, in the American case only people who played some game where asked to say the extent to which 'socializing with friends or family', 'earning extra money', or 'the excitement or challenge' (with answers on the same four-point scale as in the Spanish survey) was important for playing the games they played. This means, first, that *SOCIABILITY*, *EXTRAMONEY*, and *FUN* could not be

Table 2 Correlation matrix (Spain), $N = 802$

	SYNDICATE	FEMALE	EDUCATION	AGEC	AGEC2	UNEMPLOYED	RETIRED	INCOME	SOCIABILITY	RISKAVERSION	EXTRAMONEY	IMMORAL	FUN	WASTE	ECONDEPENDENT	NOTLABOR	PLAY
SYNDICATE	1																
FEMALE	0.168	1															
EDUCATION	0.159	-0.091	1														
AGEC	-0.227	0.002	-0.364	1													
AGEC2	-0.206	-0.002	-0.371	0.985	1												
UNEMPLOYED	-0.037	0.087	-0.003	-0.081	-0.089	1											
RETIRED	-0.159	-0.153	-0.240	0.616	0.658	-0.106	1										
INCOME	0.127	-0.169	0.469	-0.375	-0.384	-0.084	-0.298	1									
SOCIABILITY	0.155	0.009	-0.004	-0.057	-0.040	-0.014	-0.031	0.007	1								
RISKAVERSION	0.027	0.102	-0.008	0.004	0.012	-0.004	-0.005	-0.073	0.047	1							
EXTRAMONEY	-0.026	-0.002	0.004	-0.080	-0.076	-0.003	-0.042	-0.028	0.050	-0.073	1						
IMMORAL	-0.077	0.049	-0.225	0.138	0.155	-0.033	0.136	-0.125	-0.035	-0.021	-0.063	1					
FUN	0.030	-0.010	-0.010	-0.020	0.013	-0.013	0.086	-0.003	0.267	0.076	0.149	-0.020	1				
WASTE	-0.040	0.076	-0.047	0.110	0.111	-0.009	0.079	-0.046	-0.163	-0.086	-0.139	0.265	-0.204	1			
ECONDEPENDENT	0.021	0.274	-0.144	-0.023	0.015	-0.105	-0.229	-0.134	0.003	0.083	0.068	0.116	0.062	0.063	1		
NOTLABOR	-0.111	0.097	-0.309	0.479	0.543	-0.170	0.622	-0.348	-0.023	0.063	0.021	0.202	0.119	0.114	0.620	1	
PLAY	.	-0.075	0.020	0.021	0.001	0.025	0.024	0.091	0.072	0.034	0.104	0.000	0.137	-0.112	-0.175	-0.130	1

Source: *EuroNet 06*.**Table 3** Descriptive statistics (USA), $N = 883$

	Min.	Max.	Mean (SE)
SYNDICATE	0	1	0.217 (0.015)
FEMALE	0	1	0.468 (0.018)
EDUCATION	2	8	5.514 (0.061)
AGEC	23.5	75	44.648 (0.594)
AGEC2	552.25	5625	2248.269 (58.271)
NOTLABOR	0	1	0.235 (0.015)
INCOME	1	4	2.301 (0.035)
RACEW	0	1	0.725 (0.017)
SOCIABILITY	1	4	2.083 (0.037)
EXTRAMONEY	1	4	2.927 (0.035)
IMMORAL	1	5	3.086 (0.028)
FUN	1	4	2.207 (0.033)
NGAMES	0	8	1.337 (0.057)
LOTSTATERES	0	1	0.863 (0.008)
PLAY	0	1	0.418 (0.012)

Source: *Gambling Impact Study, 1997–1999*.Note: Mean and SEs for LOTSTATERES and PLAY are for $N = 2092$, as in Table 6, Model 3.

introduced to predict lottery play, unlike in the Spanish case, and second, that responses to these latter variables might be contaminated by the respondents' participation in other games.⁸

As for the controls, we included the same socio-demographic variables used in the Spanish case, with the addition of race (with RACEW equal to 1 for whites; and 0 otherwise), residence in a lottery state (LOTSTATERES, equal to 1 for lottery state residents; and 0 otherwise), and the dichotomous variable NOTLABOR (equal to 1 if the interviewee is not working or in the labour force; and 0 otherwise), which substitutes for UNEMPLOYMENT and RETIRED in the Spanish survey. Tables 3 and 4 present the descriptive statistics and the correlation matrix for the US data. A full description of both the Spanish and American variables are available under request to the first author.

