



CENTRE FOR DECISION RESEARCH & EXPERIMENTAL ECONOMICS



Discussion Paper No. 2016-18

Simona Demel, Abigail Barr,
Luis Miller & Paloma Ubeda
December 2016

**Labor Market Participation,
Political Ideology and
Distributive Preferences**

CeDEx Discussion Paper Series
ISSN 1749 - 3293



CENTRE FOR DECISION RESEARCH & EXPERIMENTAL ECONOMICS

The Centre for Decision Research and Experimental Economics was founded in 2000, and is based in the School of Economics at the University of Nottingham.

The focus for the Centre is research into individual and strategic decision-making using a combination of theoretical and experimental methods. On the theory side, members of the Centre investigate individual choice under uncertainty, cooperative and non-cooperative game theory, as well as theories of psychology, bounded rationality and evolutionary game theory. Members of the Centre have applied experimental methods in the fields of public economics, individual choice under risk and uncertainty, strategic interaction, and the performance of auctions, markets and other economic institutions. Much of the Centre's research involves collaborative projects with researchers from other departments in the UK and overseas.

Please visit <http://www.nottingham.ac.uk/cedex> for more information about the Centre or contact

Suzanne Robey
Centre for Decision Research and Experimental Economics
School of Economics
University of Nottingham
University Park
Nottingham
NG7 2RD
Tel: +44 (0)115 95 14763
Fax: +44 (0) 115 95 14159
suzanne.robey@nottingham.ac.uk

The full list of CeDEX Discussion Papers is available at

<http://www.nottingham.ac.uk/cedex/publications/discussion-papers/index.aspx>

Labor Market Participation, Political Ideology and Distributive Preferences

Simona Demel^b, Abigail Barr^a, Luis Miller^{b,1}, Paloma Ubeda^b

12 December 2016

Abstract.

Using a political-frame-free, lab-in-the-field experiment, we investigate the effects of employment status and political ideology on preferences for redistribution. The experiment consists of a real-effort task, followed by a four-player dictator game. In one treatment, initial endowments depend on participants' performance in the real-effort task, i.e., they are earned, in the other, they are randomly determined. We find that being employed or unemployed affects revealed redistributive preferences, while the political ideology of the employed and unemployed does not. In contrast, the revealed redistributive preferences of students are strongly related to their political ideologies. The employed and right-leaning students redistribute earnings less than windfalls, the unemployed and left-leaning students make no such distinction. We conclude that, when people are not exposed to the sometimes harsh realities of the labor market, their redistributive preferences depend on their political ideology but, when they are exposed, the effect of those realities overrules their ideology.

Keywords: economic status | lab-in-the-field experiments | left-right scale | redistribution

Acknowledgments: A. Barr acknowledges support from the Economic and Social Research Council via the Network for Integrated Behavioural Sciences (Award No. ES/K002201/1). L. Miller acknowledges support from the Spanish Ministry of Economy and Competitiveness (grant ECO2015-67105-R) and the Basque Government (research group IT-783-13).

¹ To whom correspondence should be addressed: E-mail: luismiguel.miller@ehu.eus. ^aSchool of Economics, University of Nottingham, Room B44, Sir Clive Granger Building, University Park Nottingham, NG7 2RD, UK; ^bSchool of Economics and Business, University of the Basque Country (UPV/EHU), Av. Lehendakari Aguirre 83, 48015 Bilbao, Spain.

Preferences for the redistribution of earned income have received considerable attention across the social sciences (Alesina and Giuliano 2011; Margalit 2013; Owens and Pedulla 2014). Survey-based studies identify material self-interest (Alesina and La Ferrara 2005) and ideological factors, most notably political left-right ideology (Alesina and Glaeser 2004; Fong 2001), as the principle determinants of such preferences. In most of these studies, redistributive preferences are quantified using politically-framed survey questions invoking specific redistributive schemes or welfare policies. This being the case, if individuals' redistributive preferences vary depending on which policy they have in mind, these frames could be driving the results (Cavaillé and Trump 2015; Jaime-Castillo and Sáez-Lozano 2016). To eliminate the possible effects of political framing, some studies use behavioral laboratory experiments designed to reveal individuals' redistributive preferences through the decisions that they make under abstract and controlled conditions (Durante et al. 2014; Barr et al. 2015; Barr et al. 2016). These show that economic status affects redistributive preferences. However, until now, no such experimental study has set out to disentangle the effects of economic status and political ideology on redistributive preferences.

In this paper, we use a “lab-in-the-field” experiment (Morton and Williams 2010) to investigate the effects of material self-interest and political ideology on preferences for the redistribution of earned income. The experiment involves a distributive justice game designed to measure individual acknowledgement of earned entitlement, i.e., the strength of the preference *not* to redistribute money that is earned compared to money gained owing to pure luck. Participants' political left-right ideology is measured using a standard ten-point scale. To identify the effect of material self-interest on preferences for the redistribution of earned income (Margalit 2013; Owens and Pedulla 2014; Campbell 2016), employed and unemployed individuals were invited to participate in the experiment.

If political ideology is a driver of redistributive preferences, acknowledgement of earned entitlement should increase from the political left to the political right, even after controlling for employment status. However, if such preferences are driven by material self-interest, the employed should acknowledge earned entitlement and the unemployed not, with political ideology playing a secondary or no role.

Finally, full-time students were also invited to participate. Students are less exposed to the harsh realities of the labor market; in general, they are not earning and being taxed and, to the extent that they need support, it is because they are investing in their future earning potential. Thus, material self-interest should have no immediate bearing on their redistributive preferences and the latter should be closely aligned to their political ideologies.

Methods

The experiment consisted of two parts. In the first part, participants were asked to engage in a real-effort task, an easy-to-understand, manual task for which no skills were required. In the second part, participants engaged in a four-player dictator game (4PDG). A tray divided into four quadrants, with each quadrant corresponding to one of the four players, was handed to each participant. Each participant knew which of the quadrants on the tray corresponded to him- or herself. The initial endowments of each of the four were indicated by black counters placed in each quadrant (1 counter = 1€). The four initial endowment values were 6€, 10€, 12€ and 16€. Participants were then told they could redistribute the counters however they wanted. Once everyone had finished, the final allocations proposed by one of the four, randomly chosen, were used to determine the final payoffs for all four players. Three or four groups of

four participated in each experimental session. The participants did not know who they were playing with and their redistribution decisions were made in private and kept anonymous.²

There were two treatments. In the earned treatment, participants' initial endowments in the 4PDG were directly related to their within-session rankings in the real-effort task – participants who were more productive started the 4PDG with higher initial endowments – and participants knew this. In the random treatment, the initial endowments were randomly assigned and, again, participants knew this.

Following the experiment, participants completed a survey which included questions on employment status, political left-right placement (LERI), and other characteristics. The LERI question invited them to place themselves on a ten-point scale. It was worded as follows: “When people talk about politics, the terms left and right are usually used. Below there is a left-right axis. Where would you place yourself on this axis? Indicate it with an X.”

