

**UNIVERSIDAD DE GRANADA**

DEPARTAMENTO DE TEORÍA E HISTORIA ECONÓMICA



**TESIS DOCTORAL**

**ESSAYS ON TRANSFERS: SURVEY AND EXPERIMENTAL DATA**

**Doctoranda**

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Editor: Editorial de la Universidad de Granada  
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D.L.: GR 1054-2012  
ISBN: 978-84-694-9412-7

La memoria de tesis titulada “Essays on transfers: Survey and Experimental Data”, que presenta la doctoranda Marisa Bucheli para optar al título de Doctor en Economía, ha sido realizada en el Departamento de Teoría e Historia Económica, bajo la dirección de Pablo Brañas Garza y Teresa María García Muñoz.

Granada, julio de 2011.

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# CAPÍTULO 1

## INTRODUCCIÓN

Existen etapas de la vida en que las personas necesitan transferencias - donaciones de recursos- para financiar su consumo ya que carecen de recursos propios. La niñez es la típica etapa en que no se generan recursos, ni se cuenta con ahorros o acceso al crédito. Además, las sociedades realizan transferencias también hacia otras poblaciones como los adultos mayores, los desempleados y los grupos con alta probabilidad de ser pobres.

Parte de las transferencias se realizan por canales públicos que captan recursos a través de impuestos y contribuciones, y los transfieren a través de programas. Otra parte se canaliza por mecanismos privados, menos propensos a estar institucionalizados. La mayoría de las transferencias privadas se realizan entre hogares relacionados por lazos familiares y (aun más intensamente) entre los integrantes del mismo hogar.

Durante varios años mi trabajo se centró en el estudio empírico de las transferencias públicas y privadas utilizando registros administrativos y datos de encuestas del Uruguay. Los trabajos empíricos sobre transferencias privadas se guían por una literatura teórica que distingue dos grandes razones para realizar transferencias: el altruismo y el intercambio. En las versiones más tradicionales de los modelos de altruismo aplicados a las transferencias intergeneracionales, los padres incorporan en su función de utilidad el bienestar de sus hijos de manera que les transfieren recursos cuyo monto contempla además las transferencias que sus hijos reciben por programas públicos (Becker, 1974; Barro, 1974). En los modelos de intercambio, las transferencias intergeneracionales forman parte de un intercambio de servicios entre padres e hijos desfasado en el tiempo (Bernheim, Shleifer, and Summers, 1985; Cox, 1987) o en caso de padres divorciados, de intercambio con las madres para que estas permitan tiempo con sus hijos (del Boca y Ribero, 2001). En todos los casos, los modelos de comportamiento se basan en conductas racionales. Lo mismo ocurre en la literatura sobre contribución a los programas públicos y su uso. Es el caso por ejemplo de los estudios sobre contribución a la seguridad social y en general la informalidad, en que las personas prefieran evadirlas porque los costos son más

elevados que los beneficios esperados o existe racionamiento derivado de conductas individuales racionales (ver por ejemplo Maloney, 1999; Perry *et al*, 2007)

En el capítulo 2 recojo un trabajo sobre transferencias públicas, en particular, sobre los aportes al sistema de seguridad social. Su motivación comienza por las bajas tasas de contribución que caracterizan no solamente al país, sino en general a la región latinoamericana. En los años noventa, en el marco de un debate sobre los sistemas de pensiones, los países de la región buscaron implementar un diseño con mayores incentivos a la contribución. En términos generales, se procuró atar más estrechamente la pensión a la historia laboral en el entendido que la no-contribución era resultado de que el costo de cotizar no era atractivo frente a los beneficios esperados. El trabajo del capítulo 2 analiza la historia contributiva luego de la reforma uruguaya, utilizando análisis de sobrevivencia para modelizar las transiciones entre estados (el estado refiere a contribuir o no contribuir en un determinado mes). A partir de las estimaciones, se realizan simulaciones de historias de vida cuyo patrón indica que la mayoría de los trabajadores presentarán historias fragmentadas al final de su vida laboral, a pesar la reforma, en particular los trabajadores de menores ingresos. El trabajo argumenta que ante la expectativa de interrupciones frecuentes, es rentable minimizar el número de cotizaciones, ya que es probable no alcanzar el mínimo de contribuciones necesarias para acceder al retiro. De allí que la distribución del número de contribuciones sea bimodal, lo que en otros términos significa una elevada proporción de trabajadores informales que necesitan en su vejez, transferencias (recursos sin contrapartida) para financiar su consumo.

Los trabajos sobre transferencias despertaron mi interés por las motivaciones que hay por detrás del altruismo. Dada la especialidad de mi tutor Pablo Brañas en economía experimental y altruismo, pude plantearme estudiar este tema con el procedimiento y datos adecuados. En el capítulo 3 presento el diseño del experimento realizado y el procedimiento seguido para llevarlo a cabo, lo que se hizo en Uruguay, país sin experiencia en la realización de experimentos. El experimento consiste en una serie de *dictator games* con diferente macro (*frame*): además de un juego ciego, que sirve de base, quince juegos consisten en realizar donaciones teniendo diferente información.

En el capítulo 4 realizo un análisis del efecto de la información en las donaciones, en el contexto de las nociones de *in-group* / *out-group* (Charness, Rigotti and Rustichini, 2007; Chen and Li, 2009), identidad (Akerloff and Kranton, 2000) e imagen social (Andreoni and



Bernheim, 2009; Lacetera and Macis, 2010). El trabajo encuentra que, en comparación con el tratamiento base, los sujetos aumentan la donación cuando se les dice que el receptor conocerá el grupo al que pertenecen, sugiriendo que las personas son sensibles a la imagen del grupo al que pertenecen. También hay un efecto de dar información sobre el receptor, pero en este caso hay heterogeneidad de respuestas. Es posible identificar motivaciones *in-group / out-group* e identidad en el caso de la clasificación por posición ideológica, en que la donación cuando el receptor pertenece al mismo grupo y cae (no varía para algunos sujetos) cuando pertenece al contrario. La categoría “pobre” parece también despertar sentimientos de identidad que provocan altruismo con los iguales pero no con los opuestos. Los ricos en cambio aumentan su donación cuando el receptor es pobre mostrando ser adversos a la inequidad y desear compensar (en el laboratorio) las desigualdades de la sociedad. En el caso de la clasificación por sexo, las mujeres son más altruistas con las mujeres que con los hombres. Esto no ocurre con los hombres, quienes son más generosos con las mujeres que con los receptores de su mismo sexo.

El capítulo 5 se aborda el estudio de las donaciones en el marco de las hipótesis de *moral cleansing* y *moral self-licensing* (Zhong and Liljenquist, 2006; Merritt, Effron and Monin, 2010; Sachdeva, Iliciev and Medin, 2009). Estas hacen referencia a un comportamiento que intenta compensar los desvíos desde un estado éticamente normal. Las malas acciones llevan a realizar buenas acciones (“limpieza”) y las buenas acciones autorizan futuras malas acciones (“licencia”). El patrón de donaciones a lo largo del primer experimento coincide con un patrón derivado de estas hipótesis: a una donación baja sigue una elevada, a la cual le sigue una baja nuevamente.

El capítulo 6 retoma el resultado anterior, en términos del método con que analizar decisiones repetidas en los experimentos. En efecto, si una decisión afecta la posterior, la extracción de información a través de decisiones repetidas requiere analizar los datos como los de un panel de datos dinámico. Este método es poco utilizado en economía experimental, por lo que se retoman datos de experimentos previos concluyendo que la aplicación de métodos de paneles dinámicos puede aportar información de interés que no se obtiene con los métodos de análisis de paneles estáticos.

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## CAPÍTULO 2:

### WORK HISTORIES AND THE ACCESS TO CONTRIBUTORY PENSIONS: THE CASE OF URUGUAY<sup>12</sup>

#### I - INTRODUCTION

The low coverage of the social security systems in Latin America is a motive for concern. Coverage is low in many countries both among the elderly and the working population. The proportion of the elderly who are receiving pensions is a direct indicator of the effectiveness of the systems to provide income security in old age, but the proportion of the active population that is contributing is also important as it conditions the access to and the amount of future pensions. Like in other developing regions, large segments of the active population do not contribute to the pension system in Latin America (Gill et al, 2003; Auerbach et al, 2005; Rofman and Lucchetti, 2006).

While low participation of workers in the pension system is always a problem, the exact nature, causes and policy implications of the phenomenon are likely to be different depending on whether participation in social security is a permanent or a temporary status for each worker. Low aggregate coverage might arise because the population is segmented, with some workers contributing and other workers not contributing, or because many workers contribute only part of their working career. In the first scenario, those who are contributing are expected to receive a pension. In the second scenario instead, there might be a considerable number of workers who would not be well protected despite of being

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<sup>1</sup> Published in *Journal of Pension Economics and Finance* 9(3): 369 -391, 2010 (jointly with A. Forteza & I. Rossi).

<sup>2</sup> The paper benefited from comments received from two anonymous referees from this journal. The usual disclaimer applies.

registered as contributors. Therefore, it is not only the average rate of contributors in the population what matters but also the turnover.

Furthermore, turnover is having an increasing impact on the access to pensions as the social security administrations are increasing their capacity to control the fulfillment of the vesting period conditions. Not long ago, there were almost no records of individual contributions. Therefore, it was not possible to check whether workers had accumulated the required years of contributions. Benefits were hence granted on a very informal basis, often appealing to the testimony of witnesses. Albeit difficult to prove, there are many informal tales suggesting that connections in the social security institutions and in the political system were helpful. This state of affairs is gradually changing in several countries in the region as the social security systems started to build work history records as part of the reforms that took place in the 80s and 90s. These are mostly good news, but there is also a risk that many workers end up with a very low pension or no pension at all. Aware of this risk, several governments in Latin America are currently considering options to reduce the number of periods of contribution required to access a pension. In the case of Chile, for example, the reform that was passed in January 2008 eliminates the condition that workers had 20 years of contribution to access the minimum pension guarantee. Colombia is also considering a reform that would reduce the vesting period (the so called *Beneficio Económico Periódico* or periodic economic benefit). Options to soften this requirement are also in the agenda of the social security authorities of Uruguay.

Some social security institutions have recently delivered samples of the work history records and some other institutions will probably follow their way in the near future. These rich and large panel datasets can be used to assess the proportion of workers who could reach the required periods of contributions at the retirement age, but the available histories are still partial, usually about 10 to 15 years long. In this paper, we present a methodology to assess the access to pensions building life-time work histories from incomplete histories and present results for the case of Uruguay. The paper aims to answer several questions. How many workers will not comply with the years of contributions required to access a pension at ordinary retirement ages? Which are the most vulnerable groups? What factors condition the probability that a worker accumulates the required years of contribution at the usual retirement ages?

We use survival analysis to model the transitions between contributing and not contributing. Survival analysis allows us to adopt more flexible assumptions than those adopted in previous studies that used work history records in Latin America (Bertranou and Sanchez, 2003; Lagomarsino and Lanzilotta, 2004; Bucheli et al, 2005 and 2006; Bravo et al, 2006; Berstein et al, 2005 and 2006). We then use the transition rates to simulate the complete work histories of hypothetical workers using Monte Carlo simulations.

We applied our methodology to a database of the work history records of the largest social security institution of Uruguay, the *Banco de Prevision Social* (BPS). We found that, unless there is a significant change in the patterns of contribution in the future, a vast majority of the contributors to this institution will not comply with the required years of contribution. Our results show that the situation will be particularly severe among low income workers working in the private sector. Notice that these gloom projections seem to be at odds with the comparatively high coverage of the old-age pension program. This apparent contradiction may be due to the lack of enforcement of pension eligibility conditions and not to a past fulfillment of contribution requirements.

In the next section, we present a brief summary of some related literature. We describe the Uruguayan pension system in section 3 and the data in section 4. In section 5 we present the methodologies for the estimation of the hazard rates and the simulation of the work histories. The main results are reported in section 6 and section 7 concludes.

## II - PREVIOUS STUDIES

### II.A - Analytical framework

Most of the literature focusing informality tries to model how workers sort between formal or informal sector. For example, Galiani and Weinschelbaum (2006) present a model in which workers differ in their amount of human capital. Because of fixed costs of formalization, only workers with human capital above a threshold will afford formalization. The model thus predicts that low income workers will be in the informal

sector and high income workers will be in the formal sector. Although this result is roughly consistent with findings, this model does not explain why workers switch their contribution status or the proportion of time they spend in each status. Thus, literature that focus on labor flows rather than on stocks is much more appropriate to the type of analysis we are interested on.

In its theoretical vein, the flow approach to labor markets models the behavior of workers and firms as rational dynamic optimization agents. Labor market frictions are modeled using a matching function, i.e. the number of hires depends on vacancies and unemployment. The model also determines endogenously the equilibrium rate of job creation and destruction and the wage (Mortensen and Pissarides, 1994; among others).

Albrecht et al (2008) have recently proposed an extension of Mortensen and Pissarides' model that accounts for informality, that is, a sector composed by firms that do not pay payroll taxes. Unemployed can move to either the informal or the formal sector. The rates at which they receive job offers in the informal sector are exogenous; also the rate at which informal sector workers lose jobs is exogenous. In turn, the rate at which the unemployed find jobs in the formal sector and the rates at which formal sector workers lose jobs are endogenous. A formal sector employer creates a vacancy when its expected value is at least as large as its cost. In turn, the vacancy is filled when a worker looking for a job finds the vacancy *and* the employer and the worker think the match is at least as beneficial as their outside opportunities. The gains the employer and the worker get from the match positively depend on its productivity. A formal sector employment ends when a negative idiosyncratic productivity shock determines that the worker and the employer no longer find the association sufficiently appealing relative to their outside opportunities.

Key to this model is the assumption that workers have different productivities in the formal sector, while productivity in the informal sector is the same for everybody. Because of these different productivities, some workers will find unappealing a job offer that other workers would take. The authors show that in equilibrium there are two cutoff productivity points such that workers less productive than the lower cutoff point never take a formal job, workers more productive than the higher cutoff point never take an informal job and workers in the middle take either a formal or an informal job, depending on which opportunity comes first. Therefore, workers sort themselves into the formal and informal sectors depending on their formal sector productivity.

Thanks to their intrinsic dynamic nature, the labor matching models account for the switches in labor status that workers usually show across their working life. The version proposed by Albrecht, Navarro and Vroman also makes some very specific predictions about the proportion of time each worker will spend in the formal sector: (i) low income workers will never show up; (ii) other workers will spend varying proportions of their time in the formal sector; and (iii) the higher workers' formal sector income the higher the proportion of time they are employed in the sector.

## **II.B - Empirical studies**

The issue of social security coverage has attracted considerable attention in Latin America in recent years. While in the 90s the focus was centered on financial sustainability, an increasing concern has been growing in recent years about coverage. Gill et al. (2003) emphasize that low coverage is one of the main factors that undermine the capacity of the pension systems in Latin America to protect the elderly against the risk of poverty in old age. Latin American pension systems are mostly contributory and hence failure to contribute in the active phase leaves many citizens without access to pensions. This is not only a Latin American problem though, as most developing countries face the same issue. This concern and the increasingly widespread view that contributory schemes are ill-suited to solve the coverage issue in low and middle income countries have led the World Bank to add a non-contributory zero-pillar to its traditional multi-pillar model for pensions (Holzmann and Hinz, 2005).

A considerable effort has been devoted to measurement of coverage of social security in Latin America. Rofman and Lucchetti (2006) present extensive computations of coverage among the active and passive populations based on household surveys. They show that labor force participation in social security is very heterogeneous across the region, ranging from about 60% in Costa Rica to only 10% in Bolivia. In all countries the participation of the active population in the pension system is lower among the less educated, low income workers, the self-employed and salaried workers employed in small firms. Therefore, coverage of workers is not only low on average, but it is particularly low among the most vulnerable groups. Coverage of the elderly also shows much diversity across the region.



The percentage of the citizens aged 65 and above who are receiving pensions ranges from less than 20% in Guatemala to more than 80% in Brazil.

Social Security coverage of the labor force in Latin America is similar to other regions of the world with similar income per capita. Palacios and Pallares-Miralles (2000) show that a loglinear regression of the labor force participation on GDP per capita explains more than 70% of the variation in labor force participation across the world. Drawing an expected labor force participation line based on this regression leaves Latin American countries not too far from the line. In other words, *observed* coverage of social security among the labor force in Latin America is not generally different from *expected* coverage given GDP per capita. This is not to say that coverage of the labor force is not an issue in the region, but that it is not a peculiarity of Latin America.

