Inequality aversion among gypsies: a field investigation*

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Abstract

This paper presents a first attempt to measure inequality aversion among gypsies. We conducted an experiment among adult gypsies living at slums outside Vallecas (Madrid). To analyze this variable we use the mechanism provided by Kroll & Davidovitz (2003) among 38 voluntary participants. Results indicate that: i) 52.6% of the individuals are inequality averse; ii) there is a positive relationship between inequality aversion and some features of the population such as individual religious practise, marital status, family size, position in the hierarchy of the family or club association and, iii) neither wealth, nor participation in voluntary activities affect inequality aversion.

Keywords: inequality aversion, gypsies, field experiment.
JEL Class.: C93, D85, Z13

1 Motivation

Gypsies are one of the highest minorities in Spain, approximately 600 thousand (around 1.5% of the total Spanish population), and its life has been marked by persecution, discrimination and social exclusion. Although gypsies have achieved full status as citizens and there have been improvements in their access to education, housing and so on, they still suffer from segregation and marginalization, specially in the slums built, often by public initiative, on the outskirts of many Spanish cities (see Gay Blasco (1999)).

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Gypsies appear on the top of most negative indices such as lack of vaccination, accident rate or prison but they do not appear in positive indices such as economic, educative or political development.

Research about economic behavior of Spanish gypsies is still reduced. A large number of papers such as Gamella (2005), Gay Blasco (1999) and Sanchez Ortega (1986) among others have described gypsies' history, social context or patterns of behavior. Although, as far we know, only Brañas-Garza, Cobo-Reyes and Domínguez (2006) (BCD hereafter) have studied this population using economic methods. Specifically, BCD analyze concepts of fairness and solidarity among Spanish gypsies using a Strategy Method Ultimatum Game and find an unexpected high level of solidarity among them.

This paper intends to enlarge BCD previous research analyzing other possible factors explaining pro-social behavior, in particular we focus on *inequality aversion* and its determinants.

A large body of experiments have shown that people do not choose systematically in order to maximize their own material payoffs (see Henrich (2000) and Henrich *et al.* (2001)). Recent literature on other regarding preferences tries to explain individuals motivations for that behavior. Among these arguments, inequality aversion appears as a key factor. Inequality aversion is defined as the extent to which an individual prefers a more equal distribution of the money. Ferh & Schmidt (1999) or Bolton & Ockenfels (2000), propose models in which they introduce inequality aversion as an explaining factor of individuals' behavior.

Experimental evidence is not conclusive about individual's inequality aversion: while authors as Charness & Grosskopf (2005) show that inequality aversion do not affect individual behavior on strategic environments (even when there is an advantage distribution for players' partners), Loewenstein, Thompson and Bazerman (1989) provide evidence on subjects exhibiting strong and robust preferences against disadvantageous inequality.

The aim of this paper is to explore inequality aversion among a specific population: Spanish gypsies. This paper also enlarges this research with the analysis of the main items from the CORE[1] questionnaire as determinants of inequality aversion.

To perform the former investigation we conducted an economic experiment plus an extensive survey among gypsies belonging to the school for adults "El Barro", placed in Vallecas, Madrid. The sample was composed by 38 subjects, both females and males who came voluntarily to the experimental session.[2] All

[1] CORE survey is an international project to analyze anthropology foundations for human behavior. This survey contains three different experiments (ultimatum game, dictator game and punishment game) plus an extensive questionnaire. The whole CORE protocol can be consulted at http://webuser.bus.umich.edu/henrich/gameproject.htm .

[2] Recall that the experiment was conducted exclusively among gypsies, i.e., the whole sample was compounded of gypsies, so we did not study the behavior of gypsies facing non-gypsies. This paper is only a first approximation to gypsies' economic behavior and we were interested in analyze first the pure level of inequality aversion without problems of racism or mistrust which could appear when individuals play the game against other ethnic groups (see Ferraro & Cummings (2005)). Hence, the study of inequality aversion when gypsies play the game vs.

subjects were students from this school. They were illiterate and with very low wealth. We used the CORE survey to explore demographic attitudes and social capital issues. The survey comprises a large number of questions regarding education, religiosity, family size, social integration, social capital and so on. To elicit subjects' inequality aversion we used a modified version of the device proposed by Kroll & Davidovitz (2003).

Results show that roughly 50% of the population are inequality averse. Results also indicate that inequality aversion is positively related to femininity, number of children, churchgoing, family responsibility, family size, social integration and other social capital indicators; and negatively to age, education, self-esteem and trust. Surprisingly, the current level of income has not a significant effect.