We ran 29 experimental sessions involving 412 participants from across two Spanish cities, Bilbao and Cordoba. This sample was evenly distributed across genders and cities. The average participant was approximately 27 years old and had post-secondary education. Ideology was slightly skewed to the left, with a mean value of four.³

To investigate the effect of LERI on redistributive preferences, we estimate the following model:

$$x_{ij \neq i} = a_0 + a_1 E_i + a_2 y_j + a_3 (E_i * y_j) + a_4 LERI_i + a_5 (LERI_i * E_i) + a_6 (LERI_i * y_j) + a_7 (LERI_i * E_i * y_j) + \varepsilon_{ij} \quad (1)$$

² The experimental design is fully described and the experimental instructions presented in the *Supplementary Materials*.

³ The sample is fully described in Table A.1 of the *Supplementary Materials*.

where x_{ij} is participant i 's allocation to participant j in the 4PDG expressed as a proportion of the maximum amount that i could allocate to j (€44), E_i takes the value 1 if i played under the earned treatment and 0 if i played under the random treatment, y_j is j 's initial endowment, $LERI_i$ ranges from 1 (extreme left) to 10 (extreme right), a_0 to a_7 are the coefficients to be estimated, and ε_{ij} is the error term. This model identifies the slope of the relationship between j 's initial endowment, y_j , and i 's final allocation to j , x_{ij} , and the effects of whether j earned her initial endowment and i 's political ideology on that slope. In this model, acknowledgement of earned entitlement (AEE) manifests as the slope being more positive in the earned compared to the random treatment. The coefficient a_7 identifies the effect of i 's political ideology on the difference in the slope between the treatments, i.e., the effect of political ideology on AEE.⁴⁵ If AEE is strong among people on the political right and absent among people on the political left, a_7 will be positive.

To investigate the effect of employment status on AEE, following Barr et al. (2015), we extend model (1) to include four additional variables, $Unemployed_i$, which equals one if i is unemployed and zero otherwise, and its three interactions with y_j and E_i . If AEE is associated with being employed, the coefficient on the interaction between y_j and E_i will be positive and the coefficient on the three-way interaction between $Unemployed_i$, y_j and E_i will be negative. Then, to investigate how the effect of $LERI_i$ on AEE varies depending on participant type we estimate model (1) separately for the employed, unemployed and student participants.

⁴ For a complete description of the model and its' interpretation see section 3 in the *Supplementary Materials*.

⁵ In all estimations we exclude allocations by participants who took all the counters for themselves. Models 1 and 2 in Table A.2 of the *Supplementary Materials* indicate that there is no association between, acting selfishly, i.e., taking all the counters for oneself, and either political ideology or employment status..

Table 1: Regression analysis of the effect of ideology and employment status on distributive preferences Dependent variable = i 's allocation to j

	(1) <i>Full sample</i>	(2) <i>Full sample</i>	(3) <i>Employed</i>	(4) <i>Unemployed</i>	(5) <i>Students</i>
Earned treatment (E_i)	-0.042 (0.031)	-0.075 ** (0.033)	-0.131 ** (0.055)	0.038 (0.047)	-0.039 (0.052)
j 's initial endowment (y_j)	-0.004 (0.078)	-0.073 (0.086)	-0.089 (0.155)	0.073 (0.129)	-0.052 (0.080)
$E_i * y_j$	0.098 (0.113)	0.218 * (0.121)	0.414 * (0.212)	-0.087 (0.173)	-0.039 (0.170)
$LERI_i$	-0.003 (0.005)	-0.004 (0.005)	-0.012 (0.008)	0.004 (0.009)	-0.003 (0.005)
$LERI_i * E_i$	-0.008 (0.007)	-0.005 (0.007)	0.007 (0.013)	-0.017 (0.012)	-0.011 (0.013)
$LERI_i * y_j$	-0.000 (0.017)	0.006 (0.017)	0.009 (0.032)	0.003 (0.032)	0.006 (0.014)
$LERI_i * E_i * y_j$	0.045 * (0.026)	0.035 (0.026)	-0.003 (0.048)	0.051 (0.042)	0.078 ** (0.038)
$Unemployed_i$		-0.024 (0.017)			
$Unemployed_i * E_i$		0.069 *** (0.025)			
$Unemployed_i * y_j$		0.127 ** (0.054)			
$Unemployed_i * E_i * y_j$					***
y_j		-0.236 (0.086)			
Constant	0.218 * (0.022)	0.231 (0.023)	0.257 (0.040)	0.176 (0.035)	0.231 *** (0.027)
Observations	1092	1092	432	363	297
Participants	364	364	144	121	99

Notes: Sample includes final allocations made to others by participants who made at least one positive final allocation to another; there are three observations per participant; j 's initial endowment (y_j) = j 's initial endowment expressed as a proportion of the 44 tokens in the game; Earned (E)=1 if i made allocations under the earned treatment, =0 if i made allocations under the random treatment; standard errors clustered at the individual level; *** - sig. at 1%; ** - sig. at 5%, * - sig. at 10%

Results

Column (1) of Table 1 presents the results of an OLS estimation of model (1) for the full sample. Panel A of Figure 1 graphs the slopes of the relationships between participant j 's initial endowment and participant i 's allocation to j , $\Delta x_{ij}/\Delta y_j$, as a function of i 's $LERI_i$ placement

that are implied by this estimation. The slopes for the earned and random treatments are graphed separately. The figure indicates that, when initial endowments are randomly assigned, i 's allocation to j is not affected by j 's initial endowment and that this is the case regardless of i 's $LERI_i$ placement. In contrast, when initial endowments are earned, i 's allocation to j is positively affected by j 's initial endowment and when i is politically further to the right this positive effect is larger. The increasing-to-the-right vertical separation between the two lines indicates that, on average, AEE is greater among participants who are further to the political right. Finally, returning to column (1) of Table 1, we see that this conditional effect is statistically significant at the 10% level (see coefficient on the interaction between y_j , $LERI_i$ and E_i).

In column (2) of Table 1 $Unemployed_i$ and its three interactions with y_j and E_i are added to the estimated model. The coefficients on the three interaction terms are significant at the 5% level (or better) and the coefficient on y_j interacted with E_i (top panel) has gained significance at the 10% level.⁶ This estimation indicates that economic status affects AEE. The significant positive coefficient on y_j interacted with E_i indicates that students and the employed do acknowledge earned entitlement and the significant negative coefficient on y_j interacted with $Unemployed_i$ and E_i indicates that the unemployed acknowledge earned entitlement considerably less. Further, a linear restriction test indicates that we cannot reject the null hypothesis that AEE is zero among the unemployed. Finally, controlling for i 's economic status, reduces the size of the coefficient on y_j interacted with $LERI_i$ and E_i (middle panel) and renders it insignificant (p-value=0.188).

⁶ According to a Chow test, the allocation decisions made by students and the employed can be pooled. If we exclude the allocation decisions made by students, the results are almost identical.