There are no clear signs of improvement in social security coverage of the active population in Latin America in recent years. Packard et al. (2003), for example, analyze the evolution of coverage between 1990 and 1999 in thirteen countries and find no clear general patterns: coverage rises in some countries and decreases in others. Rofman and Lucchetti (2006) report a fall in coverage between the middle 90s and early 2000s in nine countries and an increase in three countries out of fifteen countries analyzed. They also show that in some countries –notably in Argentina– coverage is decreasing in some particularly vulnerable segments of the population.

There are two main explanations of low coverage of social security. One, in the tradition of the dualistic labor market model of Harris and Todaro (1970), asserts that some workers are *excluded* from formal labor markets, due to the presence of several rigidities like minimum wages, high hiring/firing costs and costs of registration. In this view, uncovered workers have lower wages than covered workers without receiving any compensation so they would willingly formalize if they could do so. The other explanation is based on the idea that workers and firms make a cost-benefit analysis and decide whether to contribute or to *exit* (Hirschman, 1970). In the context of limited capacity of the states to enforce law, the argument goes, workers and firms can transit from one sector to the other, depending on incentives. Therefore, in this view, agents in the informal sector are not worse off than identical agents in the formal sector. These explanations could be complementary rather than competitive, according to Perry et al (2007). Indeed, most recent empirical studies have found that both exit and exclusion are present in varying degrees.

The most widely used data source to analyze coverage in Latin America is the household survey. Analysts have long been using this data to compute coverage of the labor force as the proportion of the active population that contributes to the social security system. Several researchers have used qualitative dependent variable models to estimate the probability that workers contribute and to analyze what factors impact on this probability (Auerbach et al, 2005; Barr and Packard, 2003; Barrientos, 1996 and 1998; Bustamante and Paola, 2006; Holzmann et al, 2000; Li and Olivera, 2005; Packard et al, 2006; Packard, 2001; among others). The household surveys are rich data sources but they only provide cross section information at the individual level, so these surveys are not suited to the type of questions we aim to answer.

In recent years, taking advantage of recently available longitudinal datasets, analysts have not only been able to compute the proportion of workers who are contributing –something that can be done with the household surveys–, but also the proportion of time that each worker is contributing, the so called *density of contributions* (De Biase and Grushka, 2003; Farall et al, 2003; Zioli Fernandes, 2003; among others). Most of these studies are based on administrative records of social security, which are increasingly available in the region. In the case of Chile, administrative records have been combined with information from a social protection survey to produce a richer dataset (Bravo et al, 2006, Arenas de Mesa et al, 2004).

Some studies used limited dependent variable regression models to analyze determinants of the probability of contributing (Berstein et al, 2005; Bertranou and Sánchez, 2003; Lagomarsino and Lanzilotta, 2004). Berstein et al (2005) is the most direct antecedent to the present study, as they –like us– aimed at doing projections of work histories to determine proportions of contributors who would be entitled to pension benefits at retirement age.

The strategy to model the probability of contributing used in the present paper is more general than previous attempts we could identify in the literature. The first studies on this subject that we could find assumed that the probability of contributing is independent of previous status (Bucheli et al, 2005; Bertranou and Sánchez, 2003; Berstein et al, 2005; Lagomarsino and Lanzilotta, 2004), which is a strong assumption as Bucheli et al (2005) explicitly acknowledge. The assumption of independence is not only strong, but it can also be tested and so there is no need to just assume it. In a recent study, we extended the

framework adopted in the papers mentioned above, allowing the probabilities of contributing to depend on the previous period status (Bucheli et al, 2006). But we still maintained the not very appealing assumption that the probabilities of switching between contributing and not contributing do not depend on duration in the state. This hypothesis was formally tested and systematically rejected in the framework proposed in the present paper.

### III - THE SOCIAL SECURITY SYSTEM IN URUGUAY

In Uruguay, the first old-age, survival and disability (OASDI) insurance programs were set up in the 19<sup>th</sup> century. Since then similar programs have spread and became almost universal in the 1950s, incorporating new programs to cover against other risks. In 1967, a public institution called *Banco de Previsión Social* (BPS) was created with the purpose to be in charge of the social security system. Since then, BPS administers four large retirement programs that covered public servants, private workers (with some exceptions), rural workers and domestic workers. In addition, some categories of workers have their own special pension schemes: bank employees, notaries, self-employed university graduates, armed forces personnel, and police force personnel. By 2001, the number of contributors to the BPS represented 89% of the total number of contributors to all social security institutions in the country (Ferreira-Coimbra and Forteza, 2004).

Before the social security reform initiated in 1996, the Uruguayan retirement system relied on a pay-as-you-go (PAYG) system financed through payroll contributions paid by employers and employees. Contribution was also mandatory for self-employed workers who were subject to minimum declared earnings. The 1996 reform modified the BPS retirement programs introducing individual savings accounts, administered by enterprises, to complement the PAYG system.

As a general rule, workers whose earnings are below a threshold are exclusively affiliated to the PAYG pillar. However, they can opt to deposit half of their personal contributions into individual savings accounts. Workers whose earnings are over this threshold must contribute to both pillars. For the amount below the threshold they contribute to the PAYG public system and from there up to a certain maximum, also established by law, they must

contribute to individual accounts. There is no mandatory contribution for earnings over the established maximum. Employers' contributions go exclusively to the PAYG pillar.

The reform introduced other modifications. The minimum retirement age was fixed at 60 for men and women, which meant an increase of 5 years for the latter. Also, the minimum number of years of contribution required to access an ordinary pension was raised from 30 to 35. Workers can receive a contributory pension with only 15 years of contribution, but this benefit is smaller than the ordinary pension and eligibility is restricted to individuals who are 70 years or older. Workers with hazardous occupations and other special categories have special bonus on their count of years of contribution.

The replacement rate was also modified, making it more sensitive to both retirement age and years of contributions, in order to induce longer working-lives. Nowadays there are no gender differences and it ranges from 50% to 82.5%, depending on the years of contribution and the retirement age. The average wage used in the benefit formula was modified to include a longer period of contributions. In addition, there is an extra bonus for low-income workers who choose to contribute to individual savings accounts.

It is worth to notice that contributors are also entitled to unemployment insurance, disability pension, sickness and maternity subsidies, family allowances and health care. In all these programs, benefits are conditioned on compliance with eligibility requirements and as a general rule, the self-employed receive less benefits.

This system is financed by employers and employees payroll contributions and general taxes. In the 1996 reform, employee contributions were set to 18% of their monthly earnings, while employers' contributions were set at 17.5% of their total payroll. In the following years, the government introduced several exemptions to employers' contributions and in 2007, in the context of a tax reform, some of these exemptions were lifted and the general employers' contribution rate to social security was reduced to 12.5%. Self-employed contributions are based on a minimum declared monthly income.

Not contributing to the social security system eases evasion of other labor costs. The most important are the compulsory insurance to cover work injury risk and a progressive tax on wages that until 2006 ranged from 2 to 6%.

Workers who do not contribute may access to means-tested benefits: an assistance pension for persons older than 70 years old –less generous than the contributory pension-, family allowances and free health care in the public system.

It is difficult to assess the costs and benefits of not contributing. Anyway, it is worth to note that one of the aims of the 1996 reform was to provide incentives for workers to contribute, strengthening the link between contributions and pensions. But the most widely-quoted disincentive to contribute to BPS has been the lack of an effective control of the number of years of contribution. Insomuch as the administrative records do not exist or are very incomplete, the BPS has had to accept the testimony of witnesses as prove of contributions.

#### IV - THE DATA

We use a random sample of the work history records of the BPS, collected in December 2004 by the Labor History Unit of the BPS (ATYR-BPS). Workers in the sample are between 18 and 70 years old and contributed at least one month between April 1996 and December 2004. The sample has 68,997 individuals.

The records are organized in four databases. One file gives personal information on individuals: date of birth, sex and country of birth. Another file contains information about the job of each person, particularly the ending and beginning of contribution spells. A third file reports monthly information on wages and some characteristics of the job. Finally, there is a database reporting information about benefits that allowed us to know the date of retirement.

Table 2.a shows the number of individuals in the database by cohort, gender and private/public condition. There are 37,822 men (55%) and 31,175 women (45%). We consider as public worker everyone who had worked in the public sector for at least half of the total time he or she had contributed. According to this criterion, we identify 58,617 (85%) private and 10,380 (15%) public workers in the database. While public sector contributors are evenly distributed between sexes (51% are women), private sector contributors are predominantly men (44% are women).

**Table 2.a: Number of individuals in the database**

Generation	Public Sector			Private Sector			Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
1925-1930	109	35	144	339	158	497	448	193	641
1931-1935	291	91	382	801	371	1,172	1,092	462	1,554
1936-1940	534	236	770	1,517	855	2,372	2,051	1,091	3,142
1941-1945	532	435	967	1,830	1,398	3,228	2,362	1,833	4,195
1946-1950	577	611	1,188	2,235	1,786	4,021	2,812	2,397	5,209
1951-1955	607	713	1,320	2,718	2,137	4,855	3,325	2,850	6,175
1956-1960	767	842	1,609	3,066	2,626	5,692	3,833	3,468	7,301
1961-1965	663	766	1,429	3,417	2,862	6,279	4,080	3,628	7,708
1966-1970	414	577	991	3,684	3,146	6,830	4,098	3,723	7,821
1971-1975	305	523	828	4,427	3,951	8,378	4,732	4,474	9,206
1976-1978	146	281	427	3,154	2,642	5,796	3,300	2,923	6,223
1979-1987	110	215	325	5,579	3,918	9,497	5,689	4,133	9,822
Total	5,055	5,325	10,380	32,767	25,850	58,617	37,822	31,175	68,997

Source: Authors' computations using a sample of the work history database of the BPS

The average density of contributions is 60%. Lagomarsino and Lanzilotta (2004) report a significantly higher figure, of around 75%, between January 1997 and December 2003. Different sampling procedures can explain these results. While we take the sample at the end of the observation period, they do it at the beginning. Our sampling procedure gives all individuals who made at least one contribution in the observation period equal probability of being picked. With their procedure, workers with low density of contributions are less likely to be in the sample.

The distribution of the density of contributions has two modes and is strongly asymmetric, characteristics also pointed out by Lagomarsino and Lanzilotta (2004). A similar pattern has been reported in Argentina (Farall et al, 2003; and Bertranou and Sánchez, 2003) and Chile (Bravo et al, 2006). In our sample, 28% of the workers contributed 100% of the period. This was the most frequent density of contributions in the database. Besides, over 40% do not register contributions for at least half of the potential months of contribution (Table 2.b).

**Table 2.b:** Distribution of the population in the database according to the proportion of time in which the individuals contributed. Several groups of workers.

	Less than 50%	Between 50 and 75%	Between 75 and 87.5%	Between 87.5 and 100%	The entire period (100%)	Total	Average
Total	41	14	7	10	28	100.0	59.8
Sex							
Men	40	14	7	10	29	100.0	61.4
Women	43	14	7	9	27	100.0	58.0
Sector							
Public	13	8	5	7	67	100.0	85.4
Private	46	15	8	10	21	100.0	55.3
Income bracket							
Poorest quintile	67	11	5	6	11	100.0	37.9
2 <sup>nd</sup> quintile	52	15	7	8	18	100.0	50.7
3 <sup>rd</sup> quintile	41	17	9	10	23	100.0	59.4
4 <sup>th</sup> quintile	28	15	9	12	36	100.0	71.1
Richest quintile	17	12	8	11	52	100.0	80.4
Age							
20	73	11	5	3	8	100.0	30.2
40	30	9	5	6	50	100.0	70.1
55	23	8	5	6	58	100.0	76.5

Note: Each bracket includes the minimum of the interval.

Source: Authors' computations using a sample of the work history database of the BPS

Men present higher densities of contribution than women. Indeed, on average men contributed 61.4% of the time and women did it 58.0%.

As expected, public sector workers have significantly higher densities of contribution than private sector workers. While more than two thirds of public employees contributed the whole period, only 21% of private employees did that much. Moreover, a significantly smaller proportion of public than of private workers contributed less than half of the time. There is however a considerable number of individuals classified as public employees who present low densities of contribution. This unexpected result responds to the classification criterion and to the high participation in the public sector of activities with special bonuses, i.e. activities that compute more than one year of contribution per every year of actual contribution, as teachers.

Additionally, we grouped the individuals in the sample in quintiles of the earnings distribution. In order to avoid the circular reasoning of finding low densities for workers whose low average income is due to few periods of contribution, we calculated the average earnings over periods in which individuals reported strictly positive earnings. Then, we

grouped five-year generations workers by sex and we calculated the quintiles of the earnings distribution for each group. The average density of contribution consistently rises with the quintile of these distributions: it is almost 38% for the poorest quintile and more than 80% for the richest quintile.

There are also significant differences according to individuals' age. At 20, the density of contribution is about 30% on average and it continuously increases with age, exceeding 75% when workers are in their fifties. However, there is an important dispersion for individuals of the same age.

The business cycle seems to have had a significant impact on the density of contribution. The Uruguayan economy began a recession in 1999 which was followed by the most severe economic crisis in the country's history. The recovery began slowly in 2003, and 2004 was already a year of significant growth. This evolution is reflected in the unemployment and employment rates observed between 1996 and 2004. In this period of significant macroeconomic volatility, the density of contribution mirrored the rate of employment (figure 2.a).

Finally, it is worth emphasizing that our data is not a representative sample of the Uruguayan labor force. Rather it represents the universe of workers registered with the BPS as to December 2004, including both workers who were actively contributing and workers who were not contributing but were registered because they had at least once contributed before that date. Thus, the database is appropriate to estimate the proportion of the working population registered with the BPS who might not be eligible for benefits at the retirement age. We estimate that about 68% of the Uruguayan non-retired population between 18 and 54 years old were registered with the BPS in December 2004.<sup>3</sup> Some workers who are not registered with the BPS are covered by other pension programs, but they represented only 2% of total population in this age range in 2004. Therefore as much

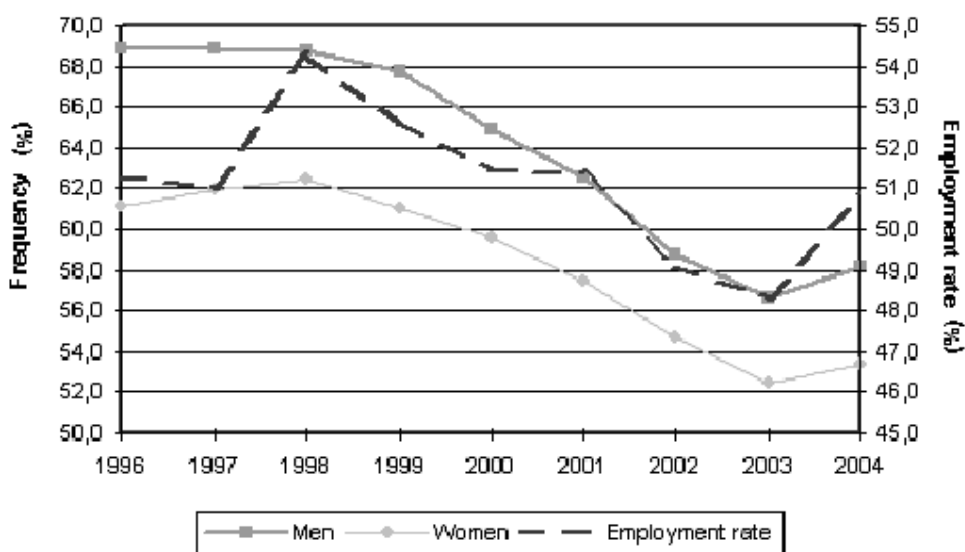
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<sup>3</sup> Using the household survey, we first estimated the proportion of the population that was contributing to the BPS (call it  $rc\_pop$ ). We then estimated the proportion of the population that was registered but not actively contributing ( $rnc\_pop$ ), using the ratio between inactive and active contributors in the work history database ( $rnc\_bps/rc\_bps$ ). More specifically, the proportion of the population registered but not actively contributing at December 2004 was computed as:  $rnc\_pop = rc\_pop * rnc\_bps/rc\_bps$ .



as 30% of this population group was out of the social security system. Men were registered with the BPS in higher proportions than women (75% and 60%, respectively, same age range). In turn, the proportion of the population registered with the BPS is much smaller among young people: only 41% of women and 43% of men aged between 18 and 24 were registered according to our estimations in 2004.