The paper is structured as follows. Next section explains the mechanism proposed by Kroll & Davidovitz (2003) to elicit inequality aversion. Section 3 analyzes the sample, the experimental protocol and the survey. Section 4 shows results, and section five concludes.

2 Kroll & Davidovitz (2003)

Kroll & Davidovitz (2003) (hereafter KD), propose an straight and simple method to explore individual inequality aversion. The idea is that subjects facing a decision problem show, by themselves, if they are or not inequality averse.

In KD, subjects are asked to choose between two different lotteries featured by: *a*) identical risk (both lotteries share the same level of risk) but *b*) heterogeneous distribution (they differ in the way the reward is distributed among the whole population).

Kroll & Davidovitz imposed the same risk level to both procedures to eliminate risk aversion as a possible explanation for inequality aversion.[3] The later is easy to understand with an example.

> **Example**: *Imagine the life in a small village in the jungle where the maintenance of individuals depends completely on the total bag they hunt. Possibly, a subject prefers an egalitarian distribution of the food not because he is inequality averse, but because he may expect not to be able to hunt enough animals to feed his family.*

The essence of the KD method is as follows. The individuals' payoff depends on the number shown by the dice thrown by the experimenter. Before the experimenter throws the dice, subjects are offered two possibilities:

non-gypsies is an open question to analyze.

[3] Risk aversion is defined as the desire to avoid uncertainty (Deardorff (2005)). In the theory of expected utility maximization, a risk averter is defined as an individual with a concave utility function (Friedman & Savage (1948)).

Alternative 1 (common): the experimenter throws the dice once for the whole population, so all individuals would receive the same payoff (depending on the number shown by the dice).

Alternative 2 (individual): the experimenter throws the dice once for each particular individual, therefore a subject would receive her reward according to the number indicated on *her* dice.

Note that the *probability of obtaining a specific amount of money* (the risk of the lottery) *is the same in both methods* (1/6 for each of the six different payoffs). Thus, the only difference between these two possibilities is the distribution of the money.

Applying alternative 1 all individuals obtain the same payoff, whereas in alternative 2 each participant gets his own payoff (which, particularly, could be the same for all players). Hence, we may partition the population according to the following two definitions:

Definition 1 (inequality averse) *Subjects who choose alternative 1, given that they prefer all individuals to obtain the same amount of money.*

Definition 2 (inequality lover) *Subjects who choose alternative 2 given that they prefer each individual to obtain his own amount of money.*

3 Experimental design, procedures and rewards

3.1 Design

We conducted this research following part of the CORE package included in the Cross–Cultural Analysis Second phase (see Henrich and Ensminger (2002)). We carried out the extensive survey, included in that package, plus two different experiments: the Strategic Method Ultimatum Game (SMUG) and the Inequality Aversion Test (IAT) described above. SMUG was motivated with monetary rewards while IAT was conducted hypothetically. Whereas BCD explores the SMUG, this work focus on the inequality aversion test.[4]

As in KD, our subjects were invited to choose between a collective (but uncertain) prize and a personal (but uncertain) one.

We will provide later (see table 1, page 13) the results and the main findings of the survey. They explore several individual attributes such us personal features, labour issues, social integration and so forth.

3.2 Rewards

The IAT mechanism -which separates inequality aversion from risk aversion- seems very intuitive and easy to understand, but the way of implementing the

[4] For a more detailed explanation of the whole experiment, including SMUG, see Brañas-Garza et al. (2006).

"winning" alternative is not at all obvious. The problem is that there are many players choosing between the two alternatives explained before, hence, in order to decide subjects' final payoff, we must implement only one of these alternatives. The question is how to decide which alternative (1 or 2) will be executed. Some options are:

Decision rule 1 (KD): common or individual dice would be determined by the choice of the majority of the group.

The weakness of this method relies on the following fact. If subjects know ex-ante that this would be the decision rule, the decisiveness ex-ante of each individual is very small, therefore their decision will have a very low impact on others income.[5] In the case that subjects do not know the decision rule before making their choice, this situation may generate deception.

Decision rule 2 (random): the alternative would be executed according to a decision randomly chosen from the whole group of individuals.