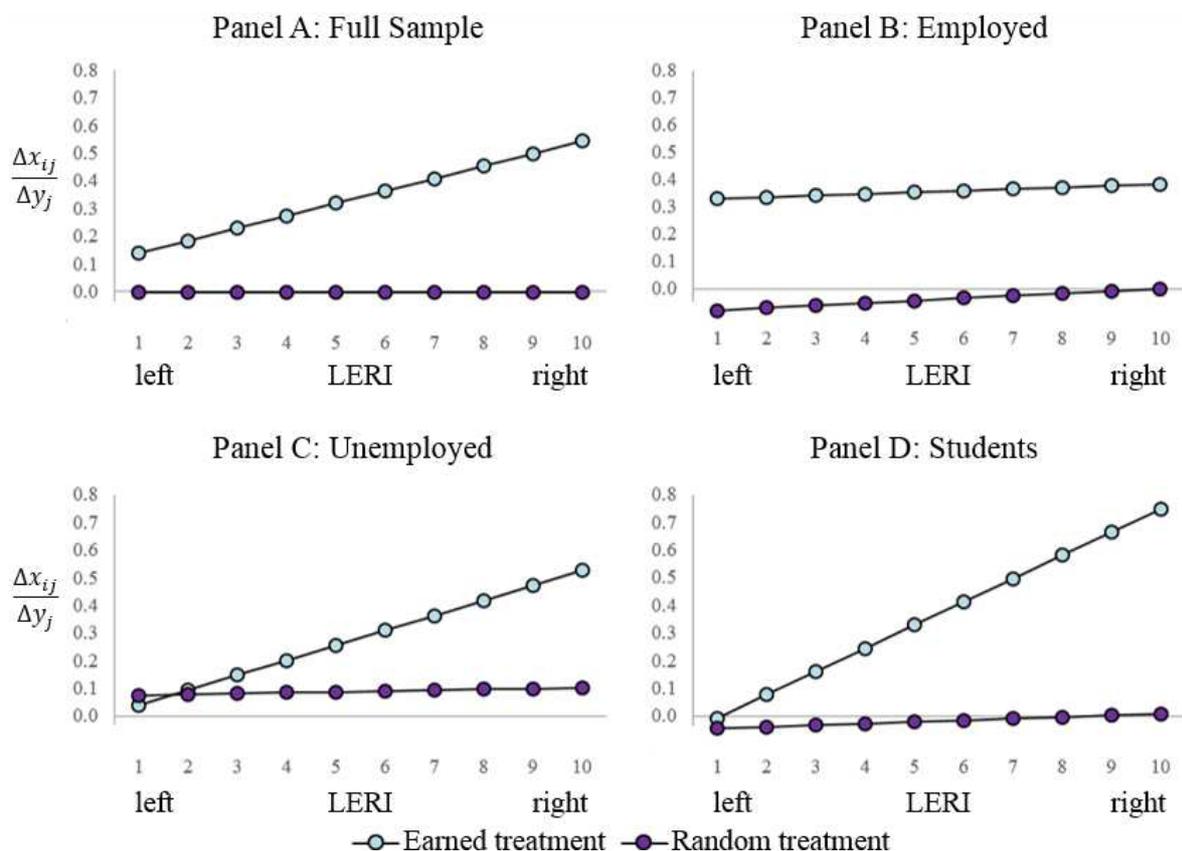


Fig. 1. The effect of ideology on the acknowledgement of entitlement. The linear functions graphed are derived from the regression models presented in columns (1), (3), (4) and (5) of Table 1.

Columns (3) to (5) of Table 1 present the results of OLS estimations of Model 1 for the employed, unemployed and students separately and Panels B, C and D of Figure 1 contain the corresponding graphs. The estimations for the employed (column (3)) and unemployed (column (4)) indicate, again, that economic status and not political ideology determine AEE. The coefficient on the interaction between j 's initial endowment and E_i is positive, large and significant at the 10% level for the employed and negative, small and insignificant for the unemployed and the coefficients on all the terms involving $LERI_i$ including the interaction with y_j and E_i , are small and insignificant in both models. Panel B indicates that, among the employed, AEE (the vertical distance between the lines) does not depend on $LERI_i$; across the political spectrum, employed people acknowledge earned entitlement. Panel C suggests

otherwise for the unemployed; the increasing-to-the-right vertical separation between the lines for the random and earned treatments suggests that AEE is greater among unemployed people who are further to the political right. However, the corresponding estimation indicates that AEE is never significantly different from zero.

Discussion

This paper addresses two gaps in the growing literature on preferences for redistribution. First, it provides an analysis of the effect of political left-right ideology and economic, specifically employment, status on experimentally-elicited distributive preferences. This analysis shows that, when making redistributive decisions in a political-frame-free context, the employed acknowledge earned entitlement, the unemployed do not and, in both cases, political ideology plays no or a very minor role. This is consistent with the findings of prior survey-based studies and lends support to the primacy of material self-interest hypothesis.

Second, the paper analyses the relationship between political ideology and redistributive preferences, not only for the employed and unemployed, but also for students. This analysis reveals that, in contrast to that of the employed and unemployed, students' AEE is directly and strongly related to their political ideology; those on the far left do not acknowledge earned entitlement and those further to the right do. These findings are consistent with the idea that, when people are not exposed to the sometimes harsh realities of the labor market, their preferences for redistribution depend on their political ideology, but when they are exposed, the effect of those realities, harsh or otherwise, overrules their ideology.

For the employed, the absence of an effect of political ideology on AEE is clear and striking. For the unemployed, while there is no statistical evidence of AEE anywhere on the political spectrum, Panel C of Figure 1 suggests that movement towards the political right is associated with an inclination towards AEE. Here, working with larger samples and including other

covariates in the analysis to account for heretofore unexplained heterogeneity could yield further insights.

For students, the well-defined relationship between self-proclaimed political ideology and the redistributive decisions they make when given the opportunity is robust to the inclusions of age and other demographic characteristics in the analysis and goes some way towards explaining why they have so often played a central role in political mobilization.

References

Alesina, Alberto and Edward L. Glaeser. 2004. *Fighting Poverty in the US and Europe: A World of Difference*. Oxford, UK: Oxford University Press.

Alesina, Alberto, and Eliana La Ferrara. 2005. "Preferences for Redistribution in the Land of Opportunities." *Journal of Public Economics* 89: 897-931.

Alesina, Alberto, and Paola Giuliano. 2011. "Preferences for redistribution." In *Handbook of Social Economics*, eds. Jess Benhabib, Alberto Bisin and Matthew O. Jackson. North Holland: Elsevier, 93–132.

Barr, Abigail, Justine Burns, Luis Miller, and Ingrid Shaw. 2015. "Economic status and acknowledgement of earned entitlement." *Journal of Economic Behavior & Organization* 118: 55–68.

Barr, Abigail, Luis Miller, and Paloma Ubeda. 2016. "Moral consequences of becoming unemployed." *Proceedings of the National Academy of Sciences* 113(17): 4676–4681.