**Figure 2.a:** Density of contribution and rate of employment



Source: Authors' computations using a sample of the work history database of the BPS and Instituto Nacional de Estadística (INE).

## V – METHODOLOGY

We want to estimate the proportion of workers who would reach the number of periods of contribution required to access a pension at the normal retirement ages and to identify the most vulnerable groups, using a data set of incomplete work histories. To address this issue, we propose a two-stage methodology. In the first stage, we split the sample into sixteen groups and for each one we estimate the rates of transition (or hazard rates) between contributing and not contributing. In the second stage, we use the predicted hazard

rates to simulate the lifetime work histories and compute the distribution functions of the counting of periods of contribution at different ages.

### V.A - First stage: estimating the hazard rates

Consider a worker who may be in any of two possible states: contributing and not contributing to social security. Let  $h_c(t, X_t)$  be the probability that a worker who *does* contribute to social security during month  $t$  stops contributing in  $t+1$  and let  $h_n(t, X_t)$  be the probability that a worker who *does not* contribute during month  $t$  starts contributing in  $t+1$ . These probabilities are the (discrete time) transition rates or hazard rates of leaving the state of contributing and leaving the state of not contributing respectively. The hazard rates may depend on several variables represented by  $X_t$ .

In order to identify the hazard functions, different alternative assumptions are usually made in the literature. The most common one is that the hazard rate can be decomposed in two multiplicative terms, one that summarizes the impact of duration in the state, the so called baseline hazard, and a term that summarizes the impact of the covariates  $X_t$ . This model has been called *proportional hazard* because the hazard rates of two individuals who differ only in time-invariant covariates maintain a constant ratio, which is in turn proportional to the absolute difference in the covariates.

In a discrete time framework, the proportional hazard assumption leads to the following specification (Jenkins 2005, pp 41-2):

$$h(t, X_t) = 1 - \exp[-\exp(\beta' X_t + \gamma_t)]$$

where  $\gamma_t$  summarizes the baseline hazard. This model is known as the *cloglog model*, because a complementary log-log transformation of the hazard is a linear function of the baseline hazard and the covariates:

$$\log[-\log(1 - h(t, X_t))] = \beta' X_t + \gamma_t$$

An alternative identifying assumption that is often used in discrete time models is that the odds ratios are proportional to the absolute difference in the covariates. This assumption leads to the *logistic hazard model*:

$$\text{logit}[h(t, X_t)] = \log \left[ \frac{h(t, X_t)}{1-h(t, X_t)} \right] = \beta' X_t + \alpha_t$$

where  $\alpha_t$  summarizes the relative odds of making a transition when  $X = 0$ .

We estimate separate models for sixteen groups of workers. For each sex, we split the sample of workers in the private sector in five groups according to the income quintile. In the case of public servants, we split the sample of each sex in three: a group includes the first three quintiles and the other two contain the fourth and fifth quintile respectively.<sup>4</sup>

The vector of covariates  $X_t$  includes the age, the duration in the state and the monthly national unemployment rate. Lacking specific theoretical guidance and in order to avoid imposing a functional form, we first adopted the usual practice of using dummies to represent duration and age. The results led us to choose a polynomial of degree three on age and the log of duration. Additionally, as the pattern of duration might vary along the life cycle, we include two variables of interaction between duration and age. Finally, we also include the monthly unemployment rate.<sup>5</sup>

The data present some characteristics that make the estimations of the hazard rates relatively complex: censoring, truncation, and unobserved heterogeneity. We briefly explain how we dealt with each of these complications in what follows.

A spell of contributions is expected to end when the worker transits from contributing to not contributing. But the observed spell can also end because of the end of the observation period, death or the retirement of the contributor. This right censoring is not a major problem for the estimation of the hazard rates though.

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<sup>4</sup> We run a series of likelihood ratio tests to see whether these models could be merged into a smaller number of models after controlling for sex, income and sector. The results led us to reject the constrained models in all cases.

<sup>5</sup> This covariate may cause a violation of the assumption of iid errors, leading to an underestimation of the standard deviations of the coefficient (Moulton, 1990). The significance of the parameter for the unemployment rate should thus be taken with caution. Nevertheless, the estimation of the coefficient itself is unbiased. Since our main goal is to do simulations, we think that this problem should not significantly impact on our results.

The spells of not contribution that began before April 1996 are left censored. As usual, we exclude these unavailable spells of the analysis. There is no left censoring of the spells of contribution in this data set. Even when the spell may have begun before the initial observation date we have the information about when these spells began.

There might be left truncation of the spells of contribution in this data set. The work history database captures all individuals who contributed at least one month between April 1996 and December 2004. Consider two workers who began to contribute say in January 1990, but one left one year later and never returned and the other one continued at least until April 1996. While the second worker will be registered in the social security database, the first worker with the shorter spell will be excluded.

Unobserved heterogeneity may significantly bias these estimations. Over time, the proportion in the population of individuals with high risk of leaving the state declines. Thus, the average hazard rates of mixed populations tend to decline over time even if the “true” hazard rates of the individuals in the population rise. In order to reduce uncontrolled heterogeneity, we worked separately with several groups of workers whose behavior is likely to differ. For each one we run formal tests of unobserved heterogeneity and controlled for the heterogeneity that could still remain modeling it as an individual effect. Assuming that the individual effects are normally distributed with zero mean, the hazard rates for mixed distributions can be estimated using random effects complementary loglog or logit models (Jenkins 2005, pp 84-5). We used the `xtcloglog` and `xtlogit` commands in STATA to estimate these models (STATA, 2003). The program reports the likelihood ratio test for the null hypothesis that the variance of the individual effects is zero. Frailty is not important if this hypothesis cannot be rejected. Otherwise, frailty matters and the random effects estimation takes it into account.

## **V.B - Second stage: simulating the work histories**

Our final goal is to build empirical distribution functions of the number of contribution periods at the usual retirement ages without assuming that the probabilities of contributing each period are independent of previous period status As probabilities vary along the life

cycle, work histories are determined by a non-homogenous Markov chain. We performed Monte Carlo simulations to overcome this difficulty.

The simulation of the work histories entails building strings of “c” and “n” (for contributing and not contributing, respectively) that adequately replicate the stochastic properties of the observed incomplete histories. The simulated worker contributes in  $t$  if either he was contributing in  $t-1$  and did not make a transition to not contributing or he was not contributing in  $t-1$  and made a transition to contributing. Let  $p$  represent the propensity to make transitions and let us assume that it is drawn from a uniform distribution in the  $[0,1]$  interval. The individual contributes in  $t$  if  $p \geq h_c(t-1, X_{t-1})$  and he was contributing in  $t-1$ , or if  $p \geq 1 - h_n(t-1, X_{t-1})$  and he was not contributing in  $t-1$ . With this rule, the probability that an individual who contributes in  $t-1$  also contributes in  $t$  is  $1 - h_c(t-1, X_{t-1})$ , which is the probability of not leaving the state “contributing”. The probability that an individual who does not contribute in  $t-1$  contributes in  $t$  is  $h_n(t-1, X_{t-1})$ , which is the probability of leaving the state “not contributing”.

For each of the sixteen groups of workers, we use the probabilities predicted in the first stage and we apply the above algorithm to the lifetime of each simulated individual. The simulations begin at age 18 in the state “not-contributing” and end at age 70. We assume that the rate of unemployment is 11.2% (average of 1981-2006). The number of months of contribution accumulated at any age could then be counted in each simulated work history. Repeating this procedure 5000 times, we got empirical distributions of the counting of the months of contribution at the desired ages.

## VI - RESULTS

### VI.A - The hazard rates

We estimated the complementary loglog and logit models of contributing and not contributing for the sixteen groups. Both models yield very similar results. Thus, for the sake of brevity, we only present here some of the results obtained with the complementary

loglog model (table 2.c).<sup>6</sup>

Higher unemployment rates increase the probability of not contributing and decline the probability of contributing for most categories of *private* workers. This is to be expected, as in periods of high unemployment workers stop contributing at higher rates because of job loss and transition to informality, and find it more difficult to get formal jobs. Higher hazard rates of leaving the contributing state and lower hazard rates of leaving the not contributing state lead to lower densities of contribution during downturns. In the case of Chile, Berstein et al (2006) report that the unemployment rate has a negative impact on the density of contributions of men, but positive on the density of contributions of women.

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<sup>6</sup> The results not presented here are available from the authors upon request.

**Table 2.c:** Hazard rates of leaving the state of contributin.

	Private Sector				Public Sector			
	Men poorest	Men richest	Women poorest	Women richest	Men poorest	Men richest	Women poorest	Women richest
Log of duration	-0.289***	-0.435***	-0.329***	-0.464***	-0.373***	-0.420***	-0.415***	-0.371***
Age	0.094**	-0.254***	-0.287***	-0.195***	0.144	-0.737***	-0.008	-0.621***
Age2	0.002*	0.006***	0.006***	0.003	-0.005	0.0127***	-0.001	0.011***
Age3	0.000	-0.000***	-0.000***	-0.000	0.000*	-0.000*	0.000	-0.000
Log of duration * age 30 to 59	0.118***	-0.057***	-0.081***	-0.020	-0.188***	-0.125*	-0.151**	-0.185***
Log of duration * age 60+	0.077**	0.264***	0.107**	0.160**	0.105	0.069	-0.083	-0.161*
Unemployment rate	0.811	7.713***	-1.063	6.714***	-1.963	1.257	-2.740	-4.907**
Constant	0.385	-0.597	1.093***	-0.654	-3.363*	6.551***	-1.356	5.789***
Likelihood- ratio test of rho=0	chibar2(01) = 596.73	189.83	260.92	66.67	73.87	123.58	31.71	119.90
	Prob >= chibar2	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend: \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

Notes: The table summarizes the results of running a random effects complementary loglog model for the state “contributing”. For private workers the poorest includes only the first quintile of the income distribution by gender and generation, while for public workers includes the first, second and third quintiles.

Source: Authors’ computations using a sample of the work history database of the BPS

Age has a significant impact on the hazard rates as well. Young workers tend to have higher hazard rates of both contributing and not contributing than middle-aged workers, implying that turnover is particularly high at the beginning of the working career. Senior workers tend to show higher hazard rates of leaving the contributing state and lower hazard rates of leaving the not contributing state than middle-aged workers. This is to be expected, as workers within the pensionable age are more likely to stop contributing and less likely to restart contributing after they stopped than workers who are in the middle of their working careers and have not yet arrived to the retirement age.

In both states, the probabilities of making a transition reduce as the workers spend time in the state. Indeed, duration has a highly significant negative impact on the hazard rates of both contributing and not-contributing. In most regressions the coefficient for duration was found to be negative meaning that the hazard rates drop initially fast and tend to stabilize for long durations. The estimated coefficient varies across categories, but it is worth noting that even in the public sector duration has a highly significant impact.

The coefficient of the variable that captures the interaction between duration and the dummy variable for age 30 to 59 is negative in all regressions and significantly different from zero at 0.1% significance level in most of them. This means that duration has a higher negative impact on the hazard rates of contributing and not contributing when workers are between 30 and 59 years old than earlier in their lifetime. In turn, the coefficient sign is not stable for aged 60 and above, meaning that the pattern is less clear for senior workers.

The negative effect of duration is depicted in table 2.d that provides some predicted hazard rates of leaving the contributing state when the unemployment rate is set at the mean of 1981-2006 (11.2%). The average 40 years old man working in the private sector and belonging to the richest quintile has an expected hazard rate of about 3.2% in the first month and only 0.6% in the 36<sup>th</sup> month of contribution. The same individual at 25 would have an expected hazard rate of 4.1% in the first month and 0.9% in the 36<sup>th</sup> month of contribution.

The predicted hazard rates also indicate that low income workers tend to have higher (lower) risk of leaving the state contributing (not contributing). Therefore, low income workers are less likely to contribute than high income workers.



Workers in the public sector present lower (higher) hazard rates of leaving the state contributing (not contributing) than private workers. Thus, the former have higher probabilities of contributing than the latter.

**Table 2.d:** Simulated monthly hazard rates of leaving the state of contributing (%)

Category	Age in years and Duration in months			
	Age = 25	Age = 25	Age = 40	Age = 40
	Duration = 1	Duration=36	Duration = 1	Duration=36
Men, private sector				
<i>Poorest quintile</i>	13.0	4.8	9.6	2.3
<i>2nd quintile</i>	6.8	3.7	4.4	1.5
<i>3rd quintile</i>	7.0	3.1	5.2	1.6
<i>4th quintile</i>	6.1	2.1	4.4	1.0
<i>Richest quintile</i>	4.1	0.9	3.2	0.6
Women, private sector				
<i>Poorest quintile</i>	10.1	3.2	6.6	1.6
<i>2nd quintile</i>	7.0	4.3	4.8	1.8
<i>3rd quintile</i>	7.1	2.9	4.6	1.3
<i>4th quintile</i>	5.7	2.0	4.0	0.09
<i>Richest quintile</i>	4.3	0.8	2.6	0.5
Men, public sector	8.6	2.3	5.2	0.7
<i>1st – 3rd quintiles</i>				
<i>4th quintile</i>	5.1	0.8	2.0	0.2
<i>Richest quintile</i>	1.0	0.2	0.3	0.04
Women, public sector				
<i>1st – 3rd quintiles</i>	10.0	2.3	6.7	0.9
<i>4th quintile</i>	5.9	0.9	3.1	0.4
<i>Richest quintile</i>	1.6	0.4	0.7	0.1

Note: These simulations have been done setting the unemployment rate at the 1981-2006 period average, which was 11.20%.

Source: Authors' computations using a sample of the work history database of the BPS

## VI.B - The simulations

In table 2.e we present the percentage of workers who reach 30 and 35 years of contribution at the ages of 60 and 65, obtained by simulating the lifetime path of contributions considering an unemployment rate of 11.2% (average rate of 1981-2006). According to our estimations, there is a serious risk that a sizeable proportion of the workers registered in the work history records of the BPS will not be able to accumulate the 35 years of contribution required to be eligible for a pension when they reach the usual retirement ages. Only about 25% of contributors will have made the required 35 years of contributions by the age of 60 and about 35% by the age of 65. However, as also showed in

table 5, 70% of workers reach 15 years of contribution at 70 years old, which make them eligible for a (minimum) benefit higher than the assistant pension.

**Table 2.e.** Percentage of workers who contribute for at least 30 or 35 years at the ages 60 and 65, and for at least 15 years at 70 years of age. Simulations were run using the average unemployment rate observed between 1981 and 2006 (11.20%)

	35 years of contribution		30 years of contribution		15 years of contribution
	60 years old	65 years old	60 years old	65 years old	70 years old
<b>Total</b>	25.2	34.7	41.3	48.9	70.0
Men	30.3	41.8	48.8	58.2	86.4
Women	23.1	32.8	39.3	47.5	73.8
Men, private sector	18.0	30.0	37.8	49.1	83.7
<i>Poorest quintile</i>	0.2	1.1	2.1	5.6	46.4
<i>Second quintile</i>	7.1	21.5	30.4	48.6	94.9
<i>Third quintile</i>	11.8	29.3	41.6	59.1	97.7
<i>Fourth quintile</i>	36.3	55.8	69.2	79.6	99.0
<i>Richest quintile</i>	67.9	79.3	86.3	90.8	98.8
Women, private sector	13.8	23.4	28.5	38.6	68.3
<i>Poorest quintile</i>	1.2	4.0	7.1	11.9	31.4
<i>Second quintile</i>	1.0	5.1	8.7	18.9	62.1
<i>Third quintile</i>	8.2	21.6	29.1	44.1	84.0
<i>Fourth quintile</i>	26.6	44.5	54.9	67.0	95.2
<i>Richest quintile</i>	61.0	73.4	80.1	84.6	97.5
Men public sector	68.2	74.6	82.1	83.8	94.4
<i>First to third quintile</i>	16.5	34.9	42.1	54.9	84.6
<i>Fourth quintile</i>	64.8	79.7	85.7	89.3	97.0
<i>Richest quintile</i>	94.2	95.9	97.3	97.6	99.1
Women public sector	55.2	69.4	77.1	82.1	94.8
<i>First to third quintile</i>	14.3	35.6	40.7	55.8	85.6
<i>Fourth quintile</i>	43.3	63.5	74.0	79.3	94.2
<i>Richest quintile</i>	79.2	85.9	92.8	93.4	99.4

Source: Authors' computations using a sample of the work history database of the BPS

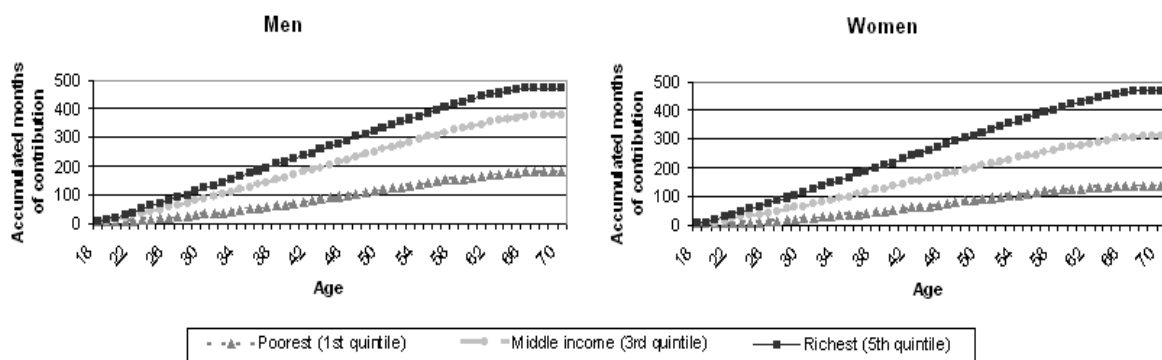
As expected, the problem is more serious for women than men. While only 33% of women satisfy the requirements at 65, 42% of men manage to do so at the same age. These figures fall to 23% and 30%, respectively, at 60.