Results

Table 5 reports the estimates from probit models using the Spanish survey data. The dependent variable is whether the respondent plays the lottery in syndicates or not. Model 1 presents the results with the socio-demographic control variables only. Women, better educated, and either young or old people are more likely to play the lottery in syndicates than other types of people. We did not find significant effects for unemployed or retired people, or for income. Model 2 adds

Table 4 Correlation matrix (USA), $N = 883$

	SYNDICATE	FEMALE	EDUCATION	AGEC	AGEC2	NOTLABOR	INCOME	RACEW	SOCIABILITY	EXTRAMONEY	IMMORAL	FUN	NGAMES	LOTSTATESRES	PLAY
SYNDICATE	1														
FEMALE	0.035	1													
EDUCATION	0.078	-0.039	1												
AGEC	-0.130	0.028	-0.163	1											
AGEC2	-0.138	0.026	-0.174	0.986	1										
NOTLABOR	-0.146	0.039	-0.210	0.532	0.576	1									
INCOME	0.035	-0.101	0.375	-0.196	-0.231	-0.289	1								
RACEW	0.034	0.016	0.128	0.072	0.062	0.034	0.085	1							
SOCIABILITY	0.140	-0.012	-0.048	-0.075	-0.069	-0.017	-0.050	-0.066	1						
EXTRAMONEY	0.060	0.006	0.048	-0.144	-0.149	-0.132	0.057	-0.101	0.043	1					
IMMORAL	-0.113	-0.030	0.052	0.106	0.101	0.043	0.008	-0.018	-0.098	-0.047	1				
FUN	0.083	-0.065	0.018	-0.105	-0.096	-0.033	0.024	-0.001	0.259	0.322	-0.238	1			
NGAMES	0.167	-0.100	0.020	-0.036	-0.044	-0.060	0.124	0.075	0.324	-0.001	-0.156	0.305	1		
LOTSTATESRES	.	-0.004	-0.038	0.072	0.068	-0.004	0.005	0.064	-0.026	0.033	0.090	-0.025	-0.029	1	
PLAY	.	-0.042	0.013	0.122	0.098	-0.020	0.069	0.009	-0.143	0.155	-0.017	0.009	-0.063	0.173	1

Source: *Gambling Impact Study, 1997–1999*.Note: Data for PLAY and for LOTSTATESRES have been calculated for $N = 2092$, as in Table 6, Model 3.

the hypothesized variables. We find strong support for the prediction that people who place value on socializing with relatives, friends, or coworkers are more likely to play the lottery in syndicates (H_1). We find no evidence indicating that economic considerations such as risk aversion or monetary rewards are at play (H_2). Model 3 takes into consideration the possibility that the subsample of lottery players differs systematically from the subsample of non-players due to self-selection. We estimated a two-stage bivariate probit model in which the first stage predicted who plays the lottery (bottom panel) and the second predicted who plays the lottery in syndicates, among those who do play (top panel). We used socio-demographic and attitudinal variables as instruments to predict who plays.⁹ The results essentially replicate those reported above.

In order to ensure the robustness of our results, we conducted a battery of additional tests. First, we took into consideration the possibility that our measure of sociability is endogenous, that is, people who score high on SOCIABILITY do so for reasons that are also correlated with playing the lottery in syndicates. We estimated a two-stage instrumental variable model predicting SOCIABILITY first, and then predicting who plays in syndicates. The results of this analysis show that exogeneity cannot be rejected, and hence the results of the models reported in Table 5 should be preferred; moreover, the results of the endogeneity analysis provide additional support for H_1 (again, at the 0.001 level) and no support for H_2 .