Cavaillé, Charlotte, and Kris-Stella Trump. 2015. "The Two Facets of Social Policy Preferences", *Journal of Politics* 77 (1): 146-160.

Campbell, Colin. 2016. "The Formative Years, Economic Hardship, and Beliefs about the Government's Role in Lessening Poverty." *Social Problems* 63: 244-265.

- Durante, Ruben, Louis Putterman, and Joël van der Weele. 2014. "Preferences for redistribution and perception of fairness: An experimental study." *Journal of the European Economic Association* 12(4): 1059–1086.
- Fong, Christina. 2001. "Social Preferences, Self-Interest, and the Demand for Redistribution." *Journal of Public Economics* 82: 225-246.
- Jaime-Castillo, Antonio M., and José L. Sáez-Lozano. 2016. "Preferences for tax schemes in OECD countries, self-interest and ideology." *International Political Science Review* 37: 81-98.
- Margalit, Yotam. 2013. "Explaining social policy preferences: Evidence from the Great Recession." *American Political Science Review* 107(01): 80–103.
- Morton, Rebecca B., and Kenneth C. Williams. 2010. *Experimental Political Science and the Study of Causality: From Nature to the Lab*. Cambridge, UK: Cambridge University Press.
- Owens, Lindsay A., and David S. Pedulla. 2014. "Material welfare and changing political preferences: The case of support for redistributive social policies." *Social Forces* 92(3): 1087–1113.

Appendix for “Labor Market Participation, Political Ideology and Distributive Preferences”

Supplementary Information

Table of Contents

- 1. Experimental Procedures**
- 2. Participant sample**
- 3. Regression models and their interpretation**
- 4. Linear restriction tests**
- 5. Accounting for potentially considerable changes in partial selfishness**
- 6. Inclusion of controls**
- 7. Instructions and post-experimental questionnaire**

1. Experimental Procedures

1.1. Real-Effort Task

In the real-effort task participants had to sort yellow and blue gravel into various containers for seven minutes. There were two types of task. In the “filling task”, participants received a tray on which there was a box containing mixed yellow and blue gravel and many small plastic pots. They were asked to put seven pieces of yellow gravel and seven pieces of blue gravel in each small pot. In the “emptying task”, they were given a tray on which there was two empty boxes and many small plastic pots each containing a mixture of blue and yellow gravel. They were asked to empty the small pots sorting the gravel by color, putting the blue gravel in one of the boxes and the yellow gravel in the other. One or other task was undertaken in each session. The emptying task can be viewed as preparation for the filling task and vice versa, which enabled us to tell the participants in each session they were helping us prepare for subsequent sessions by sorting out some materials. Therefore, participants were encouraged to view their efforts as genuinely productive.

In the earned treatment, the initial endowments in the four-player dictator game (4PDG) were determined by the participants’ within session rank in the real-effort task. Rank depended on the number of small pots either filled or emptied.

1.2 The Four-Player Dictator Game

The four-player dictator game (4PDG) was conducted using specially designed and manufactured trays. Each participant received a tray which was divided into four quadrants, each quadrant relating to a participant. The participant’s own quadrant was blue and located at the side of the tray closest to the participant when the tray was placed on the desk in front of him/her. Each quadrant contained black counters which represented the initial endowment of the corresponding participant. One black counter was worth €1. The participants were told they

could rearrange the counters any way they liked, as long as none of the counters were removed from the tray. All instructions were given verbally in Spanish.

1.3 Show-up fee

In addition to their final payoffs from the 4PDG, each participant received a show-up fee of €4. In the random treatment, the €4 was presented as a flat fee for the real-effort task. In the earned treatment, the €4 was added to each of the possible earnings levels and then set aside to be collected at the end of the session. Therefore, the €4 represented a minimum total final payoff for each participant.

2. Participant Sample

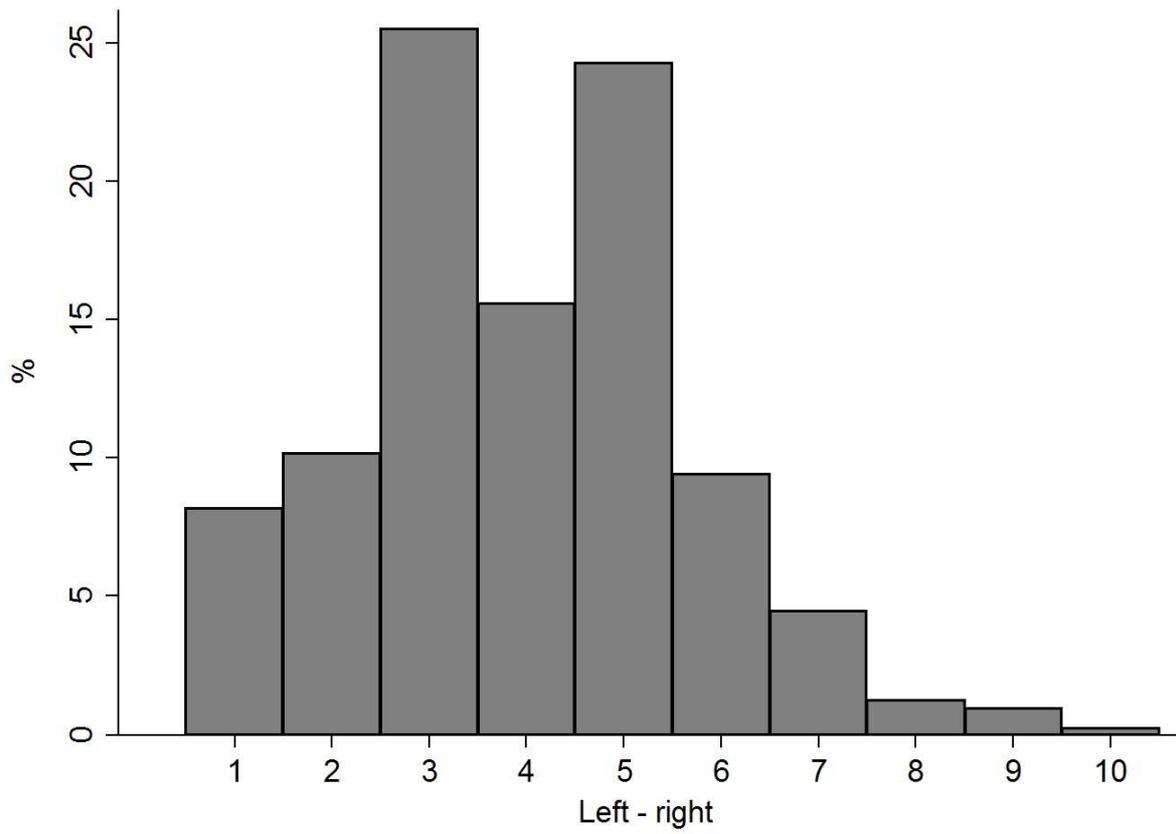
We ran 13 experimental sessions in Bilbao (northern Spain), seven sessions of 16 participants and six sessions of 12, with a total of 184 participants. In Cordoba (southern Spain), we ran 16 experimental sessions, nine sessions of 16 participants and the rest of 12, with a total of 228 participants. The large majority of the sample (95%) was aged 20–35.