Public employees are more likely to meet the requirements than private workers. Only 30% of men and 23% of women working in the private sector satisfy the access condition when they turn 65 years old. In contrast, 75% of men and 69% of women working in the public sector do.

We have also found big differences between workers in different income brackets. In figure 2b we depict the predicted lifetime accumulated contributions of the average private

worker of different income strata. Both the average man and woman of the highest quintile accumulate 35 years of contribution (420 months) at age 60. About 94% of the men and 80% of the women in the richest quintile working in the public sector would access a pension when they turn 60 (Table ). In contrast, in the poorest quintile, the average man accumulates 13 and the average woman 10 years of contribution. Almost no worker in this category would be eligible for a pension at 60, because they would have not contributed 35 years or more. Some of them would however be eligible for a contributory pension that is granted at 70 with only 15 years of contribution. According to our simulations, about 46% of men and 31% of women in the poorest quintile would accumulate at least 15 years of contribution at 70. These findings are roughly consistent with the theoretical literature on informality.

**Figure 2b: Accumulated months of contribution by age**



Source: Authors' computations using a sample of the work history database of the BPS

We also report the probability of accumulating 30 rather than 35 years of contribution at the retirement ages. The difference between these two estimations provides a rough approximation to the *direct* impact on pension coverage of changing the minimum required number of years of contribution. This measure does not take into account the *indirect* effects of such changes. It is possible, for example, that reductions in the required number of periods of contribution induce some workers to contribute less frequently. But it is also possible that an increase in the required number of periods of contribution, like the one that was put in place in 1996, provides incentives for some workers to contribute more periods.

If this is the case, the *total* impact on coverage of changing this access condition will be lower than the *direct* impact estimated here. Therefore, the estimated difference between the probabilities of contributing 30 and 35 years at retirement provide an upper bound to the total impact of this change.

If the density of contributions observed between 1996 and 2004 remain unchanged, the proportion of individuals who accumulate 30 years of contributions is necessarily higher than the proportion of individuals who accumulate 35 years of contributions at any given age. We find that 41% and almost 49% of the population registered in the labor history records will accumulate 30 years of contributions when they turn 60 and 65 years old, respectively. Thus the difference between the proportion of workers who would reach the required 30 or 35 years is around 15 percentage points. The change seems to impact more strongly on individuals with high and medium densities of contribution than on individuals with low densities. Indeed, workers with very low densities of contributions are not likely to contribute either 30 or 35 years.

According to these results, the increase in the vesting period in place since 1996 will likely cause a sizable decrease in the proportion of contributors who will fulfill this requirement. This tightening of the conditions to access a pension is therefore likely to cause a significant reduction in the proportion of individuals that can retire at any given age, and an increase in the average retirement age. Obviously, for these phenomena to take place, the social security administration has to actually check individual records of contributions and enforce the pension access conditions. This was not warranted in the past, but the ability of the administration to do it is growing gradually as information based on labor history records is being accumulated.

It is worth to note that the simulations are sensitive to the business cycle. We showed in the previous section that the unemployment rate impacts on the hazard rates and hence the simulated work histories depend on the assumptions made about the unemployment rate. The simulations presented so far are based on the average unemployment rate in the period 1981-2006. In order to analyze the sensitivity of the results to this variable, we did similar simulations using the average unemployment rate of the period covered by the work history database, i.e. between April 1996 and December 2004, which was 13.45%. As expected, we find a lower proportion of workers accumulating the required years of contribution. For example, the proportion reaching 35 years of contribution at 65 years old

decreases from 49% to 41%. However, the poorest workers are practically unaffected by the change in the unemployment rate. Most of them are basically out of the system with any of the two unemployment rates used in the simulations, suggesting that the business cycle has a bigger impact on workers in higher quintiles of the distribution.

The simulations presented so far were based on computations of the periods of service for regular jobs. There are some occupations that compute more than one period of service per period of effective contribution though. This is the case of most teachers and individuals working in risky activities. For example, workers handling radioactive substances register 3 periods of service every 2 periods of effective contribution, and hence they are required to contribute a significantly smaller number of periods to be eligible for a pension. The special regimes are relatively frequent among some groups of public employees, but they are much less frequent among private employees. Hence we do not expect these regimes to have a significant impact on the estimations of the proportion of private employees who would qualify for a pension. Women in the richest quintile register the largest incidence of special regimes among private workers, and yet only around 3% of them have special bonuses for at least half of the time they have contributed.

In contrast, over 30% of every income group of women working in the public sector has a special bonus at least half of the total time they have contributed. This figure exceeds 46% when it comes to women in the richest quintile. Workers that present the lowest incidence of these regimes in the public sector are men in the fourth highest quintile, and almost 12% of them work in activities with bonus for at least half of the time.

Thus, we compute a proxy for the number of periods of service of public workers in activities with special bonuses. A worker who contributed one period in any of these activities will be granted more than one period of service (the exact number depending on the bonus legally attached to the activity). This correction of the original estimation increases the estimated proportion of public workers who would satisfy accessibility requirements for every subgroup of public employees. As expected, the difference between the estimations that take into account special bonus and those which do not is much bigger among women than men. The proportion of public workers who accumulate 35 years of contribution at 60 years old rises by 3.4 and 15.6 percentage points, men and women respectively. In the case of women in the fourth highest quintile, the difference between the two estimations is as high as 25 percentage points at the age of 60 and 12 percentage points

at the age of 65. These results suggest that special bonuses may have a great impact on the proportion of public workers who satisfy the accessibility conditions, in particular in the case of women.

## VII - CONCLUDING REMARKS

Large segments of Latin American population are not covered by the old-age pension programs. Some workers stay out of the system all their lives, never contributing or receiving pensions. Other workers contribute, but many of them do not reach the minimum number of periods of contribution required to qualify for a pension or for a minimum pension guarantee. There is increasing evidence of the existence of a significant number of workers making frequent transitions between formality and informality. Highly fragmented and incomplete histories of contribution to social security risk leaving these workers with no contributory pension rights. Some of them might receive an assistance pension, but these are usually much less generous. This risk has probably been rising recently as the social security administrations have been increasing their ability to enforce the fulfillment of the qualifying conditions.

We propose in this paper a methodology to estimate the proportion of workers who would accumulate the number of periods of contribution required to access a pension, and to assess the impact of different explanatory variables on the fulfillment of this condition. The estimation represents a significant challenge because the information that is currently available to estimate the number of periods of contribution of each worker is incomplete. We propose a two-steps methodology to overcome this difficulty. In the first step, we estimate the probabilities of transition between contributing and not contributing at each age, using survival analysis. In the second step, we perform Monte Carlo simulations of the histories of contribution using the probabilities of transition estimated in the first step.

Using this methodology on a database of the main social security institution of Uruguay, the BPS, we found some distinctive patterns in the hazard rates. First, the hazard rate of both states decline with duration. As workers spend time in any of the two states, the chances of staying in the state rise. History and luck during the first periods in the state seem thus to be crucial for the fate of the working career. Second, young workers have

higher risk of quitting the state contributing but also of quitting the state not contributing, i.e. they are more mobile. Third, economic downturns raise the risk that private workers stop contributing and reduce the chances that they start contributing.

Our simulations indicate that the majority of contributors to the BPS will not reach the required number of years of contribution to access a pension at the normal retirement age. Not at least if the current probabilities of transition between contributing and not contributing remain in the future the same as in the period of observation (1996-2004). The required number of periods of contribution to access a pension in Uruguay is 35 years, which is unusually high for a developing country, but even when we estimate the proportion of contributors who would accumulate 30 years of contribution we get disappointingly low figures.

Incomplete and highly fragmented histories of contribution are much more pervasive among low than among high income workers. This is hardly surprising, but the size of the differences is really striking. Consider for example the case of men working in the private sector. They have almost a 68% chance of reaching the required 35 years of contribution at 60 years if they belong to the richest quintile, but less than 1% chance if they belong to the poorest quintile. The same figures for women are 61% and 1% for the richest and poorest quintiles, respectively.

These findings may be explained in the framework of Albrecht et al. (2008). Additionally, some more specific characteristics of the Uruguayan social security system –like minimum pensions, non-contributory pensions and incomplete work history records– may contribute to explain why some workers and especially low income workers tend to stay out of the system or to contribute only part of the time. While the above mentioned formal models do not explicitly consider those characteristics, they can nevertheless shed some light on these issues if some of the parameters in the models are reinterpreted in the appropriate way. First, minimum pensions turn contributions into a pure tax in the margin for some low income workers. When the self-financed pension lies below the minimum, all additional contributions that are not enough to surpass the minimum do not raise the pension and are therefore completely taxed out. In terms of Albrecht, Navarro and Vroman's model, these workers would be implicitly paying higher payroll taxes and the model predicts that payroll taxes decrease the rate of formalization. Second, many social security systems (including the Uruguayan one) offer a non-contributory pension to low income individuals

who are not eligible for contributory pensions. This benefit raises the value of working in the informal sector and decreases the incentives to accept formal sector job offers. Third, the limited capacity that the social security administration had in the past to verify whether contributions had been made, may have also increased the tax content of social security contributions for many workers. Unable to verify contributions, the administrations de facto loosened the link between contributions and pensions eroding the incentives to contribute.

These results suggest that this pension scheme requires some reform. In particular, the condition of having accumulated 35 years of contribution to access to a pension should be revised.

Several social security systems in Latin America seem to be facing similar challenges as the BPS in Uruguay and have now similar databases as the one used in this paper. The densities of contribution estimated in previous studies for countries like Argentina and Chile are similar to the ones we found for Uruguay. But the densities of contribution alone do not tell us what the probability is that a worker qualifies for a pension when he reaches the retirement age. The methodology proposed in this paper to estimate these probabilities and the factors that impact on them might thus be useful to assess the situation in other countries of Latin America as well.

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## CAPÍTULO 3

### TRABAJO CON DATOS EXPERIMENTALES: DISEÑO Y PROCEDIMIENTO DEL EXPERIMENTO

Este capítulo sirve para introducir los experimentos se realizaron en la Universidad de la República (Uruguay) en cuatro sesiones a lo largo de algo menos de un mes en las que participaron estudiantes de nivel de licenciatura. Vamos a dedicar estas páginas para explicar en detalle como se hicieron los experimentos y los problemas que encontramos. No en vano los datos de este único experimento nos han servido para escribir distintos trabajos. Antes de avanzar en el experimento en sí vamos a explicar una serie de pequeños detalles de los *papers* que encontrará en los capítulos 4, 5 y 6.

- El *paper* del capítulo 4 es el típico estudio experimental. Tenemos un baseline y una serie de tratamientos (*within*) que comparamos con el anterior.
- El trabajo de los capítulos 5 y 6 aprovecha mi *background* como microeconometra (y el de mi co-directora) y revisa los mismos datos con una visión completamente distinta. Usamos paneles dinámicos para ver cómo se comporta la gente *across the game*.

Realmente tanto mi propio *background* como la heterogeneidad entre mis directores me ha permitido pasar de la microeconometría empírica en que había trabajado durante ¡20 años! a esta nueva manera de investigación que me permite acercarme de manera precisa a los problemas que quiero estudiar. Y para ello, por supuesto, generar los datos que más se acerquen a mi tema de investigación. Después de esta introducción paso a explicar cómo fue mi primera experiencia.

#### I- EXPERIMENTOS EN URUGUAY

Puesto que no existe tradición de implementación de experimentos en Uruguay, siendo prácticamente desconocida la economía experimental entre los estudiantes, se planeó una estrategia de difusión que comenzó quince días antes de la primera sesión y que continuó hasta dos días antes de la última sesión.

Para hacer “la llamada” se hizo publicidad a través de pósters en la Facultad de Ciencias Sociales y en la Facultad de Ciencias Económicas, dirigidos a los estudiantes de licenciatura. Ambas facultades imparten grados parecidos pero están ubicadas en sitios completamente distintos de la ciudad. Además se suponen que atienden a población estudiantil muy distinta: más bien de orientación de izquierda en Sociales y más de corte liberal en Económicas.

En paralelo se hizo difusión oral en diferentes clases (en su horario regular) en charlas que duraron alrededor de quince minutos.

También se solicitó al centro de estudiantes (sindicato de estudiantes) que enviara un correo electrónico a sus miembros con el contenido del póster. Por último, se utilizó también la red social Facebook.

En todos los instrumentos de difusión utilizados, se solicitó a los interesados en participar que se inscribieran y llenaran un formulario en una página web. Dicha dirección se les facilitó tanto en los posters, como en las charlas, etc. y además se hizo un vínculo desde la web del departamento de Economía (dECON).

En el formulario (generado con *google docs*) se les preguntó:

- la dirección de correo electrónico,
- el sexo y la edad,
- la postura ideológica en una escala del 1 (extrema izquierda) al 10 (extrema derecha),
- el nivel socioeconómico también en una escala del 1 (pobre extremo) al 10 (rico extremo), y
- otras preguntas destinadas a que el inscripto no percibiera el interés de las dos anteriores.

Las viñetas siguientes refieren en detalle cómo se realizaron las preguntas sobre política y renta familiar.

- *“En cuestiones políticas, la gente habla de “posturas de izquierda” y “posturas de derecha”. En la siguiente escala del 1 (extrema izquierda) al 10 (extrema derecha), marcá el número que mejor te representa”.*

- “En la siguiente escala del 1 al 10, en dónde el 1 representa a las personas más pobres y el 10 a las más ricas, marca el número que mejor refleja la posición económica de tu hogar”.

Para el total de inscriptos, la mediana de la postura ideológica fue 4 y la mediana del nivel socioeconómico fue 5. Se clasificó a las personas como de *izquierda* o de *derecha* según si el valor que habían indicado en la escala del 1 al 10 era menor o superior a la mediana. A quienes indicaron el valor mediano, se les distribuyó aleatoriamente entre izquierda y derecha.

En paralelo, las personas fueron clasificadas como *pobres* o *ricas* siguiendo un procedimiento similar.

Todos los sujetos que se apuntaron a la web fueron llamados al experimento. Desgraciadamente nunca pudimos llegar a nuestro objetivo inicial de 200 participantes por lo que: ni llegamos a 200 sujetos en los experimentos ni pudimos aleatorizar entre los que se apuntaron.

La citación a las sesiones se hizo vía correo electrónico. Los sujetos debían confirmar su participación antes del día de la sesión a la que habían sido citados.

Dado el tipo de difusión, la mayoría de los participantes fueron estudiantes de las licenciaturas de ciencia política, sociología, trabajo social, economía y administración. Cada sujeto participó solamente en una sesión.

Por puras razones de logística (falta de laboratorio, de ayudantes, etc.) tuvimos que dividir el juego (un *dictator game*) en días diferentes. Los dictadores vinieron un día y los receptores otro día. Para evitar *deception* siempre se les dijo a los dictadores que los receptores vendrían en otra sesión y nunca se mencionó la fecha.

Los sujetos fueron asignados a las (cuatro) posibles sesiones de manera aleatoria aunque también tuvimos en cuenta sus preferencias sobre las fechas.

La primera parte del experimento consistió en “donar” en un *dictator game* y la segunda en adivinar los resultados del experimento anterior.