However, this procedure would imply similar disadvantageous features as the rule used by Kroll & Davidovitz. Firstly, the decisiveness ex ante of a subject is only $\frac{1}{n}$, where n is the total number of individuals. In addition, this system is too complicated in the sense that payoffs are a composed lottery, hence the execution of subjects' decision depends too much on randomness.[6]

Decision rule 3: the alternative implemented is only decided according to the preferences of one individual of the group. The difference is that this individual is not randomly chosen but chosen from an ordered list of the whole group. Then, we repeat this procedure with the remainder subjects of the list. Therefore, in each repetition one different subject is the "dictator" in the decision rule. This method avoids deception and also all individuals are decisive in one repetition.

However, one of the inconveniences of this procedure would be the waste of time (even if only one individual decides the alternative which implies throwing one dice for each individual, the length of throwing a dice $2n-1$ times would be too long). Moreover, from the point of view of the aggregate payoffs the decision of one individual would not make a big change in others income.

[5] For a more detailed explanation about decisiveness, see Laurelle & Valenciano (2005). They defined decisiveness ex-ante as the probability that a voter is successful and his vote is critical for it. Individual i is said to have been successful if the final decision coincides with voter i´s vote. In particular, assuming that the distribution of vote configuration, S , is uniform, that is $p(S) = \frac{1}{2^n}$, the decisiveness ex-ante of any individual i in the majority rule is $\frac{\binom{n-1}{\lfloor \frac{n}{2} \rfloor}}{2^{n-1}}$. For instance, if $n = 38$ i's decisiveness is 1.42×10^{-11}.

[6] A lottery for the decision of the alternative of throwing the dice, and a lottery for the final payoff according to the number shown on the dice.

Taking into account the difficulties to implement payoffs and given that subjects were already paid a show-up fee, and they also were paid for the SMUG experiment, we considered that not to pay the subjects for the IAT would not make an important difference with respect to the incentives. Hence, we conducted the IAT in an **hypothetical scenario**. As the SMUG was conducted before the IAT, subjects were already involved in an economic setting and they have incentives to perform the task seriously. Therefore, the results obtained seem to be a good approach of their preferences concerning inequality.

3.3 Procedures

The whole experimental session was conducted in July 2004 in the School for Adults "El Barro" in Vallecas. This school is driven by nuns with the target of teaching illiteracy gypsies to read and to write. Experimental subjects live in "Santa Catalina", a slum outside Madrid. They were invited to participate in an experiment in which they could earn some money. As a result of this "public call" the day of the experiment appeared 38 students. The later reduces the representativeness of our sample; as subjects were students of a school for adults, maybe they shared some special features and social norms that could make them different from other gypsies, so we cannot generalize our results to the whole gypsy population (although, as we will see below, our sample shares the main social and cultural features with the rest of Spanish gypsy population).

The experimental session was conducted by three experimenters in three basic steps:[7] *i*) all the subjects received the instructions orally in a common room; they also received a numerical code (identification) for each one. Individuals did not give their names, they were identified only with the numerical code.[8]

ii) Once subjects were completely informed about the experiment, they went to another room where each experimenter conducted: 1) the SMUG (see BCD), 2) they fill the full CORE survey in a second room, and finally 3) the inequality aversion device in the bottom of the second room.

iii) After subjects finished the SMUG, they received 3€ show–up fee, and at the end they received the SMUG earning (5 euros on average).

4 Spanish gypsies

The Spanish gypsies come from the first migratory waves of Roman into western Europe, which ended in the second half of the 15th century (see Gamella & Martin (2002)). Spanish gypsies have contributed much to Spanish culture and folklore, specially in Andalusia, where many of the symbols and practices which identify the region to the world have a crucial gypsy component (see Leblon

[7] Six nuns helped the experimenters but they only participated in the questionnaire. They did not know anything about the experiment (so they could not influence subjects' responses).

[8] In this way we preserved anonymity of individuals, so results were not influenced by problems of identification between subjects. We expected sincere responses given that nobody knew which were the responses of the rest of the individuals.

(2003)). The number of gypsies in Spain is approximately 600,000. Spanish gypsies live in permanent settled communities (almost all Spanish gypsies are sedentary). They inhabit 95% of slums around large cities in Spain. Neighborhoods are characterized by a lack of running water and a lack of police presence. However, levels of poverty and social discrimination are less significative for Spanish gypsies than for communities in Central and Eastern Europe.

Gypsy society as a whole is structured around extended family units. Individuals belong to a single unit. Gypsy society has no written rules. Instead, the entire set of social norms is transmitted by observation and imitation (see Lancy (1996)) or it can be transmitted orally from generation to generation. Thus the older members play a key role in the society and are looked up to the whole population who hold their experience and knowledge in high esteem. Related to the size of the families, the average size of a Roman family is 5.4 members, in comparison with 3.7 *members* of a non-Roman Spanish family.