Table A.1 displays the main characteristics of our sample, which is evenly distributed across genders and cities. Out of 412 participants, eight people left the ideology question unanswered – less than 2% of the sample. LERI is slightly skewed to the left, with a mean value of four (see Figure A.1).

Table A.1: Participants and treatment assignment

	All	Unemployed	Employed	Students
Sample sizes	412	137	161	114
Characteristics				
Female (%)	53.3%	51.2%	57.1%	50%
Age (mean)	26.9	28.8	28.3	22.7
Years in education	17.9	18.1	18.8	16.5
Left-right (mean)	4.0	3.7	4.0	4.3
Location				
Bilbao (%)	44.7%	37.2%	47.8%	49.1%
Cordoba (%)	55.3%	62.8%	52.2%	50.9%
Treatments				
Random (%)	40.8%	45.3%	37.3%	40.3%
Earned (%)	59.2%	54.7%	62.7%	59.7%

Figure A.1: Distribution of Left-right



3. Regression models and their interpretation

When estimating model (1) the analytical objective is to establish whether, how, and to what extent the allocation made by i to j in the DJ game is conditioned upon j 's initial endowment and whether, how, and to what extent this conditioning varies depending on i 's political ideology.

Model (1) took the following form:

$$x_{ij \neq i}^* = a_0 + a_1 E_i + a_2 y_j + a_3 (E_i * y_j) + a_4 LER I_i + a_5 (LER I_i * E_i) + a_6 (LER I_i * y_j) + a_7 (LER I_i * E_i * y_j) + \varepsilon_{ij} \quad (1)$$

where:

- $x_{ij \neq i}^*$ is the allocation made by i to j in the 4PDG expressed as a proportion of the maximum amount that i could allocate to j (€44);

- $E_i = 1$ if i played the DJ game under the earned treatment, $= 0$ if i played the DJ game under the random treatment;
- y_j is j 's initial endowment in the 4PDG also expressed as a proportion of €44;
- $LERI_i$ captures i 's political ideology and ranges from 1 (extreme left) to 10 (extreme right);
- a_0 to a_7 are the coefficients to be estimated; and
- ε_{ij} is the disturbance term.

Moderate variations in partial selfishness manifest as a vertical shifts in the relationship between j 's initial endowment and i 's allocation to j ; an increase (decrease) in i 's selfishness leads to a downward (upward) shift in the relationship. Differences in moderate partial selfishness between left leaning and right leaning participants and between treatments are accounted for by including E_i , $LERI_i$, and the interaction between the two as regressors in the model.

Assuming linearity (see section 4 for tests), the extent to which the allocation by i to j is conditioned upon j 's initial endowment equals the effect of a one unit change in j 's initial endowment on an i 's allocation to j , i.e., it is the slope of the relationship between the two. The slopes graphed in Fig. 1 (for various samples) are derived from the model above as follows:

Effect of a one unit change in j 's initial endowment on i 's allocation to j , $\frac{\Delta x_{ij}}{\Delta y_j}$:

- for an i with $LERI_i = 1$ (extreme left) under the Random treatment $= a_2 + a_6$;
- for an i with $LERI_i = 2$ under the Random treatment $= a_2 + 2a_6$;
- for an i with $LERI_i = 3$ under the Random treatment $= a_2 + 3a_6$; etc. to
- for an i with $LERI_i = 10$ (extreme right) under the Random treatment $= a_2 + 10a_6$;
- for an i with $LERI_i = 1$ (extreme left) under the Earned treatment =
 $a_2 + a_3 + a_6 + a_7$;
- for an i with $LERI_i = 2$ under the Earned treatment $= a_2 + a_3 + 2(a_6 + a_7)$;

- for an i with $LERI_i = 3$ under the Earned treatment = $a_2 + a_3 + 3(a_6 + a_7)$; etc. to
- for an i with $LERI_i = 10$ (extreme right) under the Earned treatment =

$$a_2 + a_3 + 10(a_6 + a_7).$$

The extent to which participants with any given $LERI_i$ acknowledges earned entitlement can be defined as the difference in slope between the earned and random treatment. So, for example, the extent to which participants with $LERI_i = 6$ acknowledge earned entitlement is given by $6(a_6 + a_7)$.

When adding demographic controls to the model it is important to include not only the control variable itself but also the control variable interacted with E_i and y_j . This is because a variable can have no effect on the average allocation made by i to j and, nevertheless, have an effect on the slope of the relationship between x_{ij} and y_j . So, when accounting for the employment status of the decision-making participants to the model, we add $Unemployed_i$, which equals 1 if participant i was unemployed at the time of the experiment plus three interactions:

$$\begin{aligned} x_{ij \neq i}^* = & a_0 + a_1 E_i + a_2 y_j + a_3 (E_i * y_j) \\ & + a_4 LERI_i + a_5 (LERI_i * E_i) + a_6 (LERI_i * y_j) + a_7 (LERI_i * E_i * y_j) \\ & + b_4 Unemployed_i + a_5 (Unemployed_i * E_i) + a_6 (Unemployed_i * y_j) \\ & + a_7 (Unemployed_i * E_i * y_j) + \mu_{ij} \quad (2) \end{aligned}$$

When estimating models (1) and (2) we exclude allocations to others by participants who took all the counters for the themselves. We do this because such participants are signaling nothing about their notion of distributive justice, they are simply aiming to maximize their own personal payoff.

4. Linear restriction tests

The model presented in Table 1 (columns 1, 3-5) is estimated assuming that, conditional on experimental treatment and the decision-maker i 's placement on the left-right scale, $LERI_i$, the relationship between participant j 's initial endowment and i 's final allocation to j is linear. It also assumes linearity in the relationship between $LERI_i$, and participant i 's final allocation to j , this time conditional on treatment and j 's initial endowment.

To test the first assumption, we estimated an unrestricted version of (1) and conducted a linear restriction corresponding to the null hypothesis that the conditional relationships are linear in j 's initial endowment and the alternative hypothesis that they are not linear. In the unrestricted model, j 's initial endowment is included as a set of dummy variables, instead of as a single continuous variable, one corresponding to each of the possible values that j 's initial endowment could take. Then, each of these is interacted with E_i , $LERI_i$ and $E_i * LERI_i$. An F-test indicates that the fit of the unrestricted model is no better than the fit of the linear model (p-value=0.267). We were unable to test the second assumption using the same method owing to small cell frequencies in $LERI_i$. Instead, we estimated an unrestricted model, which included the square of $LERI_i$ as well as its interactions with E_i , y_j and $E_i * y_j$. Once again, the F-test shows that the fit of the unrestricted model is no better than the fit of the linear model (p-value=0.255).