- La primera parte se realizó en dos sesiones con seis días de diferencia. En la primera sesión participaron 66 sujetos y en la segunda 22, sumando 88 observaciones.

- Quince días después de culminada la primera parte del experimento se realizó la segunda, en dos sesiones secuenciales a la que asistieron 44 personas.

Como se ve, la segunda sesión de la segunda parte del experimento fue bastante desastrosa: sólo se presentaron 44 sujetos. Para evitar efectos indeseados y pérdidas de reputación (y con la Navidad muy próxima que no nos permitía hacer nuevas sesiones ni arreglar el problema) notificamos los otros 44 sorteados para que pasaran a retirar la donación por el dECON. No retiraron el dinero 19 de los receptores.

## II - PRIMERA PARTE DEL EXPERIMENTO

Las instrucciones se presentaron en un cuadernillo de 19 hojas impresas en el que el sujeto debía marcar sus decisiones (ver en el anexo una copia de las mismas). Tal como se verá más adelante, el experimento requería un cuadernillo personalizado que variaba según características del sujeto (sexo, grupo ideológico y grupo de renta). Por eso, la primera hoja (cubierta) permitía identificar al sujeto al momento que entraba. Así, al momento de presentarse en la puerta del salón, el sujeto se identificaba con su dirección de correo electrónico. Su cuadernillo era asignado a un monitor que se encargaba de indicarle un lugar para sentarse. Había un monitor cada diez participantes aproximadamente.

Los sujetos fueron sentados de manera que no pudieran ver las respuestas de los demás participantes. Además, se les advirtió que no podían comunicarse entre ellos. Una vez ubicados, se les entregó el cuadernillo. Luego se procedió a leer las primeras hojas –que impartían explicaciones de carácter general- en voz alta, y se brindó alguna información adicional previamente acordada, como por ejemplo, que el dinero no era del equipo que realizaba el experimento.

En la cubierta, además de figurar la dirección de correo electrónico del sujeto, aparecían sus tres características de interés:

- si era hombre o mujer (identificadas por las letras H o M, respectivamente),
- rico (R) o pobre (P), y
- de izquierda (I) o derecha (D).

La primera hoja de cada librito, es decir la cubierta, tenía el siguiente aspecto:

**Figura 3.a:** Cubierta de los “paquetes” experimentales

sebastian\_pd  
@hotmail

h\_r

Entre las instrucciones orales del comienzo del experimento, se dijo a los participantes que retiraran la cubierta, y que anotaran en la página siguiente (página 0) si:

- estaban descontentos con el grupo de renta (P o R) y/o
- ideológico (I o D),

al que habían sido asignados.

Dijeron estar descontentos con su grupo de renta, 19 de los 88 sujetos (21.6%). 15 de los descontentos eran del grupo R y varios de ellos habían declarado valores superiores a la mediana. A su vez, dijeron estar descontentos con su clasificación ideológica 16 sujetos que se habían auto-posicionados como 4 o 5 en la escala del 1 al 10. En síntesis, si bien el descontento con el grupo de renta parece más bien relacionado con el concepto de “rico”, el descontento con la etiqueta de posición ideológica parece deberse a la incomodidad de quienes decidieron situarse en el medio.

En las dos primeras hojas (de aquí en adelante, página 0 y página 0’) figuraron las explicaciones generales.

- En la página 0 aparecía el procedimiento por el cual se habían creado los grupos de renta e ideológico.
- La página 0’ se dedicó enteramente a la presentación de la tarea general a realizar: el participante (denominado A) debía realizar una transferencia entre \$0 y \$200, de valor múltiplo de 20 incluido 0, a una persona denominada B que participaría en



otra sesión de este experimento. El formato de presentación de la donación es muy similar a la de List (2007).

En el apéndice se puede consultar en detalle el contenido. La figura 3.b tiene como objetivo ilustrar el aspecto de dichas páginas.

El sujeto A debía realizar esta tarea 16 veces en diferentes contextos. Estas aparecían a continuación, en hojas numeradas del 1 al 16. El orden de las hojas era diferente entre sujetos, y fue establecido en forma aleatoria.

**Figura 3.b: Presentación de las páginas 0 y 0'**

**INSTRUCCIONES**

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Hemos invitado a alrededor de 200 estudiantes a participar en un experimento en el marco de una investigación que estamos realizando en el Departamento de Economía de la Facultad de Ciencias Sociales (dECON). El propósito de esta investigación es estudiar cómo las personas toman decisiones en determinados contextos.

Te vamos a solicitar que realices una serie de tareas que consisten en tomar decisiones. Las instrucciones para realizarlas son simples. Todas tus decisiones serán anónimas y no te podremos identificar. Los datos se tratarán de manera totalmente anónima. Nadie conocerá ni las decisiones ni los resultados obtenidos de ningún participante.

Realizando estas tareas tendrás la posibilidad de ganar una cierta cantidad de dinero. El monto se calculará y se entregará de manera confidencial.

Podés preguntarnos en cualquier momento las dudas que tengas levantando primero la mano. Fuera de esas preguntas, cualquier tipo de comunicación del salón está prohibida.

Como recordarán, en una encuesta previa te solicitamos información referente a tu situación económica y preferencias políticas. Usando la información de toda la muestra de estudiantes como vos, hemos etiquetado a los participantes como de izquierda, si pertenecen al 50% más a la izquierda, y de derecha, al resto. De ahora en adelante usaremos el término izquierda/derecha para definir esas preferencias. Igualmente, hemos definido como pobres al 50% con menor ingreso y como ricos al 50% con mayor ingreso.

**LA TAREA**

La tarea se realiza en parejas. Hay participantes ubicados en este salón (a los que llamaremos tipo A) y participantes ubicados en otro salón (a los que llamaremos tipo B). Vos sos tipo A.

Tu pareja será un tipo B elegido de manera aleatoria. Ni ahora ni después (nunca) vas a saber cuál es tu pareja. Además, tu pareja nunca sabrá quién sos vos.

Los participantes tipo A como vos se enfrentan a la tarea siguiente:

*"Has sido provisionalmente dotado de 200 pesos, para vos y tu pareja (tipo B). Tu decisión es muy simple: decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Tu decisión puede ser cualquiera entre \$0 y \$200 en billetes de \$20."*

Por favor, poné un círculo alrededor de la cantidad que querés **transferir** a tu pareja:

\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200

**HOY**

Ahora vas a enfrentarte a esa decisión X veces. Es decir, X veces vas a tener que decidir qué cantidad de dinero (si alguna) vas a pasar al participante tipo B. En cada ocasión, tu pareja B será distinta. Además debes saber que **lo B nunca sos A**.

De todas las decisiones que realices, sólo se ejecutará una, que elijeremos **aleatoriamente**. Vos te llevarás el dinero de esa decisión a tu casa, y tu pareja (a que sea o no) recibirá el dinero que vos decidiste en esa tarea. **La pareja B va a recibir el dinero de verdad.**

Por favor, no hables con nadie hasta que la sesión no haya terminado. No te preocupes por lo que hagan los demás. Ahora, una por una, se te irán dando las decisiones.

La estructura de tareas era como sigue:

- En una tarea, el sujeto debía realizar una donación a un sujeto B del que no sabía nada. La hoja en que aparecía se titulaba Tarea O.
- En otras seis tareas, se informaba a A una característica de B: hombre, mujer, rico, pobre, derecha o izquierda. Estas hojas tuvieron por título Tarea H, M, R, P, D o I. Todas estas hojas tenían el siguiente aspecto: en una columna, aparecían las seis

características y solo una estaba redondeada. Cuando ninguna de las características estaba redondeada, el sujeto A no tenía información sobre B (Tarea O).

- En otras tres tareas se le decía a A que al recibir la donación, B iba conocer una característica de A: su sexo, grupo de renta o grupo ideológico. Estas hojas se titularon Tareas o-gen, Tarea o-inc y Tarea o-win, respectivamente. Nuevamente, la característica figuraba redondeada en una columna en la que aparecían las seis características. Obviamente las hojas diferían entre sujetos.

Las hojas tenían el aspecto que se muestra en la Figura 3.c.

**Figura 3.c:** Ilustración de las “tareas”.

i) Tareas O, H, M, P, R, D, I

ii) Tareas o-gen, o-inc, o-win

**Tarea I**

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

Información de tu pareja

Hombre  
Mujer  
Pobre  
Rico  
**Izquierda**  
Derecha

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200

**Tarea o-gen**

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece alguna característica tuya según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti. Si no hubiera ninguna característica marcada, entonces él no sabrá nada.

Información tuya

**Hombre**  
Mujer  
Pobre  
Rico  
Izquierda  
Derecha

Sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200

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- Finalmente, en otras seis tareas, además de darle a A una característica de B, se le decía que B iba a saber: i) que A conocía esa característica de B al hacer la donación; ii) el grupo de A. Esta información aparecía en dos columnas formadas por las seis características de interés. A la izquierda, aparecía redondeada una característica de A; a la derecha, una de B. En dos tareas, la marca correspondiente

al sujeto A era su sexo. En cada una de estas dos hojas, en la columna de la derecha aparecía un sexo diferente, de manera que en una A y B tenían el mismo sexo y en la otra, el sexo opuesto. En el primer caso, la tarea se tituló Tarea ge/ge; en el segundo, Tarea ge/ge-. En forma análoga, dos hojas preveían una donación a una persona del mismo grupo de renta y del opuesto (Tarea in/in y Tarea in/in-, respectivamente), y dos hojas referían a los grupos ideológicos de A y B (Tarea win/win y Tarea win/win-, respectivamente).

La Figura 3.d. nos muestra el aspecto de estas tareas algo más sofisticadas. En realidad no era nada de complicado puesto que el formato era muy natural: “qué se yo de él y qué sabe él de mi”.

**Figura 3.d:** Ilustración Presentación de las Tareas ge/ge; ge/ge-  
in/in; in/in-; win/win; win/win-

### Tarea in/in-

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre **tu pareja**. La característica marcada con un círculo es lo único que sabrás de B.

Observá además que aparece también alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti.

#### Información tuya

Hombre  
Mujer  
Pobre  
**Rico**  
Izquierda  
Derecha

#### Información de tu pareja

Hombre  
Mujer  
**Pobre**  
Rico  
Izquierda  
Derecha

Con esta información sobre tu pareja B y sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200

Para realizar los pagos, se sorteó una sola tarea. Específicamente, cada monitor sorteó para su grupo un número del 1 al 16, de manera de pagar la tarea que figuraba en la página sorteada. Como las hojas estaban ordenadas de forma diferente entre sujetos, las tareas pagadas fueron distintas incluso para los participantes con mismo monitor.

La base de datos construida a partir del experimento tiene la siguiente información del sujeto A:

1. la donación realizada en cada tarea;
2. el número de orden de cada tarea;
3. la posición en la escala de renta de 1 a 10 y el grupo de renta asignado (P o R);
4. la postura ideológica en la escala de 1 a 10 y el grupo ideológico asignado (I o D);
5. el descontento con el grupo de renta asignado (está de acuerdo o no lo está);
6. el descontento con el grupo ideológico asignado (está de acuerdo o no);
7. el sexo y la edad.

Esta información nos será de enorme utilidad para los trabajos que se presentan en los capítulos 4 y 5.

### III - SEGUNDA PARTE DEL EXPERIMENTO

Los participantes de la segunda parte del experimento, los *receptores*, fueron sorteados como parejas de los participantes de la primera parte del experimento, por lo que son denominados sujetos B.

Para realizar el sorteo, se utilizó la información de los información aportada por B en el formulario de inscripción. Las parejas fueron elegidas en forma aleatoria con dos condiciones.

- Primero, se realizó un sorteo sin reposición, de forma que el sujeto B tuvo solamente una pareja.
- Segundo, se priorizó asignar una pareja a los sujetos A que habían realizado una donación superior a 0. Esto lo hicimos para evitar que ninguna donación positiva se quedara sin receptor. Recordad que sólo vinieron 44 de los 88 citados. Para

identificar al sujeto B al momento de entregar la donación, se le asignó un número (número de identificación).

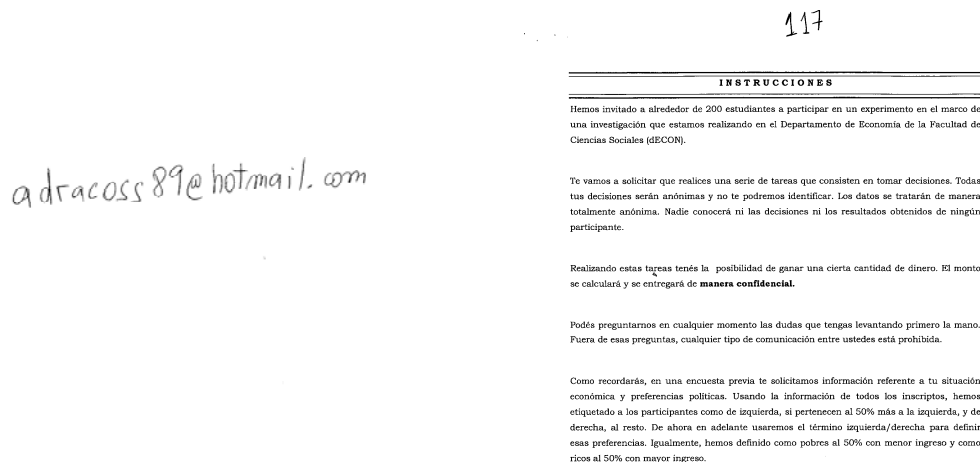
Como solamente se presentaron 44 sujetos, notificamos los otros 44 sorteados para que pasaran a retirar la donación por el dECON.

Al llegar al salón, se asignó a cada sujeto un monitor. Una vez ubicados, se les repartió un cuadernillo impreso.

- En la tapa del cuadernillo figuraba el correo electrónico del sujeto, ya que los cuadernillos estaban personalizados.
- En la segunda hoja del cuadernillo, aparecía el número de identificación que permitió entregar la donación hecha por el participante A (al final de la sesión).

Al comienzo de la sesión, se solicitó a los participantes que retiraran la cubierta (ver figura 3.e). La página siguiente (página 0) fue similar a la del experimento 1. El aspecto de estas dos páginas se muestra en la figura 3.e.

**Figura 3.e:** Presentación de la cubierta y de la página 0



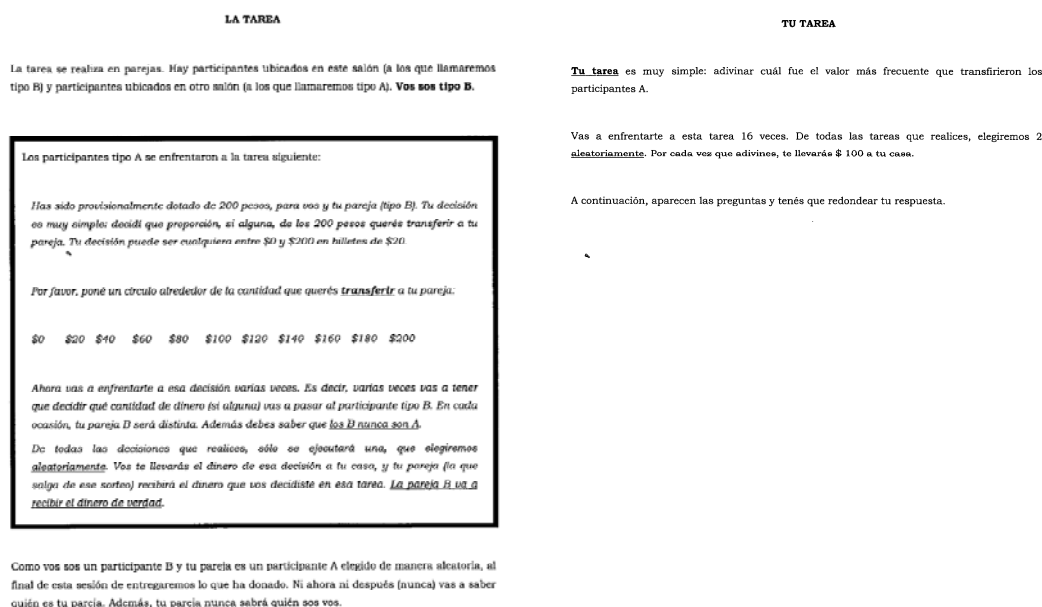
A continuación, en la hoja siguiente (páginas 0' de la Figura 3.f) se les dieron a conocer las tareas que habían realizado los participantes A. Es decir podían leer las instrucciones a las que se habían enfrentados los sujetos A.