Three basic social rules govern gypsy society: *i*) solidarity among gypsies (which includes hospitality and aiding others), *ii*) freedom as a natural condition of the people and *iii*) symbolism as a representative feature of gypsy culture. This includes flamenco, which is considered to be an expression of gypsy lifestyle.

Today the life and traditions of Spanish gypsies are being rapidly transformed. These changes affect differently depending on the social status of the individual, thus gypsy population is increasingly heterogeneous, even polarized, between the new middle class and a gypsy underclass affected by poverty and social exclusion (see Gamella (2005)).

The literacy enrollment and school attendance rates are very low among Roman. A very small percentage of Roman finish the basic education in Spain. The labor market for Roman families is very different from the rest of population. Jobs are low paid and there exist few hold salaried full-time jobs. Around 50-80% of gypsy population works in peddling, collecting solid urban waste and performing personal work.

The points above are applicable to the entire population of gypsies living in Spain. Next section explores our specific population, Spanish gypsies from Vallecas. Results of the questionnaire show that this sample shares the main socioeconomic features with the whole Spanish gypsy population.[9]

5 Descriptive analysis of our population

In this section we only focus on the most relevant items obtained from the CORE questionnaire (related to socioeconomic and cultural features of this specific sample) that we will use as explaining factors of inequality aversion.[10]

Table 1a and 1b show the items and summarize the main findings for the 38

[9] See for instance Gamella (2005), Ringold et al. (2005), Martin & Gamella (2002) or Gómez Alfaro (1998) among others.

[10] Although the whole CORE questionnaire contains a larger set of items to perform this investigation we selected the most 40 relevant variables for urban population in Western countries.

subjects who attended the experiment (N means number of observations). Table 1a shows the percentage of population which hold the selected characteristics and table 1b shows the average of some numerical attributes.

Related to education features, 93% of population has some level of education, this percentage seems very high, however they consider the fact of learning to read and write as a high educational level achieved. In relation to personal variables, tables 1a and 1b show that 73% of population is married, 86% of population has children, and the mean number of children is almost 3.

insert Table 1a here

Also note that population is very poor, for instance only 1 up to 38 subjects owns his house, none has lands only 1/3 of the population has swatch and 70% of the population has not a car. Regarding the labor market status, 83% are unemployed.

insert Table 1b here

Now we explore some of most representative variables which the CORE protocol introduces: these variables refers to *cooperation* and *social integration* (networking). As table 1a and 1b show, 15% of our population is a volunteer in an association and 24% is associated to a club. The mean number of hours spent in clubs is around 5 hours per week for people belonging to a club. The mean number of hours dedicated to volunteer activities is about 1 hour in a week.

Interestingly, the mean number of guests for lunch is around 6. The latter feature jointly with the mean number of brothers (six, which is very high if we compare to average number among Spaniards, 1.7) and the above variables that indicate subjects cooperative behavior (club membership, voluntaryism...) may be helpful to predict a "sharing" behavior of the gypsy population.

6 Results

Before analyzing our results we will show some interesting arguments given by our volunteers during the experimental session. We classify subjects according to their level of inequality aversion.

i) On the one hand, 52.6% (20 of 38 subjects) preferred played their own lottery, that is, they are INEQUALITY LOVERS. From those individuals we may extract the next sentences, that summarize the most usual responses:

- my fortune is mine.
- It is better if each one play his own lottery.
- it wouldn't be fair if just because she's unlucky the rest of us have to be unlucky too.

ii) On the other hand, 47.4% (18 of 38 subjects) preferred played the same lottery for all individuals, that is, they are INEQUALITY AVERSE. From this population we show the most usual explanations:

- It is better if all of us get the same.
- it is better if all of us get the same, because we avoid problems; if anybody earn more money other subjects may feel offended.

Next part of this section deeply examines the connection between inequality aversion and the features of the population extracted from our survey, that is, the relationship between inequality aversion and the variables obtained through the CORE questionnaire.

Table 2 shows the results for a logit model, where the dependent variable is inequality aversion (which is a binary variable which takes value 1 for inequality aversion).

insert Table 2 here

Now, we summarize the most striking results. One overwhelming result is the *gender* bias for this sample: females are more averse than males. Interestingly, older individuals are less averse than youngest which means that aversion is decreasing in *age*.