Second, for the Spanish sample, we ran the models reported in Table 5 using different ways of constructing the dependent variable. We constructed SYN2 as a dichotomous variable with a value of 1 if the interviewee syndicates at least one lottery, and zero otherwise, and SYN3 as a continuous variable measuring the percentage of times that the interviewee played the lotteries as part of a syndicate. We obtained support for H_1 at the 0.001 level for both SYN2 and SYN3. Finally, we ran separate models for specific types of lotteries, i.e. Loteria Nacional, EuroMillones, Primitiva, Cupón, and Quiniela. We found support for H_1 at the 0.01 level or better (with the exception of Quiniela) and no support for H_2 .¹⁰

Table 6 reports the results based on the US sample.¹¹ We obtained similar results. H_1 is supported: people who place value on socializing are more likely to share lottery tickets. With the exception of NOTLABOR, the socio-demographic control variables do not reach significance.

We also undertook additional analyses to assess the exogeneity of SOCIABILITY in the US sample. We included as an instrument the number of games, other than

Table 5 Determinants of syndicating vs. playing alone (Spain)

	Model 1			Model 2			Model 3	
	β	SE	Impact	β	SE	Impact	β	SE
Y = SYNDICATE (0–1)								
FEMALE	0.529***	0.101	0.18	0.543***	0.103	0.19	0.500***	0.116
EDUCATION	0.095*	0.036	0.19	0.093*	0.037	0.19	0.078*	0.036
AGEC	−0.066***	0.017	−0.86	−0.064***	0.017	−0.85	−0.065***	0.016
AGEC2/10	0.006**	0.002	0.84	0.005**	0.002	0.82	0.006**	0.002
UNEMPLOYED	−0.453	0.247	−0.14	−0.484	0.252	−0.15	−0.481*	0.222
RETIRED	−0.208	0.183	−0.07	−0.176	0.186	−0.06	−0.254	0.163
INCOME	0.037	0.032	0.09	0.036	0.032	0.09	0.003	0.038
SOCIABILITY				0.254***	0.064	0.25	0.215**	0.074
RISKAVersion				−0.009	0.054	−0.01	−0.002	0.047
EXTRAMONEY				−0.085	0.063	−0.09	−0.111	0.058
IMMORAL				−0.109	0.077	−0.07	−0.089	0.070
FUN				−0.042	0.061	−0.04	−0.090	0.061
WASTE				−0.020	0.058	−0.02	0.030	0.063
CONSTANT	−0.090	0.450		−0.402	0.592		0.347	0.696
Z = PLAY (0–1)								
WASTE							−0.131**	0.050
EXTRAMONEY							0.122*	0.054
FUN							0.173**	0.052
AGEC							0.005	0.003
ECONDEPENDENT							−0.513***	0.103
INCOME							0.074**	0.028
CONSTANT							−0.043	0.304
POTENTIAL BIAS								
/athrho							−0.876	0.765
rho							−0.704	0.386
N (valid cases)	802			802			1,038	
N (uncensored)							802	
N (censored)							236	
Pseudo-R ² (adj)	0.074			0.084				

Source: Euronet_06.

Note: Wald-test of independence: $P = 0.20$, which indicates that independence can not be rejected, and that the univariate probit model should be adequate.* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

lotteries, that respondents play in order to account for the possibility that the more games people play, the more they may come to interact with other players, and thus, to appreciate the social value of playing together (this information was only available in the US questionnaire). Unlike in the Spanish case, the results indicate that SOCIABILITY is not exogenous in the US sample. Nevertheless, SOCIABILITY continues to be significant at the 0.001 level. In sum, our empirical results show robust support for a sociological explanation of syndicate play, even after controlling for self-selection and endogeneity biases. (The results for the different specifications of SYNDICATE, and these last additional analyses are available upon request to the first author.)