A continuación (página 0'') se explicaba la tarea general que se estaba solicitando a los participantes B. Esta tarea consistía en adivinar el valor más frecuente de las donaciones realizadas por A:

*“Tu tarea es muy simple: adivinar cuál fue el valor más frecuente que transfirieron los participantes A”*

El aspecto de estas páginas se ilustra en la Figura 3.f.

**Figura 3.f:** Páginas 0' y 0'': explicación general de la tarea



En cada una de las tres hojas siguientes se solicitó que adivinaran el valor más frecuente en diferentes contextos.

Las preguntas S1 a S8 solicitaban adivinar la donación más frecuente de hombres y mujeres, por separado, cuando:

- i) el participante A no sabía nada de su pareja B;
- ii) cuando A no sabía nada de B, pero se le decía que B iba a conocer el sexo de A;
- iii) cuando A sabía que B era de su mismo sexo;

- iv) cuando A sabía que B era de diferente sexo.

Las preguntas R1 a R8 eran análogas pero los dos grupos considerados eran pobres y ricos:

- i) el participante A no sabía nada de su pareja B;
- ii) cuando A no sabía nada de B, pero se le decía que B iba a conocer el grupo de renta de A;
- iii) cuando A sabía que B era de su mismo grupo de renta;
- iv) cuando A sabía que B era de diferente grupo de renta.

**Figura 3.f:** Presentación de las Tareas S1 a S8, R1 a R8, P1 a P8

Nº	Redondea el valor que te parece que más frecuentemente se transfirió en cada caso
<b>S1</b>	¿Cuánto transfirieron los <b>hombres</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S2</b>	¿Cuánto transfirieron las <b>mujeres</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S3</b>	¿Cuánto transfirieron los <b>hombres</b> cuando les dijimos que <b>B iba a saber</b> que A era un hombre? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S4</b>	¿Cuánto transfirieron las <b>mujeres</b> cuando les dijimos que <b>B iba a saber</b> que A era una mujer? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S5</b>	¿Cuánto transfirieron los <b>hombres</b> cuando sabían que <b>B era un hombre</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S6</b>	¿Cuánto transfirieron los <b>hombres</b> cuando sabían que <b>B era una mujer</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S7</b>	¿Cuánto transfirieron las <b>mujeres</b> cuando sabían que <b>B era un hombre</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S8</b>	¿Cuánto transfirieron las <b>mujeres</b> cuando sabían que <b>B era una mujer</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200

Las preguntas P1 a P8 solicitaban adivinar la donación más frecuente considerando información de la postura ideológica:

- i) el participante A no sabía nada de su pareja B;
- ii) cuando A no sabía nada de B, pero se le decía que B iba a conocer el grupo ideológico de A;
- iii) cuando A sabía que B era de su mismo grupo ideológico;
- iv) cuando A sabía que B era de diferente grupo ideológico.

Las tres hojas fueron colocadas en orden aleatorio diferente para cada sujeto para minimizar el efecto orden. Se dijo a los participantes que se sortearían dos preguntas y se les pagaría \$100 por acierto.

Al final del experimento se pagó la donación de A y las tareas sorteadas. Cada monitor sorteó para su grupo dos preguntas de todas las realizadas en S1-S8, R1-R8 y P1-P8.

Los datos de esta segunda parte del experimento no han sido utilizados todavía. Como sólo hay 44 observaciones tendremos que realizar nuevas sesiones para tener una muestra de mayor tamaño. Tenemos muchas preguntas abiertas sobre este tema pero la verdad es que hemos postergado esta segunda parte del proyecto para después de la lectura de la tesis, cuando tengamos tiempo otra vez.

### **Referencias**

List, J. A. (2007). On the Interpretation of Giving in Dictator Games, *Journal of Political Economy* **115**(3): 482-93.



## CAPÍTULO 4:

### SOLIDARITY AND INFORMATION<sup>7</sup>

#### I - INTRODUCTION

Previous research on altruism shows that individuals in Dictator Games are sensitive to the conditions of anonymity of recipient and dictator (Hoffman et al., 1994; Frohlich et al, 2001; Charness and Gneezy, 2008).

In this paper we are interested on studying the effect on generosity of information in two dimensions: when the donator has information about wealth, sex and ideology of the recipient and when the dictator is informed that his/her wealth, sex or ideology will be known by the recipient. The social and group identity theories predict a change in the giving when the donator is informed that the recipient is of the same or opposite group. In the case of wealth, fairness concern and inequity aversion model predict that rich subject will increase donations to the poor subjects. In turn, if group membership is important, the donators will care about their social category to be known because of self-image or guilt-aversion.

To do this, we perform an experiment in which the subjects play 16 dictator games in which they have different pieces of information of about wealth, sex and ideological position. The three social categories are not artificial labels but the actual characteristics of dictators and recipients. In all of the treatments, both dictator and recipient are anonymous. In one of them, the donator only knows his social category. Besides, for each social category (wealth, gender, and ideological position) he faces three treatments:

- i) the donator knows the social category of the recipient, that is, he knows if the recipient is a member of his own group.
- ii) the donator knows his category will be told to the recipient;

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<sup>7</sup> Jointly with P. Brañas-Garza & M.P. Espinosa

- iii) the donator knows the category of the recipient and that the recipient will know the information he had when choosing the donation. Thus, the donator and the recipient know if they belong to the same or to a different group.

The advantage of the dictator game is that it gives no room to strategic behavior so identity, inequity aversion and self-image concerns will have a cost. Thus, this game provides a better environment than other ones to understand the motives behind giving. The unified framework for the three social categories helps to understand the different meaning of each one. Besides, given the category, the unified framework for the different pieces of information provides a better understanding of the motivations.

The structure of the paper is as follows. In section II we review the relevant literature. In section III we describe the framework of the experiment, in sections IV to VI we present the results when we introduce information about wealth, sex and ideology respectively, and we conclude in section VII

## II - THEORETICAL AND EMPIRICAL BACKGROUND

### **II.A - Information about the recipient**

We may argue that donations increase when providing information about the recipient because information makes donations more credible. But individuals seem to react differently when faced to different recipients. For example, Fowler and Kam (2007) find that donators are more generous with recipients of their own political party than the opposing party. Similarly, there is evidence that donators are more likely to increase their donations when the recipient is signaled as a close person –social distance is low- (Leider et al., 2009; Brañas-Garza et al., 2010).

The social psychology approach of social identity provides a framework to explain that group membership produce the desire of improving the welfare of in-group at the expense of out-group (see Charness, Rigotti and Rustichini, 2007; Chen and Li, 2009). Basically, the membership triggers discrimination between subjects who belong to the same group and the outsiders. More recently, Akerloff and Kranton (2000) developed the notion of

group identity and incorporated it in the utility function. The social categories behind the group identity may be defined on the base of social status, wealth, sex, ideology or political party. In any case, each social category is associated with ideal behavioral prescriptions. To follow them produces an affirmation of the identity. Individuals have a stock of identity that reaches its maximum value when the subject exactly follows the prescriptions. The notion of group identity has been studied by Eckel and Grossman (2005) who find that cooperation increases when individuals have a strong group-identity.

However, not always individuals favor their own group at the expense of the out-group. For example, previous experimental papers reveal that individuals are more likely to exhibit solidarity when the recipient is poor than rich (Eckel & Grossman, 1996; Holm and Engfeld, 2005; Brañas-Garza, 2006). The sensitivity of donations to income, wealth or social status of the recipient has been explained by fairness concerns: individuals care about an ideal equity and act consequently. Thus, rich subjects would perceive as fair to decrease their advantage in the social ladder. Fehr & Schmidt (1999) formalize fairness as a self-centered inequity aversion. In this model, subjects suffer a loss of utility when they have an advantageous position. Thus, when richer than others, subjects would sacrifice part of their resources to reduce the monetary gap motivated by feelings of guilt (see Charness y Dufwenberg, 2007). When in a disadvantageous position, subjects suffer an even larger utility loss (based on feelings of envy) than in the case before and they would desire to punish the advantaged ones.

Note that though social identity consequences on in-group and out-group payoffs cannot explain that rich subjects favor the poor subjects, the desire to follow ideal prescriptions in the identity model by Akerloff and Kranton (2000) can. If “helping those who need it” is a behavioral prescription for rich people, rich subjects should donate to the poor to affirm their identity.

The literature does not find a unique in-group / out-group pattern of pay-offs when studying the gender category. Dufwenberg and Muren (2000) carried on a dictator game in which they found that women receive higher donations than men. Holm and Engfeld (2005) classified the recipients in four categories taking into account sex and income and found that subjects of all groups are more likely to favor women of low income and. They interpret that this is the result of a social convention of favoring women in critical situations and/or the belief that women are less responsibly of being poor than men.

Following Fong (2001) and Holm and Engfeld (2005) we may interpret that gender discrimination in the labor market makes women be in an under-control disadvantage that subjects desire to compensate because of fairness concern.

Note that the research on gender indicates that women are more generous than men and that women expect a more generous behavior from women than from men (Andreoni and Vesterlund, 2001; Eckel and Grossman, 1998; Croson and Gneezy, 2009; Aguiar et al. 2010). If there is a social belief that women are more generous than men, donations to women are greater than to men because of a “recognition’s award”.

## **II.B - Information about the donator**

Several empirical studies suggest that social recognition and social reputation motivate altruistic activities. For example, Andreoni and Bernheim (2009) find evidence that this social image concern helps to explain the importance of the 50-50 division in dictator games. They argue besides fairness concern, people are generous because they like to be perceived as fair. In a study of blood donors, Lacetera and Macis (2010) found that the publicity of symbolic awards to frequent donors stimulated the donations. They interpret that people care about their social prestige, so they engage more likely in pro-social behavior when this engagement improves their social image.

We may extend the individual motivation of social image to the concern with the social image of the group. Following the arguments of self-image, when representing the group, individuals would be more likely generous in order to improve the prestige and social recognition of the group. Thus, making public the social category of the donator would have a positive effect on solidarity because of social-image group concern.

Guilt aversion also helps to explain that people’s behavior is affected when information about the donor is public. The guilt aversion model states that people are concerned with other’s beliefs. In other words, subjects are sensitive to people’s expectations and would like to make them real (Charness and Dufweberg, 2006). Thus, generosity depends on what the donor believes about the recipient’s expected donation.

Note the difference between guilt-aversion and identity. We already mentioned that previous research found that women expect a generous behavior from women (at least,

more generous than from men): if guilt-aversion exists, women would make generosity real when they donate to a woman who will know the donator is a woman. But if being generous with women is a behavioral prescription of women, then we should observe an increase of donations when a woman donates to woman even if the recipient will not know that the donator is a woman.

### III - FRAMEWORK

#### **III. A – The experiment design**

The experiment consists of 16 dictator games that differ in the information given to the dictators and the recipients. There is a baseline treatment where the dictators only know about themselves; in the other treatments, they have an additional piece of information. Each subject faces the treatments in a different random order. Thus, we have information about 16 randomly sorted decisions taken in the same controlled location, with instructions presented in a similar design. This allows us to have a unified framework to explore the effect of information on donations. The information refers specifically to wealth, sex and ideology.

We addressed three critical issues in the design:

- In order to have some control over the correlation of subsequent decisions, each dictator took the decision in a different random order.
- In order to avoid the potential effect of enrichment throughout the experiment, the dictator knew since the beginning that only a randomly decision would be paid.
- We do not use artificial labels but the actual characteristics of dictators and recipients.

#### **III.B - Implementation**

The experiment was conducted at the Universidad de la República (Uruguay). As it was the first experiment conducted in the institution (and the second in the country) we made a

substantial effort in publicity. The subjects were recruited in the University via posters and verbal information in regular class time. Due to the population target of the diffusion, the majority were undergraduate students of politics, sociology, social work and economics.

When the recruitment we asked the participants to fill a questionnaire in which, among other questions, they informed their sex, their (perceived) socio-economic position of their household in the society (hereafter, wealth) and their personal ideological position (hereafter, ideology). The two last variables were collected in a 10-steps scale where 1 was extremely poor / extreme-left and 10, extremely rich / extreme-right. Anonymity was always respected. The participants were identified by an e-mail address given by them and we did not ask their names.

We had 192 participants. The histograms in Figure 4.a show the distribution of their wealth and ideology. The median and mode of wealth is 5; for ideology, these statistics are 4 and 5 respectively.

Using this information we classified the subjects as follows: those below the median of the wealth distribution were labeled as poor (hereafter P) and those above the median were labeled as rich (R). The subjects who had informed a position-value identical to the median-value were randomly assigned to the P or R group. Analogously, we labeled the subjects as left-wing (L) or right-wing (hereafter C). We additionally are interested in the subject's sex, denoting the men by M and the women by F.

We performed the experiment in four sessions. The participants of the two first sessions were the dictators and the participants of the two last ones were the recipients. The recipients had to guess the amount of the donation made by the dictators. They did the guess experiment before they knew the donation they had received. As the dictators were 88 but only 44 recipients actually went to the sessions, the ones who failed went another day just to collect the money.

The dictators' sample is composed of 88 subjects whom 51% are rich, 36% are right-wing and 32% are men. The under-representation of right-wing subjects is due to their higher absenteeism rate and the under-representation of men respond to the sex structure of the registered persons.

The subjects were given verbal and printed information. The first information they received was their social category of wealth, ideology and sex.<sup>8</sup> We also informed them the method we used to classify them as P/R and C/L. Those disappointed with their label were allowed to mention it but not to change their status. In fact, 33% were not happy with the category of rich, 9% with poor, 44% with right-wing and 4% with left-wing.

The general dictator game consisted of inviting to allocate 10 bills of 20 Uruguayan pesos (around 10 American dollars) between the participant and a randomly chosen student who was not in the same room and will never be a dictator. The task was explained in one sheet of a printed booklet. Following List (2007) instructions, the possible payoffs were presented on a line on the sheet and the subjects had to mark their decision with a circle. The amount of money ranked from 0 pesos (left-end) to 200 pesos (right-end) restricting the donations to multiples of 20, that is 0, 20, 40, ..., 200.

### III.C - Treatments

We will note the treatments as  $T^{type}[(i,j);(i,j)]$  where type indicates the social category classification (wealth, sex or ideology);  $i$  indicates a characteristic of the donator (his social category);  $j$  is a characteristic of the recipient; the first pair  $(i,j)$  is the information known by de donor and the second pair  $(i,j)$  is the information that will be known by the recipient. When the type is wealth,  $i$  and  $j$  only can be  $P$  or  $R$ ; the same holds for the other two types.

In the baseline treatment, the dictator only knows his own characteristics (he is  $P$  or  $R$  for wealth type,  $M$  or  $F$  for sex type,  $C$  or  $L$  for ideology type). Thus, we note it as  $T^{type}[(i,*);(*,*)]$  where the symbol  $*$  indicates non-information.

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<sup>8</sup> Notice that each booklet was personal. We identified each booklet writing the subject's e-mail in the first page of the booklet. After receiving the booklet, the student threw away that page in order to not be identified.

a) *The dictator knows*

In six treatments we inform the subjects a characteristic of the recipient (alternatively, the recipient is P, R, F, M, C or L). According to the notation, these six treatments are noted as  $T^{type}[(i,j); (*,*)]$ . The decisions made under  $T^{type}[(i,j); (*,*)]$  vs the decisions made under  $T^{type}[(i,*); (*,*)]$  highlight the reaction of donators to persons who belong to the same or different group. Based on identity models, we would expect higher donations when donors and recipients share the same group. However, in the wealth classification we would expect that the rich subjects increase their donation when they know that the recipient is poor because of inequity aversion and/or an identity prescription.

b) *The dictator knows that the recipient will know*

In three treatments, we inform the subjects that the recipient will know the donator's group (R/P, M/F or C/L). We note them  $T^{type}[(i,*); (i,*)]$  indicating that one characteristic of the donator will be public. The comparison of the decisions made under  $T^{type}[(i,*); (i,*)]$  and  $T^{type}[(i,*); (*,*)]$  allow to explore if the subjects are sensitive to the image of their group. Indeed, if the social category classification is relevant for the subject, donations will be higher in this treatment than in the baseline because of social image.

c) *The dictator knows that both will know*

There are six treatments that are noted as  $T^{type}[(i,j); (i,j)]$ . The donor knows his own characteristic, a characteristic of the recipient and besides, he is informed that the recipient will know the information under which the donation is made. The characteristics of  $i$  and  $j$  are of the same type. The comparison of  $T^{type}[(i,j); (i,j)]$  and  $T^{type}[(i,j); (*,*)]$  allows to assess the sensitivity to the social image when facing someone to the own group or the opposite group, controlled by a potential in-group or out-group effect. In other words, in this treatment we observe the behavior within-group and between-group which are affected by two dimensions: the in-group or out-group effect on solidarity and the image concern faced to in-group or out-group persons.