Other items related to subjects' personal features are also interesting: *Marital status* plays a relevant role on aversion, subjects with spouse are more averse. The *number of children* is also a positive determinant of aversion and similarly the *number of individuals living in the same house* is also positive. In the same direction, individuals who are *family heads* are more inequality averse. However, the *number of brothers* is not statistically significant (note that the number of brothers does not depend on the subject, so it does not increase his sense of responsibility). This set of variables reflects that the larger responsibility the larger inequality aversion. This result seems to be quite sensible!

A surprising result is that individual *wealth* does not play any role on subject inequality aversion. This can be due to the fact that the differences in wealth among subjects are negligible.

Individual training (*education*) affects aversion in an amazing way: individuals schooling decreases inequality aversion, probably because subjects endowed with more education are more competitive.

Another surprise is that *religion per se* does not affect, i.e. is not statistically significant, whereas *church assistance* affects. In fact, subjects church-attendance increases their aversion level.

The sense of safety and trust decrease aversion.

Regarding subjects social integration we extract some notable estimations. The *number of guests invited for lunch* increases aversion. Although its effect is slight we may explain this result directly: more averse subjects are willing to invite more people to their home. In the same way, individuals who are *club memberships* are more averse. However there is not inequality aversion behind subjects participation as *volunteers* in some activities.

7 Concluding remarks

This paper analyzes the determinants of inequality aversion among Spanish gypsies in Vallecas. In particular, this work studies the relationship between inequality aversion and the most relevant items from the CORE questionnaire, using a logit specification.

First of all, using a procedure similar to that developed by Kroll & Davidovitz we extract that roughly half of the population participating in the experiment is inequality averse. In order to investigate the observed behavior, we base our analysis in the particular features (obtained through a questionnaire) of this population , many of them are shared by other gypsy populations (see for example Gamella (2005)).

Results of the logit model show that gender and age affect inequality aversion. In particular females and younger individuals are more egalitarian. Family responsibilities (position, number of children and so on) also affects positively inequality aversion. Education makes not more egalitarian individuals, this may be due to a competitive environment in the school. Religion has also a positive influence on egalitarianism but only for those who practice it regularly. Logically, social integration affects positively inequality aversion.

Finally, observe that these results cannot be extrapolated to all gypsy populations in the world. However, as we have shown in section 4, Spanish gypsy population shares the most relevant sociocultural features of our experimental population, so results could be generalized to the Spanish gypsy population.

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Table 1a: Some Population Features I

Attribute	%	n	Attribute	%	n
PERSONAL			EDUCATION		
female	68	38	some level of education	93	37
is married	73	37	goes to school	65	38
lives with his partner	67	33	WEALTH		
has children	86	35	house ownership	3	34
was born in Madrid	63	38	has not swatch	64	38
was born in a rural village	18	33	not satellite television	87	38
is family head	54	35	has not radio	24	38
SOCIAL CAPITAL			has not car	70	38
houses with only one food	16	38	has lands	0	38
houses with guests	54	37	is unemployed	83	23
is associated to a club	24	34	OTHER		
is volunteer	15	33	gypsy boss	0	4
does not trust in people	56	36	thinks they live in a safe home	74	38
RELIGION					
goes to church	59	29			
has religion	75	36			

Table 1b: Some Population Features II

Attribute	Mean	n	Attribute	Mean	n
PERSONAL			EDUCATION		
age	28.79	37	years of schooling	3.6	25
number of children	2.57	30	JOB		
number of brothers	6	38	hours worked/week	24.6	10
position among brothers	3.84	38	gypsy colleg./job	15.3	3
RELIGION			SOCIAL CAPITAL		
churchatt. days/month	21.61	18	people living in a house	4.76	38
			guests for lunch/day	5.73	22

Table 2: Results for logit regression

VARIABLE	PARAMETER	STANDARD ERROR
constant	-0.51*	0.18
male	-0.18*	0.05
age	-0.02*	0.00
school assistance	-0.49*	0.06
wealth	-0.01	0.03
religion	-0.05	0.04
church assistance	0.36*	0.06
married	0.18*	0.05
children	-0.55*	0.06
n^o of children	0.25*	0.04
brothers	-0.01*	0.00
family head	0.48*	0.05
size of family	0.09*	0.01
only one food	0.31*	0.04
guests for lunch	0.01*	0.00
sense of safety	-0.09*	0.05
club membership	0.36*	0.07
volunteer	0.09	0.09
trust	-0.23*	0.01
σ	0.23*	0.01

*significative at 1% level.