Discussion and Conclusions

We have argued that the best way to study why people buy lottery tickets, which are economic assets of negative expected value, is to study how they do it. This approach unveils the socially embedded dimension of lottery play. And even when most economic and sociological research on lottery play has glossed over the impact of networks of social relations on lottery participation, lottery administrators have not.¹²

Our empirical evidence, drawn from representative samples of the population of two different societies, indicates that above and beyond socio-demographic variables, people play the lottery in groups in order to

Table 6 Determinants of syndicating vs. playing alone (United States)

	Model 1			Model 2			Model 3	
	β	SE	Impact	β	SE	Impact	β	SE
<i>Y = SYNDICATE (0–1)</i>								
FEMALE	0.053	0.102	0.02	0.071	0.105	0.02	0.094	0.109
EDUCATION	0.046	0.035	0.08	0.055	0.036	0.09	0.048	0.036
AGEC	0.019	0.022	0.28	0.024	0.023	0.35	0.017	0.029
AGEC2/10	−0.003	0.002	−0.33	−0.003	0.002	−0.34	−0.003	0.003
NOTLABOR	−0.353*	0.155	−0.09	−0.387*	0.163	−0.10	−0.353*	0.179
INCOME	0.008	0.062	0.01	0.001	0.064	0.00	−0.029	0.070
RACEW	0.204	0.122	0.06	0.230	0.128	0.06	0.218	0.129
SOCIABILITY				0.181***	0.054	0.16	0.182***	0.055
EXTRAMONEY				0.039	0.059	0.03	0.033	0.058
IMMORAL				−0.132	0.070	−0.15	−0.070	0.122
FUN				0.082	0.062	0.07	0.082	0.061
CONSTANT	−1.389**	0.500		−1.903**	0.606		−1.581	0.837
<i>Z = PLAY (0–1)</i>								
IMMORAL							−0.417***	0.034
AGEC							0.063***	0.011
AGEC2/10							−0.006***	0.001
NOTLABOR							−0.209	0.075
INCOME							0.140***	0.034
EDUCATION							−0.001	0.018
FEMALE							−0.140*	0.056
RACEW							−0.014	0.065
LOTSTATRES							0.857***	0.093
CONSTANT							−1.306***	0.279
/athrho							−0.241	0.388
Rho							−0.236	0.366
N (valid cases)	900			883			2,092	
N (uncensored)							876	
N (censored)							1,216	
Pseudo- R^2 (adj)	0.02			0.037				

Source: Gambling Impact Study, 1997–1999.

Note: Wald-test of independence: $P = 0.535$, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

cement and expand social relationships. Although sociability and an appetite for better odds are not mutually exclusive, we found no evidence of the latter being a distinguishing factor between people who play individually and in syndicates—nor, for the same token, of the urge to obtain extra money.

Our findings resonate with work in economic sociology emphasizing that social motivations help explain economic action, as it has been demonstrated in consumption decisions (Biggart, 1989; DiMaggio and Louch, 1998; Lamont and Molnár, 2001), international migration (Palloni and Massey, 2001), hiring, promotion, and performance (Fernández and Castilla, 2000), and inter-organizational collaborations (Ingram and Roberts, 2000; Powell *et al.*, 1996), among many other phenomena. The case of syndicate play, however,

provides a unique window into the social motivations behind economic action because of its apparent irrationality, at least from an economic and agency perspective.

Our analysis is limited, though, in several respects. First, Spain and the United States are both rich postindustrial societies with largely urban populations engaged in service-sector economic activities. Having said that, their underlying patterns of social organization and culture are different (Inglehart *et al.*, 2004). Thus, finding robust effects of sociability on syndicate play in two samples drawn from culturally and socially different countries boosts the credibility of our results.

A second limitation has to do with the small number of questions on the social and economic motivations of lottery play included in the surveys. This makes it

difficult to assess and improve the construct validity of our key empirical indicators. Perhaps future surveys can be designed to include a battery of items that help build better empirical proxies for the key variables driving lottery play.

The third main shortcoming of the article has to do with the cross-sectional nature of the data. A panel study would be ideal to establish the causal effect of sociability on syndicate play net of any additional variables affecting both variables simultaneously. Another possibility would be to examine the effect on lottery play of an exogenous shock, such as an acute economic downturn. Still, we conducted tests for endogeneity and found that our results were not affected.