5. Accounting for potentially considerable differences in partial selfishness

To investigate whether there is an association between placement on the left-right axis and selfishness we estimate Model 1 focusing on each participant i 's allocation to himself/herself. Column (1) of Table A2 displays the results. Neither $LERI_i$ nor any of the interactions involving $LERI_i$ bear significant coefficients and the four variables are jointly insignificant (p-value 0.147). In column (2) we include $Unemployed_i$ and its interactions with E_i and y_i .

Table A.2: Regression analysis of selfishness.Dependent variable = i 's allocation to i

	(1) Full Sample	(2) Full Sample
Earned treatment (E_i)	-0.028 (0.215)	-0.118 (0.232)
i 's initial endowment (y_i)	-0.104 (0.564)	-0.386 (0.586)
$E_i * y_i$	0.088 (0.773)	0.467 (0.834)
$LERI_i$	0.018 (0.038)	0.010 (0.037)
$LERI_i * E_i$	-0.031 (0.050)	-0.020 (0.050)
$LERI_i * y_i$	-0.025 (0.133)	0.000 (0.130)
$LERI_i * E_i * y_i$	0.160 (0.179)	0.119 (0.179)
$Unemployed_i$		-0.130 (0.124)
$Unemployed_i * E_i$		0.114 (0.171)
$Unemployed_i * y_i$		0.458 (0.470)
$Unemployed_i * E_i * y_i$		-0.562 (0.643)
Constant	0.414 *** (0.158)	0.497 *** (0.170)
Observations	404	404
Participants	404	404

Notes: Sample includes allocations made to self; standard errors clustered at the individual level; j 's initial endowment (y_j) = j 's initial endowment expressed as a proportion of the 44 tokens in the game; *Earned* (E)=1 if i made allocations under the earned treatment, =0 if i made allocations under the random treatment * -sig. at 10%; ** -sig. at 5%; *** -sig. at 1%.

In this estimation neither $LERI_i$ nor $Unemployed_i$ nor any of the interactions involving $LERI_i$ or $Unemployed_i$ bear significant coefficients, the four $LERI_i$ -related variables are jointly insignificant (p-value 0.248), and the four $Unemployed_i$ -related variables are jointly insignificant (p-value=0.651). These results indicate that political and ideology and employment status have no bearing on individual selfishness and that our findings relating to the slopes of the relationship between what one participant allocates to another and whether and how much that other participant earned in the real effort task are not driven by systematic differences in selfishness across sub-samples.

6. Inclusion of city of residence, age, gender, and education as controls

Finally, in table A.3 we re-estimate our model for the student sub-sample, while including controls for age, city of residence, gender and education and its interactions with y_j , E_i and $y_j * E_i$. We introduce one control variable and its interactions at a time to minimize the problem of multicollinearity.

Each column of the table presents the results relating to a control variable that is named in the column header. Two of the control variables, age and city of residence, affect allocations to others. However, only one of the control variables significantly affects acknowledgement of earned entitlement; students in Bilbao acknowledge earned entitlement significantly less than students in Cordoba. Most importantly, the coefficient on $LERI_i * E_i * y_j$, which is the estimator of the effect of ideology on the acknowledgement of earned entitlement, remains positive and significant across all the models, indicating that our main finding is robust to the inclusion of controls.

Table A.3: Re-estimation of the effect of ideology and student status on distributive preferences Dependent variable = i 's allocation to j

	-	Age	Bilbao	Female	Education (years)
Earned treatment (E_i)	-0.039 (0.052)	-0.066 (0.052)	-0.053 (0.052)	-0.057 (0.059)	-0.062 (0.049)
j 's initial endowment (y_j)	-0.052 (0.080)	-0.166 (0.120)	-0.145 (0.097)	0.010 (0.069)	-0.080 (0.087)
$E_i * y_j$	-0.039 (0.170)	0.108 (0.189)	0.131 (0.168)	-0.068 (0.179)	0.034 (0.158)
$LERI_i$	-0.003 (0.005)	-0.002 (0.005)	-0.004 (0.005)	-0.003 (0.005)	-0.005 (0.005)
$LERI_i * E_i$	-0.011 (0.013)	-0.010 (0.013)	-0.011 (0.012)	-0.006 (0.012)	-0.009 (0.013)
$LERI_i * y_j$	0.006 (0.014)	0.004 (0.016)	0.009 (0.014)	0.004 (0.013)	0.009 (0.013)
$LERI_i * E_i * y_j$	0.078 ** (0.038)	0.073 * (0.039)	0.074 ** (0.035)	0.068 * (0.037)	0.073 * (0.037)
Control		0.011 ** (0.005)	-0.060 ** (0.026)	0.020 (0.029)	0.007 (0.006)
$Control * E_i$		-0.004 (0.006)	0.038 (0.042)	0.002 (0.044)	-0.010 (0.010)
$Control * y_j$		-0.027 (0.017)	0.164 ** (0.075)	-0.110 (0.083)	-0.009 (0.020)
$Control * E_i * y_j$		0.025 (0.023)	-0.321 ** (0.135)	0.137 (0.147)	0.031 (0.031)
Constant	0.231 *** (0.027)	0.276 *** (0.027)	0.262 *** (0.022)	0.219 *** (0.035)	0.248 *** (0.028)
Joint sig. of CT and interactions		0.0012	0.0002	0.3058	0.4176
Observations	297	297	297	297	297
Participants	99	99	99	99	99

Notes: Sample includes allocations made to others; there are three observations per participant; j 's initial endowment (y_j) = j 's initial endowment expressed as a proportion of the 44 tokens in the game; Earned (E)=1 if i made allocations under the earned treatment, =0 if i made allocations under the random treatment; standard errors clustered at the individual level; *** - sig. at 1%; ** - sig. at 5%, * - sig. at 10%

7. Instructions and post-experimental questionnaire

Experimental scripts

Script DJ Experiments

Cordoba and Bilbao, 2013 and 2014

EARNED-FILLING
<EARNED-EMPTYING>
{RANDOM-FILLING}
/RANDOM EMPTYING/

[Before entering the lab subjects need to select a participant letter at random and be asked to sit at the desk bearing their participant letter. Record participant letters on the session form. Once everyone is seated...]

Thank you for coming here today and for agreeing to take part in this workshop.

When you came in today, you each chose a letter.

This is your player identification letter.

Please keep this player identification letter with you. You will need it at the end of the session to claim your money.

Does everyone understand?

We are now ready to begin so please could you all listen carefully to the instructions.

While the workshop is going on, please do not talk to anyone other than me and my assistants.

If you have any questions, please raise your hand and one of us will come to your desk and answer your question. If you talk to the people around you, you will be asked to leave.

There are three parts to the workshop. I am now going to explain what we want you to do in the first part, but please do not start the task until you are told to do so.

You are going to spend 7 minutes helping us sort out some materials that are to be used in another workshop later today, or tomorrow.

We are not asking you to do this for free, of course. You will be paid for helping us in this way.