The sheets of each treatment had a similar appearance. In  $T^{type}[(i,j); (*,*)]$  the six possible recipient's characteristics ( $P,R,C,L,M,F$ ) were printed in a column under the title "information of your partner". One of them was circled, indicating that recipient was a subject with that specific characteristic. One of these sheets was used for the baseline treatment  $T^{type}[(i,*); (*,*)]$  for which there was no circled characteristic.

In  $T^{type}[(i,*); (i,*)]$ , the six possible donor's characteristics ( $P,R,C,L,M,F$ ) were printed in a column under the title "information of yours" and one of them was circled; the circle indicated the donor's characteristic that the recipient will know.

Finally,  $T^{type}[(i,j); (i,j)]$  was presented in a sheet with two columns: at the left the title was "information of yours" and at the right, "information of your partner". The circled characteristics indicated the characteristics of the dictator and recipient.

In Figure 4.b we show the average donation (in bills) for the 16 treatments. In the blind treatment, the average donation is 2 bills and ranges between 1.6 and 5.1. The lowest average donation is 1.6 bills and the highest, 5.6 bills. They correspond to  $T^{wealth}[(i,P); (*,*)]$  and to  $T^{wealth}[(i,R); (*,*)]$  respectively, that is, the treatments in which the donor knows that the recipient is poor and rich, respectively. The average dictator's earning was \$142.5 (7 bills) and the average recipient earning was \$57.5 (3 bills).

### III. D - Empirical strategy

In order to analyze the decisions, we build a database of 16 observations per subject (1408 observations) and we estimate a model where the dependent variable is the level of the donation.

As we observe 10 levels of donations (10 bills) we treat the dependent variable as stemming from a latent variable that is observed in  $[0,10]$  and censored otherwise. We state that the latent variable (donations) depends on the information (that is, on the treatment and characteristics of the donor). Thus, the explanatory variables related to the treatments that handle information about wealth are:

- a dummy variable that take value 1 when the subject is R;

- a dummy variable that take value 1 in the treatment  $T^{wealth}[(i,j); (*,*)]$  and  $i=j$  (that is, the dictator knows that the donation is from R to R or from P to P);
- a dummy variable that take value 1 in the treatment  $T^{wealth}[(i,j); (*,*)]$  and  $i \neq j$  (that is, the dictator knows that the donation is from R to P or from P to R);
- a dummy variable that take value 1 in the treatment  $T^{wealth}[(i,*); (i,*)]$  (that is, the dictator knows that the recipient will know if he is R or P) ;
- a dummy variable that take value 1 in the treatment  $T^{wealth}[(i,j); (i,j)]$  and  $i=j$  (that is, the dictator knows that the recipient will know that the donation is from R to R or from P to P);
- a dummy variable that take value 1 in the treatment  $T^{wealth}[(i,j); (i,j)]$  and  $i \neq j$  (that is, the dictator knows that the donation is from R to P or from P to R);
- five variables that are the interaction between the first variable (that indicates the dictator is R) and each of the other five dummies.

We follow the same strategy for capturing the treatments with information about gender and ideology. In addition we have 2 dummy variables that indicate if the dictator is unhappy with the labels of wealth and ideology, respectively.

We estimate a Tobit model. Since we use the same subjects for the different treatments, in all the estimations we adjusted for within-cluster correlation to obtain a robust variance as proposed by Froot (1989) and implemented by Rogers (1993) in STATA software.

We report the estimated parameters of the Tobit model in the Appendix. Notice that the estimations indicate that the donor's characteristics do not help to explain the donation in the baseline. The discomfort with the socio-economic and the ideological position labels are not significant at the usual statistical levels, either.

In order to assess the effect of a treatment respect to the baseline (the omitted treatment in the estimation), we calculate the marginal effect on the latent dependent variable. That is, we estimate the increase of the donation due to the treatment if donations were not censored at 0 or 10.

## IV - INFORMATION ABOUT WEALTH

In Table 4.a we report the main figures obtained when we introduce information about wealth: the proportion of donors who increase the donation, the proportion who decrease it and the average donation. In Table 4.b we present the estimated effect of each treatment on the average donation level according to the Tobit estimation. In Figure 4.c, besides a graphic of the average donation (box i), we give a picture of the heterogeneity of individual decisions using scatter plots that compare the decisions in the baseline and under information (boxes ii, iii and iv, respectively). Below we summarize the main results.

The scatter plot in the box (ii) of Figure 4.c illustrate that undoubtedly the donation increases when the subjects know that the recipient is poor ( $T^{wealth}[(i,P); (*,*)]$ ): except one individual, the observations lie on the 45° line or above. The figures of Table 4.a report that 80% of the subjects increase the donation respect to the baseline and the rest do not vary it (just 1 exception). Thus, unsurprisingly, the average donation level increases from 2.3 in the blind treatment to 5.1 when the recipient is poor. The rich and poor donors vary the donation in the same direction but the estimated change is greater for rich than for poor (3.1 and 4.4 bills, respectively as reported in row 1 of Table 4.b).

When we inform that the recipient is rich ( $T^{wealth}[(i,R); (*,*)]$ ), the reaction vary with the dictator's group. As illustrated in Figure 4.c (box iii) poor donors are more likely to be below the 45° than above, but rich donors look more spread out than poor donors. Indeed, turning again to figures of Table 4.a, we observe that around 40% of poor dictators diminish their donation whereas the behavior of rich donors is heterogeneous: 29% of them increase it and 29% diminish it. Table 4.b reports that the treatment's estimated effect on the average donation is negative (-1.6 bills) for the poor donors and null for the rich donors.

The scatter plot in Figure 4.c (box iv), where we illustrate the results of  $T^{wealth}[(i,*); (i,*)]$ , looks less clear than the above mentioned. According to the figures presented in the row 4 of Table 1, 39% of the dictators increase the donation respect to the baseline and 10% of them decrease it. However, we find a positive effect on the donation of around 1 bill for both rich and poor donors (row 3 in Table 4.b).

In the last rows of Table 4.a and 4.b we present the results for the  $T^{wealth}[(i,j);(i,j)]$  treatments. They are quite similar to the obtained for the  $T^{wealth}[(i,j); (*,*)]$ . We do not report the scatter plots that show the difference between these treatments and the baseline because they have the same appearance than Figure 3(b) and 3(c).

When the donator and recipient belong to different wealth categories, the average effects are not different from the effects of  $T^{wealth}[(i,j); (*,*)]$  and  $T^{wealth}[(i,j);(i,j)]$  ( $p=196$  and  $p=197$  for poor and rich donators, respectively). But there are slight differences between  $T^{wealth}[(i,j); (*,*)]$  and  $T^{wealth}[(i,j);(i,j)]$  when the donator and recipient share the same wealth category. When they are poor, the average donation declines in 0.5 bills ( $p= 0,067$ ). When they are rich, it increase 0.6 bills ( $p=0,052$ ).

We may also note that the effect on average donation is different in  $T^{wealth}[(i,j);(i,j)]$  than in  $T^{wealth}[(i,*); (i,*)]$  ( $p=0$  for the four comparisons). Poor and rich subjects, who increase the donation when their wealth will be known, increase it even more if additionally the recipient is poor but diminish it if the recipient is rich.

In short, information about recipient's wealth is not neutral. Both rich and poor donors exhibit more solidarity when the recipient is poor than rich or when there is no information (baseline), as reported in previous research (Eckel & Grossman, 1996; Holm and Engfeld, 2005; Brañas-Garza, 2006) and consistently with inequity aversion arguments. Inequity aversion also can explain that the poor subjects diminish the donation when they know that the recipient is rich. However we also can argue that this reaction may also be due to an out-group effect. Finally rich donors have different reactions when they know that the recipient is rich.

To make public wealth's donator is also not neutral. Both rich and poor donors are more likely to be generous as if there actually was a concern with the group-image. However, the reaction of rich subjects may be also triggered by guilt aversion (people would expect to have a high donation if the donator is rich).

Finally, there is an effect of making public all information over only informing the recipient's group when the donor and recipient belong to the same group. The rich donator increases the donation when the rich recipient will know that they belong to the same wealth group. Thus, in-group effect within rich is not strong enough to increase the average donation (as mentioned) but the rich subjects are concerned with how their peers perceive

them. On the contrary, the poor subjects are more generous to in-group but seem to feel some relief when the recipient will know they are both poor.

## V - INFORMATION ABOUT SEX

The results of treatments with information about sex are reported in Tables 4.c and 4.d, and Figure 4.d.

Both women and men increase their donations when they know the sex of the recipient. Indeed, as reported in Table 4.c, more than a half of the subjects increase their donation and few subjects decrease it. We do not find a statistically significant difference of these proportions between men and women. We estimate that this treatment provokes an average donation increase of 1.8 bills respect to the baseline (row 1 of Table 4.d).

As reported in Table 4.c 40% of women increase the donation when the recipient is a man. Note that this proportion is lower than the obtained when they are informed that the recipient is a woman ( $p=0.051$ ). Besides, 13% of women diminish the donation. Thus, though this treatment also provokes an increase of the average donation, this change is lower than the produced when the recipient is a woman (the difference is 0.8 bills and we reject that it is null with  $p=0,006$ ).

When men are informed that the recipient is a man, only 18% of them increase the donation and 79% do not change it respect to the baseline. Although the effect on the donation is positive (0.7 bill), it is lower than the effect found when the recipient is a woman (the difference is 1 bill with  $p=0,003$ ).

In the  $T^{sex}[(i, *); (i, *)]$  treatment, 34% of the subjects donate a higher amount than in the baseline (row 4 of Table 3). This proportion is higher for women than for men ( $p=0.028$ ). But also a higher proportion of women than men diminish the donation. Thus, women seem to react more heterogeneously than men. On average, we assess that the effect on donation is 1.3 bills for women and 0.8 for men, but we do not find a significant difference between them (row 3 in Table 4.d).

Once again, we do not present the scatter plots that compare  $T^{sex}[(i,j);(i,j)]$  with the baseline because they look similar than the figures that illustrate  $T^{sex}[(i,j); (*, *)]$ . We do not

find significant statistical differences between those treatments except for the proportion of men who increase the donation when the recipient is a woman. This proportion is lower when the information is “to tell the recipient that this is the donation of a man to a woman” than just “the recipient is a woman” (54% and 43%, respectively; the test of equal proportion is  $p=0,083$ ).

We also compared the effect on average donation in  $T^{sex}[(i,j);(i,j)]$  and  $T^{sex}[(i,*);(i,*)]$ . We find that, whatever the sex of the donor, the difference between treatments is positive when the recipient is a woman ( $p=0$ ) and non-different from zero when the recipient is man.

In brief, women favor their own group over the opposite, though they do not punish the out-group. Men do not follow this pattern: they also show more solidarity with women than with men. These results are similar to the obtained in previous research on gender differences (Dufwenberg and Muren, 2000; Holm and Engfeld, 2005). We may interpret that gender means a relevant identity category for women that triggers solidarity feelings. In the case of men, it is possible that we are capturing a traditional prescription of “helping women” (“women are more deserving”) which is also the result of identity group.

Besides, the subjects are more likely generous when their sex will be known. Women are more sensitive than men to this treatment. This result is consistent with the interpretation that their gender identity feelings are stronger than for men.

## VI - INFORMATION ABOUT IDEOLOGY

We present the main results of the treatments with information about ideology in the Tables 4.e and 4.f, and Figure 4.e.

When we inform to the subjects that the recipient is of their own group, all of them are more generous. As reported in Table 5, 55% of the left-wing and 44% of the right-wing subjects increase the donation respect to the baseline when the recipient shares their ideological position. Only 4% of the left-wing and 13% of the right-wing decrease it. Thus, average donation increases for both types of dictators; the average effect is 2.1 and 1.3 bills for left-wing and right-wing, respectively (Table 4.f).

When the left-wing subjects are informed that the recipient is right-wing, 11% of the left-wing increase their donation and 30% decrease it. However we do not find a statistically significant difference between the average donation in this treatment and the baseline. Also according to the Tobit estimations reported in Table 4.f, the average effect on donation is null. In order to compare in-group and out-group results, we calculate the average amount given to an in-group recipient minus the average amount given to an out-group recipient: it is 1.5 (different from 0 with  $p=0$ ).

When we inform the right-wing subjects that the recipient is left-wing, 13% of them diminish their donation but 38% increase it. Note that this pattern is quite different than the mentioned in the paragraph above. But as in the case of left-wing, we do not find changes or effects on the average donation when comparing the amount given to the out-group with the baseline. We turn then to comparing the average amount given to a right-wing and the average amount given to a left-wing: though positive, we do not find a statistically significant difference (0.5 bills with  $p=0.409$ ).

We performed two new estimations for the sample of right-wing subjects. First, we restricted the sample to the subjects who did not report to feel uncomfortable with the right-wing label. With this sample, the average amount given to a right-wing minus the average amount given to a left-wing is undoubtedly positive (1.8 bills with  $p=0.034$ ). Second, we eliminated the subjects who report the median-value of the distribution of the 10-step scale used to declare ideological position (remind that that those subjects were randomly assigned to each group). Also with this sample, the average amount given to a right-wing minus the average amount given to a left-wing is positive (1.2 bills with  $p=0.067$ ).

Note that both groups, the group effect is composed by a generosity with a peer but not at the expense of the out-group if we measure the punishment as a decrease of the donation respect to the baseline. Studying the effect of information about political parties, Fowler and Kam (2007) find the changes on donations suggest that punishment to out-group emerges when considering subjects with strong partisan attachment. We attempt to analyze if something similar happens with our subjects. In order to restrict the sample to strong left-wing subjects, we picked the subjects who declared to have an ideological position below the median-value. We find results similar to Fowler and Kam's: the average amount given to right-wing subjects minus the average amount given in the baseline is -0.6

( $p=0.029$ ). We did not find this pattern for right-wing subjects, but this could be due to a lack of subjects with this characteristic.

When subjects know that their ideological category will be informed to the recipient, 36% of left-wing and 50% of right-wing dictators increase the donation; only 9% within each group decrease it. The estimated effect on average donation is more than 1 bill for both right and left-wing subjects.

Finally, we do not find differences between  $T^{ideology}[(i,j); (*,*)]$  and  $T^{ideology}[(i,j); (i,j)]$ . This means that left-wing subjects' donations are higher (lower) when the information is "this is the donation of a left-wing to a left-wing (right-wing)" than just "this is the donation of left-wing". We do not observe statistical significant differences in the comparisons of these treatments for right-wing subjects.

To sum up, subjects are more likely to be generous with the in-group over the out-group as found on previous research on political parties (Fowler and Kam, 2007). Additionally, the results suggest that strong left position is consistent with the prediction of social identity behavior that states that people favor their own group at the expense of the opposite. Besides, image group concerns seem to motivate both groups to be more generous.

## VII - CONCLUSIONS

We performed an experiment that allows us to study the effect of information when using a similar design for different pieces of information. When we look at the results altogether, we find that the information affects generosity but the sign of the effect depends on the social category classification.

**In-group and out-group effects.** We find evidence of in-group solidarity over out-group with special characteristics varying with the social category classification.

The information about the sex of the recipient increases the donation whatever the sex of the recipient and donator. We may interpret that the information about the recipient shortens the distance between the donor and recipient or make the donation more credible. Women favor their own group over the opposite indicating that the distance shortens even



more. But we do not find this behavior for men: on the contrary, they favor women over men.

When analyzing ideological category, both groups favor their in-group over the out-group. Unlike with women's gender differentiation, we capture that in some cases the favoring behavior to in-group over out-group is composed of an increase of solidarity with in-group as well as of a punishment to out-group. More specifically, the subjects more closed to the extreme-left do a strong differentiation between groups, shortening the distance with left-wing subjects and extending the distance with right-wing subjects.

The poor subjects follow a similar pattern, being the effect even greater than the effects obtained for ideological groups. In fact, they register the highest effect when comparing the donation to in-group and anonymous recipients, and the highest (absolute) negative effect when comparing the donation to out-group and anonymous recipients. But the discrimination made by poor subjects not necessarily is (entirely) explained by identity feelings: we pick up this argument below when referring to inequality aversion.