Future research can perhaps address these issues from other perspectives, and also explore other related topics of interest to economic sociologists, such as the potential impact of syndicate play on the regressivity of lotteries, i.e. the fact that the poor spend a higher share of their income on lottery tickets (e.g. Beckert and Lutter, 2009). Syndicate play could be neutral, or affect the regressivity of lotteries in both directions: it can allure into the game the relatively wealthy, and make lotteries be less regressive, or it can entice, lock-in, and increase the level of spending of the relatively poor. In general, syndicated or not, lottery play constitutes an ideal laboratory in which to examine the effect of sociological and economic variables on behaviour.

Notes

1. Data from the US and Spain come from the American *Gambling Impact and Behavior Study*, 1997–1999, and the *EuroNet_06* survey. Both are described below. Data from the UK and Germany come from the UK *2000 Time Use Survey*, and Beckert and Lutter (2007), respectively.
2. In the UK, 67 per cent of syndicate players share tickets with other household members, 23 per cent with people outside the household, and 10 per cent with other people. Among Spanish syndicate players, 73 per cent of them share their tickets with coworkers, 46 per cent with relatives, and 45 with friends and other people. Percentages of Spanish syndicate players do not add to 100 because their answers were not exclusive. Data come from the same sources quoted in footnote above.
3. These data come from the *EuroNet_06* survey, which will be extensively commented on later.

4. See the online edition of *The Times* of 18 May 2007, *The Sunday Mail* of 27 May 2007, and *El País*, 12 November 2003.
5. The following quotations come from the Spanish *EuroNet_05* qualitative survey.
6. See <http://www.national-lottery.co.uk/player/p/help/syndicates.ftl>.
7. This is Survey No. 2778 of the ICPSR.
8. In fact, within the target group of lottery players, 33 per cent of them are lottery-only players, 31 per cent played one extra game, 21 per cent two extra games, and 9 per cent three extra games, and 6 per cent four or more extra games.
9. We chose the instrumental variables based on theoretical considerations. More concretely, it could be assumed that people who consider playing the lottery to be a WASTE of time and money would be less prone to play. Similarly, those who think of playing as an avenue to gain EXTRAMONEY will more likely play the lottery, very much like those who consider that playing is FUN. Regarding AGE, previous research has shown that there is an age threshold over which the relatively old might be driven to play in order to improve their economic status (e.g. Clotfelter and Cook, 1989, p. 97). Also, previous research suggests that lottery play increases with income in absolute terms, although it decreases in relative terms (e.g. Garvía, 2008, pp. 100–107). Finally, we hypothesize that economically dependent people (ECONDEPENDENT) will less prone to play than those who are not. We did not have a priori theoretical expectations about the effect of these variables on SYNDICATE. But regarding the potential concern that the variables included in the selection equation might impinge upon the results model, it should be noticed that none of the variables in the selection equation (with the single exception of AGE, which, nonetheless, was not significant in the selection model), attained significance in the second-stage equation predicting SYNDICATE. Finally, we dropped out some socio-demographic variables in the selection equation, such as FEMALE and EDUCATION in order to guarantee convergence of the bivariate probit model. The fact that these variables were not significant in a univariate model for PLAY shows that their omission in the selection model is unlikely to be consequential.
10. Similarly, we also ran some analyses using a different specification of AGE as a set of dummies.

Again, these analyses, available upon request, yielded similar results.

11. The reasons to include INCOME, AGE, and NOTLABOR in the selection equation for the US sample (Table 6) are basically the same as those elaborated in footnote 9. Although NOTLABOR is not exactly the same as the ECONDEPENDENT variable in the Spanish survey, they are conceptually very similar. Certainly, the variables included in the two questionnaires do not coincide, which hinders comparability. Thus, RACEW and LOTSTATRES are not meaningful in the Spanish case, but we introduced them, as well as FEMALE and EDUCATION, given the scarcity of variables in the participation model for the US data, and in order to attain convergence. Again, we had no a priori expectations about the effect of these variables on SYNDICATE.
12. Visit, for example, the official websites of the UK National Lottery, and the Westdeutsche Lotterien where players can download a template for syndicate agreements.