On your desk, you will find a box of gravel and some small plastic pots. [Hold up example pot]

<On your desk, you will find some small plastic pots containing blue and yellow gravel, like this one, and two larger containers. [Hold up example pot]>

Please put 7 pieces of blue gravel and 7 pieces of yellow gravel in each pot. <Please empty the small pots, one or two at a time, and put the blue gravel in one of the larger containers and the yellow gravel in the other.>

Please be careful when counting the gravel. There should be 14 pieces of gravel in total in each pot, 7 blue and 7 yellow...like this one [show example]. <Please be gentle with the small pots so you do not break the hinges on the lids.>

{Only for the filling treatments} Once you have filled a pot, make sure that the pot lid is closed properly.

We will check the pots that you fill <We will check and count the pots that you have emptied>.

{Only for the earned treatments} The more pots you fill <empty>, the more money you will have at the end of this task. You will use this money in the second part of this workshop.

{Only for the earned treatments} However, any pots that do not have 7 pieces of blue gravel and 7 pieces of yellow gravel will not be counted. <However, any pots that have been emptied but the gravel has not been sorted into the larger containers, will not be counted.>

{Only for the earned treatments} The people who fill <empty> the most pots will start the second part of the workshop with more money than the people who fill <empty> the fewest.

If you run out of pots or gravel please raise your hand and we will bring you more. <If you run out of pots please raise your hand and one of us will bring you more.>

Does anyone have any questions?

[Wait... answer as required]

Please start filling <emptying> pots now. I will tell you when the 7 (seven) minutes are up.

[Note start time]

[After 7 minutes...] Please can everyone stop now. Please raise both hands in the air and keep them there until one of my assistants comes to you. Thank you for your work. We will now collect the trays, pots and gravel.

We will check that each pot has 7 pieces of blue gravel and 7 pieces of yellow gravel, write down the number of pots each one of you has filled and then begin the next part of the workshop. <We are going to count the number of pots that you have emptied, we will check that the gravel has been sorted correctly and then begin the next part of the workshop.> This will take a few minutes. Please be patient and do not talk. I will explain the next part of the workshop once we are ready.

{Only for the earned treatments} *[Rank the subjects according to how many small pots they filled. Disregard pots that do not contain 7+7. Record the number of pots and their rank on the session form. Then, allocate trays to subjects according to Table 1 (which links ranks to tray numbers) at the end of this document. Record their tray numbers on the session form. Also write the participant/desk letters on the tray lids and the corresponding receipts.]* < *[Rank the subjects according to how many small pots they emptied. Disregard pots from which the gravel has been left unsorted. Record the number of sorted pots and their rank on the session form. Then, allocate trays to subjects according to Table 1 (which links ranks to tray numbers) at the end of this document. Record their tray numbers on the session form. Also write the participant/desk letters on the tray lids and the corresponding receipts.]* >

{Only for the random treatments} *{[Count up and record the number of pots filled, disregarding any pots that do not contain 7+7. Then, allocate each subject a tray by pulling participant letters out of one cup and tray numbers out of another. Record the participant-tray number matches on the session form. Also write the participant/desk letters on the tray lids and the corresponding receipts. While this is going on, the experimenter should read on]}. [Count up and record the number of pots sorted, disregarding any pots from which the gravel has been left unsorted. Then, allocate each subject a tray by pulling participant letters out of one cup and tray numbers out of another. Record the participant letter/tray number matches on the session form. Also write the participant/desk letters on the tray lids and the corresponding receipts. While this is going on, the experimenter should read on].}*

Alright, we are nearly ready to continue with the workshop. Thank you once again for the effort you put into filling <emptying> the pots.

As promised, you will be paid for this. {Only for the random treatment, filling and emptying} *{4 Euros has been set aside for each of you. You will receive this at the end of the workshop.}*

{Only for the earned treatments} There are two parts to your pay:

{Only for the earned treatments} First, 4 Euros has been set aside for each of you. You will receive this at the end of the workshop.

{Only for the earned treatments} Second, each of you has earned additional money for the next part of the workshop depending on how many pots you filled <emptied>. You will have earned anywhere between an extra 6 Euros and 16 Euros.

Now I am going to explain the second stage of the workshop.

Please listen carefully as these instructions are very important. Once again, please do not start the task until you are told to do so.

In this part of the workshop you are all going to be placed in groups of 4. However, you will never know who else is in your group.

{Only for the random treatments} {You are each going to start off with a certain amount of money. My assistant has pulled participant letters out of a cup, at random, to find out how much money each of you is going to start off with.}

[Hold up tray photo] In a few minutes we are going to hand each of you a tray. You will find a copy of this photo to your right.

Each tray has 4 triangles: one triangle for each person in your group. The blue triangle is **your** triangle. The 3 cream triangles are for the other people in your group.

[Hold up counter] On each tray there will be several counters, like this one, in each triangle. In the photo, the little black round things to the right of the tray are counters.

{Only for the earned treatments} Each of you has earned a different amount of counters based on the number of pots you filled <emptied> in the first part of the workshop.

Each counter is worth 1 Euro, so 6 counters in a triangle is worth 6 Euros, 3 counters is worth 3 Euros, 10 counters is worth 10 Euros, and so on.

The counters that are in the blue triangle show the amount of money that each of you are starting the second part of the workshop with.

The counters in the three cream triangles show the amount of money that the other people in your group are starting the second part of the workshop with.

{Only for the earned treatments} You will never know who else is in your group, you will just know how much money they earned by looking at the number of counters in their triangles.

{Only for the random treatments} {You will never know who else is in your group, you will just know how much money they are starting out with.}

At the end of the workshop, these counters will be changed for real money.

We are going to hand the trays out now so you can see how much money you and the other people in your group have at the start of this part of the workshop. Each tray is covered by a lid (please only lift the lid when the tray is on your desk so that it cannot be seen by anyone else. It is important that no one sees the contents of your tray).

[Hand out the trays being careful to hand the right tray to the right participant. Meanwhile say...]

There are a total of 44 counters on each tray. Please do not take any counters away with you. It is very important that we get all the counters back. Please have a look at the tray so you know how much money you have and everyone else in your group has at this point in this workshop.

{Only for the earned treatments} Remember as you look at the tray, the person with the most counters in the group has the most money because they filled <emptied> the most pots. The person with the fewest counters has the least money because they did not fill <empty> as many pots as others.

{Only for the random treatments} {Remember as you look at the tray, the person with the most counters in the group has the most money, and the person with the fewest counters has the least money at this point in the workshop.}

Everyone should now have a tray and should know how much money they and the other people in their group have for the second part of the workshop.

If anyone does not understand their tray, or has any other questions please raise your hand.

OK. In this stage, if you choose, you can change the amounts of money that you and the other members of your group are to take home at the end of the workshop by moving the counters from one triangle to another.

In other words, you can take as many counters away from some people, including yourself, and give those counters to other people, including yourself.

If you want, you can move the counters between the triangles any way you choose until you are happy with the number of counters in each triangle. However, you are not allowed to take any counters completely off the tray. There are 44 counters on the trays and all 44 counters need to be on the trays when they are returned to us.