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References

- Adams, D. J. (1996). *Playing the Lottery: Social Action, Social Networks and Accounts of Motive*. Doctoral Dissertation, Department of Sociology, University of Arizona.
- Adams, D. J. (2001). My ticket, my 'self': lottery ticket number selection and the commodification and extension of the self. *Sociological Spectrum*, **21**, 455–477.
- Applebaum, E. and Katz, E. (1981). Market constraints as a rationale for the Friedman-Savage utility function. *Journal of Political Economy*, **89**, 819–825.
- Beckert, J. and Lutter, M. (2007). Wer spielt hat schon verloren? *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, **59**, 241–271.
- Beckert, J. and Lutter, M. (2009). The inequality of fair play: lottery gambling and social stratification in Germany. *European Sociological Review*, **25**, 475–488.
- Biggart, N. W. (1989). *Charismatic Capitalism*. Chicago: University of Chicago Press.
- Bloch, H. A. (1951). The sociology of gambling. *American Journal of Sociology*, **57**, 215–221.
- Clotfelter, Ch. T. and Cook, P. (1989). *Selling Hope*. Cambridge, MA: Harvard University Press.
- Cohen, L. R. (2001). The lure of the lottery. *Wake Forest Law Review*, **36**, 705–745.
- Collins, R. (2004). *Interaction Ritual Chains*. Princeton, NJ: Princeton University Press.
- Delhey, J. and Newton, K. (2003). Who trusts? The origins of social trust in seven societies. *European Societies*, **5**, 93–137.
- Devereux, E. C. Jr. ([1949] 1980). *Gambling and the Social Structure*. Vol. 2, New York: Arno Press.
- DiMaggio, P. and Louch, H. (1998). Socially embedded consumer transactions: for what kinds of purchases do people use networks most? *American Sociological Review*, **63**, 619–637.
- Durkheim, E. (1973). *On Morality and Society*. Chicago: University of Chicago Press.
- Farrell, L., Hartly, R., Lanot, G. and Walker, I. (2000). The demand for lotto: the role of conscious selection. *Journal of Business and Economic Statistics*, **18**, 228–241.
- Fernandez, R. and Castilla, E. (2000). Social capital at work: networks and employment at a phone center. *American Journal of Sociology*, **105**, 1288–1356.
- Fundación BBVA (2006). *Capital Social, Confianza, Redes y Asociacionismo en 13 Países del Mundo*. Madrid: Fundación BBVA.
- Garvía, R. (2007). Syndication, institutionalization, and lottery play. *American Journal of Sociology*, **113**, 603–653.
- Garvía, R. (2008). *Loterías. Un estudio desde la nueva sociología económica*. Madrid: CIS.
- Glaeser, E. L., Laibson, D. and Sacerdote, B. (2002). An economic approach to social capital. *The Economic Journal*, **112**, 437–458.
- Granovetter, M. (1985). Economic action and social structure: the problem of embeddedness. *American Journal of Sociology*, **91**, 481–510.
- Granovetter, M. (2002). A theoretical agenda for economic sociology. In Guillén, M. F., Collins, R., England, P. and Meyer, M. (Eds.), *The New Economic Sociology*. New York: Russell Sage Foundation, pp. 35–60.
- Guillén, M. F., Collins, R., England, P. and Meyer, M. (2005). The revival of economic sociology. In Guillén, M. F., Collins, R., England, P. and Meyer, M. (Eds.), *The New Economic Sociology*. New York: Russell Sage Foundation, pp. 1–32.
- Hakansson, N. H. (1970). Friedman-Savage utility functions consistent with risk aversion. *Quarterly Journal of Economics*, **84**, 472–487.

- Hannan, C. (1999). *Beyond Networks: 'Social Cohesion' and Unemployment Exit Rates*. IESR Working Paper 1999-07. Dublin: Institute for Economic and Social Research of Dublin.
- Hartley, R. and Farrell, L. (2002). Can expected utility theory explain gambling? *American Economic Review*, **92**, 613–624.
- Inglehart, R. et al. (2004). *Human Beliefs and Values*. Madrid: Siglo XXI.
- Ingram, P. and Roberts, P. W. (2000). Friendships among competitors in the Sydney hotel industry. *American Journal of Sociology*, **106**, 387–423.
- Jones, L. P. and Addams, J. (1991). Unemployment the effect on social networks, depression, and reemployment. *Journal of Social Service Research*, **15**, 1–22.
- Lamont, M. and Molnár, V. (2001). How blacks use consumption to shape their collective identity: evidence from African-American marketing specialists. *Journal of Consumer Culture*, **1**, 31–45.
- La Fleur, T. (2010). *2010 World Lottery Almanac*. Boyds, MD: TIF Pub.
- Light, I. (1997). Numbers gambling among blacks: a financial institution. *American Sociological Review*, **42**, 892–904.
- Marx, K. ([1852] 1963). *The Eighteenth Brumaire of Louis Bonaparte*. New York: International Publishers.
- McCaffery, E. J. (1994). Why people play lotteries and why it matters. *Wisconsin Law Review*, **1**, 71–122.
- Nibert, D. (2000). *Hitting the Lottery Jackpot*. New York: Monthly Review Press.
- Norris, P. and Inglehart, R. (2003). *Gendering Social Capital*. Paper presented at the Gender and Social Capital Conference, University of Manitoba, 2–3 May 2003, available from <www.umanitoba.ca/gender_socialcapital/> [accessed 23 December 2010].
- Palloni, A. and Massey, D. S. (2001). Social capital and international migration: a test using information on family networks. *American Journal of Sociology*, **106**, 1262–1298.
- Pareto, V. (1980). *Compendium of General Sociology*. Minneapolis: University of Minnesota Press.
- Petty, W. (1667). *Treatise on Taxes and Contributions*. London: Robert Hartford.
- Powell, W. W., Koput, K. W. and Smith-Doerr, L. (1996). Interorganizational collaboration and the locus of innovation: networks of learning in biotechnology. *Administrative Science Quarterly*, **41**, 116–145.
- Roger, P. (2011). La demande de grilles d'Euromillions: una comparaison internationale. *Revue économique*, **62**, 29–65.
- Roger, P. and Broihanne, M. H. (2007). Efficiency of betting markets and rationality of players: evidence from the French 6/49 lotto. *Journal of Applied Statistics*, **34**, 645–662.
- Smith, A. ([1776] 1952). *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: William Benton.
- Simmel, G. (1950). *The Sociology of Georg Simmel*. Translated and edited by Kurt H. Wolff. New York: Free Press.
- Simmel, G. ([1907] 1990). *The Philosophy of Money*. London: Routledge.
- Tec, N. (1964). *Gambling in Sweden*. Totowa, NJ: Bedminster.
- Uslaner, E. M. (2002). *The Moral Foundations of Trust*. Cambridge: Cambridge University Press.
- Walker, I. (1998). The economic analysis of lotteries. *Economic Policy*, **13**, 359–401.
- Walker, I. and Young, J. (2001). An economist's guide to lottery design. *The Economic Journal*, **111**, 700–722.
- Winkelmann, R. (2006). *Unemployment, Social Capital, and Subjective Well-Being*. Discussion Paper no. 2346. Institute for the Study of Labor (IZA) of Bonn.
- Zelizer, V. (1994). *The Social Meaning of Money*. New York: Basic Books.
- Zelizer, V. (2002). Enter culture. In Guillén, M. F., Collins, R., England, P. and Meyer, M. (Eds.), *The New Economic Sociology*. New York: Russell Sage Foundation, pp. 101–125.
- Zuckerman, E. W. (2004). Do firms and markets look different? Repeat collaboration in the feature film industry, available from <http://web.mit.edu/ewzucker/www/> [accessed 23 December 2010].