Let me repeat this as it is important. If you want, you can move the counters between the triangles any way you choose until you are happy with the number of counters in each triangle. However, you are not allowed to take any counters completely off the tray. There are 44 counters on the trays and all 44 counters need to be on the trays when they are returned to us. Before you start moving the counters on your tray, I have to mention something important. Once everyone has decided how to move the counters we will collect the trays. Then, for each group of four, we will put the four tray numbers into a cup and pick one at random. This will be done for each of the groups. The money you receive at the end of the workshop –on top of the 4 Euros already put aside—will depend on the decision made by the person in your group whose number is picked. Every person’s tray has an equal chance of being picked, so every person’s decision has an equal chance of being carried out. It is important that you think about your decision very carefully.

Finally, the decision you make will be kept secret. No one will ever know whether you were in their group or whether you moved money to them or away from them.

In summary:

- 1. The blue triangle is your triangle.**
- 2. The other triangles relate to 3 other people but you don’t know who they are.**
- 3. The counters are equivalent to money.**
- 4. The number of counters in a triangle tells you how much that person earned.**
- 5. You can move the counters on your tray any way you choose.**
- 6. If and how you move them will never be known by anyone else.**
- 7. At time of payment, only one person’s decision about final payments will be carried out. This decision will be randomly picked out of a cup which has all four tray numbers that correspond to all four people in the group.**

If you do not understand what you are being asked to do or how it might affect yourself and others, or if you have any other questions, please raise your hand and we will help you.

You may now make your decisions about whether and where to move counters. You can have as much time as you want. When you have arranged the counters as you see fit please close the lid of your tray and put up your hand so that one of us can collect your tray from you.

[When all trays collected...] We are going to hand out questionnaires that we would like you to fill out. This questionnaire is the third part of the workshop. When this part of the workshop is finished you will be paid and will be free to leave. Please note that the questionnaire is on both sides of the pages. When you have finished filling out the questionnaire please raise your hand.

[Hand out and later collect questionnaires once they finish. Calculate pay with reference to notes in the next section of this document. Draw up receipts.]

We are now finished. Thank you for being so patient and thank you for participating in this workshop. We have worked out how much money each of you is to be paid. In a minute I will ask you to come, one by one, to the desk in the waiting room so we can give you your money and you can sign a receipt. Once you sign the receipt, you will be free to leave.

Experimental Questionnaire

Letter ID for the session: _____ Personal ID Code: _____
Date: (dd/mm/yy) _____ Time of Session: _____

Research on Individual Decision-Making

Thank you for participating in this research. Please take a few moments to fill out the questionnaire below. All your answers will be kept confidential. There are no right or wrong answers, so please answer honestly.

0. Did you participate in this study last year?

1. Yes

2. No

If you answered **YES**, proceed to question **01**. If you answered **NO**, proceed to question **02**.

01.

A) Could you please tell us why you made the decision you made in the game?

B) Was your decision affected by the experience you had last year in our experiment?

02.

A) Could you please tell us why you made the decision you made in the game?

B) Before participating in this study, had you heard of it?

1. Yes

2. No

C) If yes, could you please tell us if that information influenced your decision in this experiment and in what way?

1. Date of Birth: (DD/MM/YYYY) _____

2. Age: _____

3. Sex 1. Male 2. Female

4. Nationality: _____

5. Postal Code: _____

6. Highest level of education completed

1. = No schooling
2. = EGB/Primary
3. = Secondary/ESO
4. = A Levels/BUP
5. = Middle Grade Vocational Studies
6. = Superior Grade Vocational Studies
7. = Special Regime Education (Visual arts and Design, Curator/Restorer, Music, Dance, Dramatic Arts
(Theatre), Languages, Military Service)
8. = Diploma/Certificate at University
9. = Bachelor's degree (under the old system)
10. = Second Cycle Studies
11. = Bachelor's degree (under the new system)
12. = Master
13. = MBA
14. = PhD
15. = Other (specify)

7. Please select the option or options that best describes your current situation

1. Employed part-time
2. Employed full-time
3. Unemployed
How long have you been unemployed (number of months: _____)?
4. Retired
5. On maternity leave
6. Housewife/Looking after family
7. Studying part-time

- 8. Studying full-time
- 9. On sick leave or disabled
- 10. Other
(specify _____)

8. Have you been unemployed in the last year, i.e., since April 2013?

- 1. Yes
- 2. No

9. If yes, how many months in total have you been unemployed in the last year?

Please also indicate the date

- From _____ Until _____

10. Do you currently do any work for which you earn money, i.e., do you have a job or a business?

- 1. Yes
- 2. No

11. If yes, how much do you earn a month? (net income)

_____ €

12. Is this work full-time or part-time?

- 1. Full-time
- 2. Part-time
- 3. Other (specify) _____
- 4. Not Applicable (if you are not working)

13. If yes, how many hours do you work per week? _____

14. How did you find your current job?

- 1. Through a family member
- 2. Through a friend
- 3. Through an employment office
- 4. On my own
- 5. Other (specify) _____

15. If you are currently working for money, when was the last time you were either a full-time student or unemployed?

Last time a full time student (mm/yyyy): _____

Last time unemployed (mm/yyyy): _____

16. If you are NOT currently working for money, do you have any other form of income?

(you may tick more than one box)

1. Pension
2. Child Care Grant
3. Disability Grant
4. Unemployment Insurance
5. Subsidy
6. Support from family members (grandfathers, fathers)
7. Other _____

17. If you are NOT currently working for money and NOT studying full time, when was the last time you were either a full-time student or in full time paid employment?

Last time a full time student (mm/yyyy): _____

Last time in full time paid employment (mm/yyyy): _____

18. If you are NOT currently working for money and NOT studying full-time, are you receiving or have you recently received (in the last 6 months) any training designed to help you gain employment?

1. Yes
2. No

19. If yes, could you please tell us which public organization or which organization offered this training?

20. If you are a full-time student, please write the name of the degree you are studying for, e.g., Business or Vocational Studies (What specialty?).

21. If you are a full-time student, when was the last time you were either in full-time paid employment or unemployed and claiming benefits or some type of grant?

Last time in full time paid employment (mm/yyyy): _____

Last time unemployed and claiming benefits or a grant (mm/yyyy): _____

22. How many people, including you, live in your household? (here, you should include all those people who sleep in the same household as you on a regular basis)

23. Would you describe your family as:

1. Rich
2. Upper income
3. Middle income
4. Lower income
5. Poor

24. Which of the following people or organizations do you think has the greatest responsibility to help the poor? (choose one answer only)

1. The Church
2. Charities or non-profit organizations
3. The government
4. Families and relatives of the poor
5. The poor themselves

25. When people talk about politics, the terms left and right are usually used. Below there is a left-right axis. Where would you place yourself on this axis? Indicate it with an X.

Left
Right

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

26. Finally, look around the room and tell us how many of the other people in the workshop do you know well or think of as friends _____