Regards to rich subjects, we do not capture any in-group effect: their donation to rich recipient is even non-different from the baseline donation.

**Inequity aversion effects.** Our results suggest that people are adverse to inequality and balance the gaps out of the lab with their giving in the lab. Indeed, rich subjects are much more generous with the poor recipients than with the rich or anonymous recipients. This framework can also explain that poor subject diminish their giving when informed that the recipient is rich.

**Social group image.** For all the donors were more generous when informed that their group would be known, with a lightly weakest effect in the case of men, suggesting that the subjects seem to care about the image of their group.

We also have two treatments in which the group of the donor will be known but additionally, the group of the recipient will also be known ("someone of group ... donates to someone of group ..."). This decision seems to be led by the knowledge of the group of the recipient: we do not find evidence of an effect of social image over the in-group / out-group or the inequality aversion effects. In other words, we may interpret that faced to groups people act according as they want to be perceived, except perhaps with a slight deviation in the case of wealth.

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**Table 4.a:** Proportion of subjects that change the donation respect to the baseline and average level of donations in treatments with information about wealth

	Proportion of dictators that increase the donation respect to the baseline			Proportion of dictators that decrease the donation respect to the baseline			Average level of donations		
	All donors	Poor donors	Rich donors	All donors	Poor donors	Rich donors	All donors	Poor donors	Rich donors
1. $T^{\text{wealth}}[(i,*);(*,*)]$	--	--	--	--	--	--	2,3	2,6	2,0
2. $T^{\text{wealth}}[(i,P);(*,*)]$	0,80	0,70	0,89**	0,01	0,00	0,02	5,1	4,5	5,6*
3. $T^{\text{wealth}}[(i,R);(*,*)]$	0,19	0,09	0,29**	0,35	0,42	0,29	1,6	1,4	1,8
4. $T^{\text{wealth}}[(i,*);(i,*)]$	0,39	0,28	0,49**	0,10	0,12	0,09	3,1	2,9	3,3
5. $T^{\text{wealth}}[(i,P);(i,P)]$	0,68	0,63	0,73	0,01	0,02	0,00	4,6	4,2	5,1
6. $T^{\text{wealth}}[(i,R);(i,R)]$	0,23	0,12	0,33**	0,30	0,40	0,20**	1,8	1,5	2,1

Notes:

$T^{\text{wealth}}[(i, j); (i, j)]$  :  $i$  indicates if the donor if R or P (reported in columns);  $j$  indicates if the recipient if R or P; the first pair  $(i,j)$  refers to the information known by the donor; the second pair  $(i,j)$  refers to the information that will be known by the recipient.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  for  $H_0$ ) equal outcomes for rich and poor

**Table 4.b:** Effect of the treatments calculated with the Tobit model estimation of donations

	Poor donors	Rich donors	Diff. Rich-Poor
1. $T^{\text{wealth}}[(i, P); (*, *)]$	3,1 ***	4,4 ***	1,3 ***
2. $T^{\text{wealth}}[(i, R); (*, *)]$	-1,6 ***	-0,6	1,0 *
3. $T^{\text{wealth}}[(i, *); (i, *)]$	1,0 ***	1,5 ***	0,5
4. $T^{\text{wealth}}[(i, P); (i, P)]$	2,7 ***	3,8 ***	1,1 *
5. $T^{\text{wealth}}[(i, R); (i, R)]$	-1,3 **	0,0	1,3 **

Notes:

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  for  $H_0$ ) equal outcomes for rich and poor

**Table 4.c:** Proportion of subjects that change the donation respect to the baseline and average level of donations in treatments with information about sex

	Proportion of dictators that increases the donation respect to the baseline			Proportion of dictators that decreases the donation respect to the baseline			Average level of donations		
	All donors	Female donors	Male donors	All donors	Female donors	Male donors	All donors	Female donors	Male donors
1. $T^{\text{sex}}[(i, *); (*, *)]$	--	--	--	--	--	--	2,3	2,5	1,9
2. $T^{\text{sex}}[(i, F); (*, *)]$	0,52	0,52	0,54	0,05	0,07	0,00	3,4	3,7	2,9
3. $T^{\text{sex}}[(i, M); (*, *)]$	0,33	0,40	0,18**	0,10	0,13	0,04	2,8	3,0	2,3
4. $T^{\text{sex}}[(i, *); (i, *)]$	0,34	0,42	0,18**	0,13	0,17	0,04*	3,0	3,4	2,4*
5. $T^{\text{sex}}[(i, F); (i, F)]$	0,48	0,50	0,43	0,03	0,05	0,00	3,4	3,7	2,8*
6. $T^{\text{sex}}[(i, M); (i, M)]$	0,30	0,35	0,18	0,11	0,15	0,04	2,8	3,0	2,4

Notes:

$T^{\text{sex}}[(i, j); (i, j)]$  :  $i$  indicates if the donor if M or F (reported in columns);  $j$  indicates if the recipient if M or F; the first pair  $(i, j)$  refers to the information known by the donor; the second pair  $(i, j)$  refers to the information that will be known by the recipient.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  for  $H_0$ ) equal outcomes for women and men

**Table 4.d:** Effect of the treatments with information about sex calculated with the  
Tobit model estimation of donations

	Female donors	Male donors	Diff. Male- Female
1. $T^{\text{sex}}[(i, F); (*, *)]$	1,8 ***	1,7 ***	-0,1
2. $T^{\text{sex}}[(i, M); (*, *)]$	1,0 ***	0,7 **	-0,3
3. $T^{\text{sex}}[(i, *); (i, *)]$	1,3 ***	0,8 **	-0,5
4. $T^{\text{sex}}[(i, F); (i, F)]$	1,8 ***	1,4 ***	-0,4
5. $T^{\text{sex}}[(i, M); (i, M)]$	0,8 ***	0,9 **	0,0
6. $T^{\text{sex}}[(i, j); (i, j)]; i=j$	1,8 ***	0,7 **	1,0 ***
7. $T^{\text{sex}}[(i, j); (i, j)]; i \neq j$	1,0 ***	1,7 ***	-0,7 *

Notes:

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  for  $H_0$ ) equal outcomes for women and men

**Table 4.e:** Proportion of subjects that change the donation respect to the baseline and average level of donations in treatments with information about ideology

	Proportion of dictators that increases the donation respect to the baseline			Proportion of dictators that decreases the donation respect to the baseline			Average level of donations		
	All donors	Left-wing donors	Right-wing donors	All donors	Left-wing donors	Right-wing donors	All donors	Left-wing donors	Right-wing donors
1. $T^{\text{ideology}}[(i, *); (*, *)]$	-.	-.	-.	-.	-.	-.	2,3	2,3	2,4
2. $T^{\text{ideology}}[(i, L); (*, *)]$	0,49	0,55	0,38	0,07	0,04	0,13	3,3	3,4	3,1
3. $T^{\text{ideology}}[(i, C); (*, *)]$	0,23	0,11	0,44***	0,24	0,30	0,13*	2,5	1,9	3,6***
4. $T^{\text{ideology}}[(i, *); (i, *)]$	0,41	0,36	0,50	0,09	0,09	0,09	3,2	2,9	3,6
5. $T^{\text{ideology}}[(i, L); (i, L)]$	0,47	0,50	0,41	0,06	0,04	0,09	3,3	3,5	3,0
6. $T^{\text{ideology}}[(i, C); (i, C)]$	0,24	0,18	0,34*	0,19	0,25	0,09*	2,5	2,1	3,1**

Notes:

$T^{\text{sex}} [(i, j); (i, j)]$  :  $i$  indicates if the donor if C or L (reported in columns);  $j$  indicates if the recipient if C or L; the first pair  $(i, j)$  refers to the information known by the donor; the second pair  $(i, j)$  refers to the information that will be known by the recipient.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  for  $H_0$  equal outcomes for right-wing and left-wing.



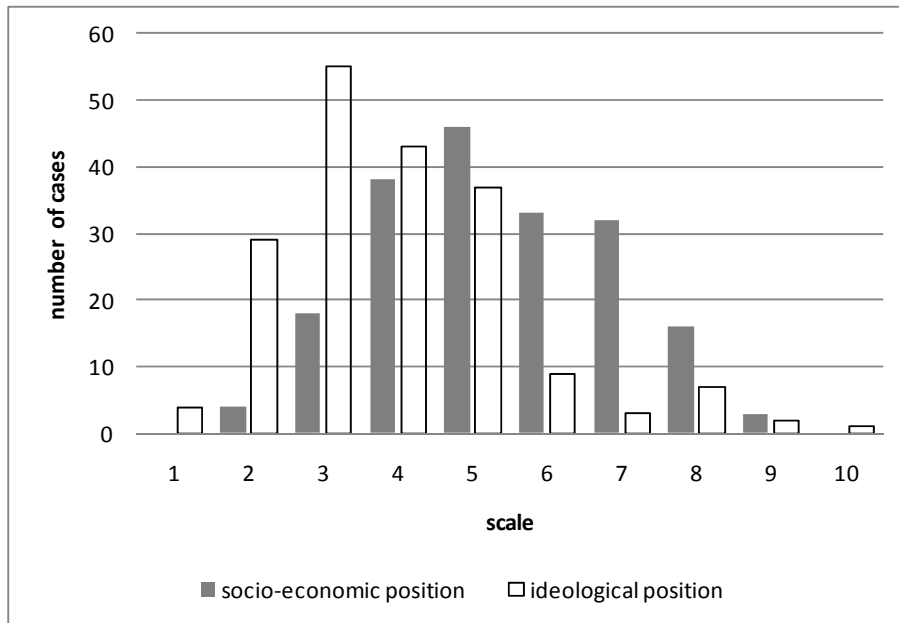
**Table 4.f:** Effect of the treatments with information about ideology  
calculated with the Tobit model estimation of donations

	Left-wing donors	Right-wing donors	Diff. Right-Left
1. $T^{\text{ideology}}[(i, L); (*, *)]$	2,1 ***	0,7	-1,5 ***
2. $T^{\text{ideology}}[(i, C); (*, *)]$	-0,4	1,3 ***	1,8 ***
3. $T^{\text{ideology}}[(i, *); (i, *)]$	1,5 ***	1,3 ***	-0,2
4. $T^{\text{ideology}}[(i, L); (i, L)]$	2,2 ***	0,6 **	-1,6 ***
5. $T^{\text{ideology}}[(i, C); (i, C)]$	0,1	0,8 *	0,7 *
6. $T^{\text{sex}}[(i, j); (i, j)]; i=j$	2,1 ***	1,3 ***	-0,8 *
7. $T^{\text{ideology}}[(i, j); (i, j)]; i \neq j$	-0,4	0,7	-0,2 *

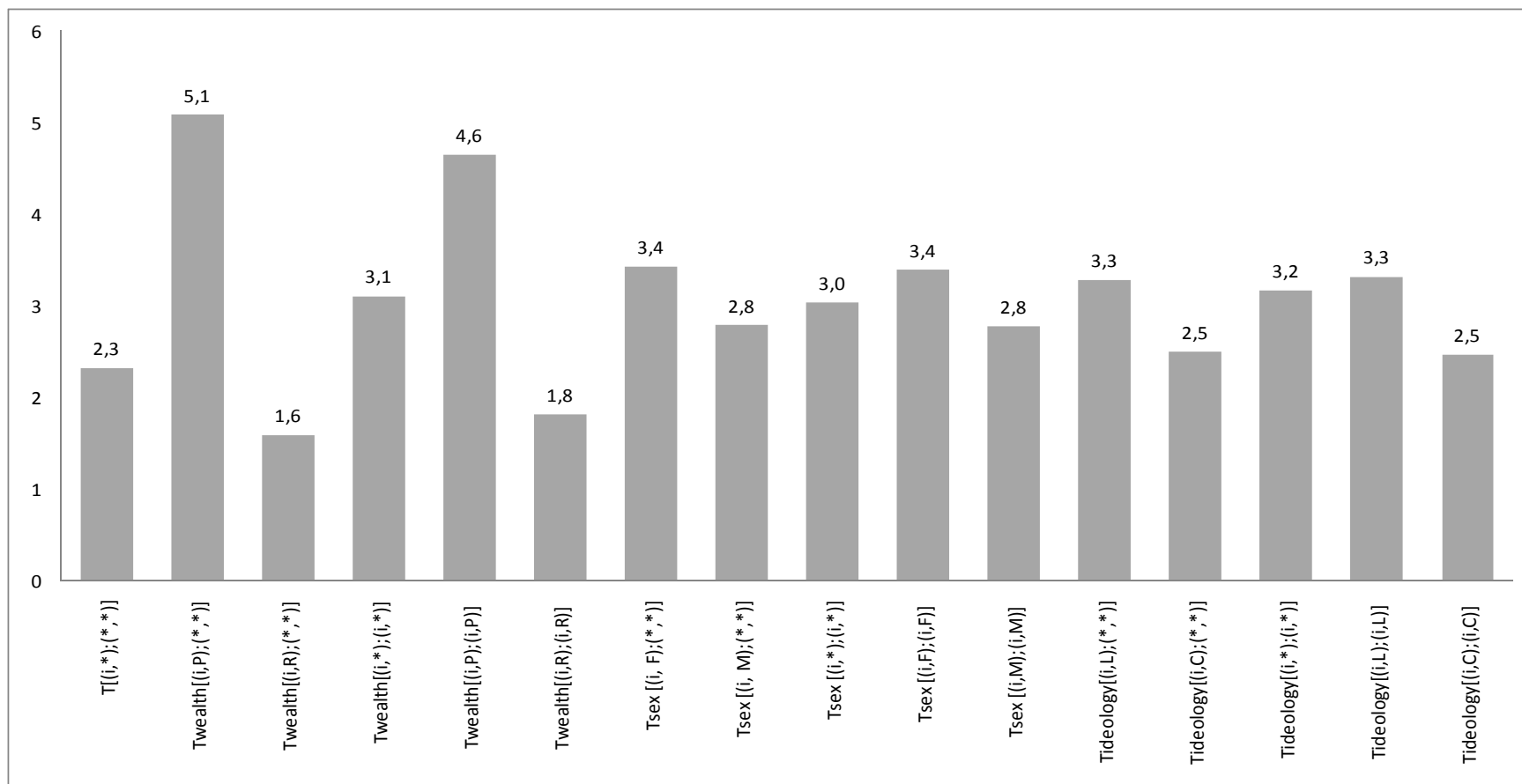
Notes:

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  for  $H_0: \alpha = 0$

**Figure 4.a:** Histograms of wealth and ideology



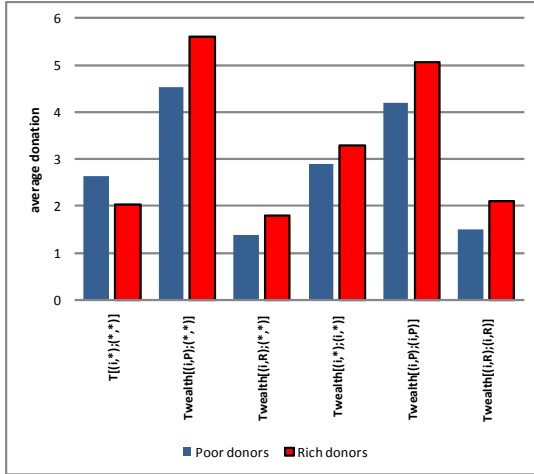
**Figure 4.b: Average donation by treatment**



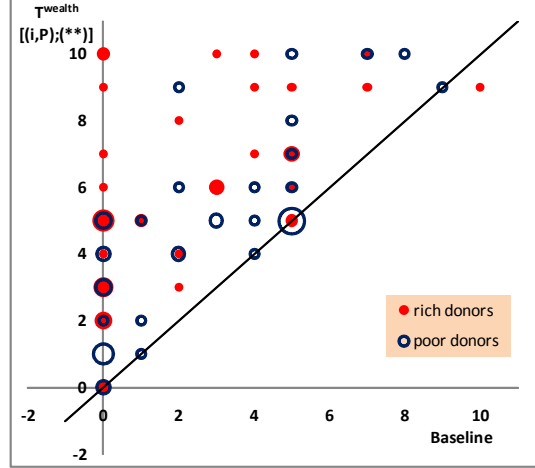
$T^{Type}[(i, j); (i, j)]$  :  $i$  and  $j$  indicate a characteristic of the donor and recipient, respectively; the first pair  $(i, j)$  refers to the information known by the donor; the second to the information known by the recipient and  $Type$  is wealth, ideology or sex.

**Figure 4.c: Donations in treatment with information about wealth**

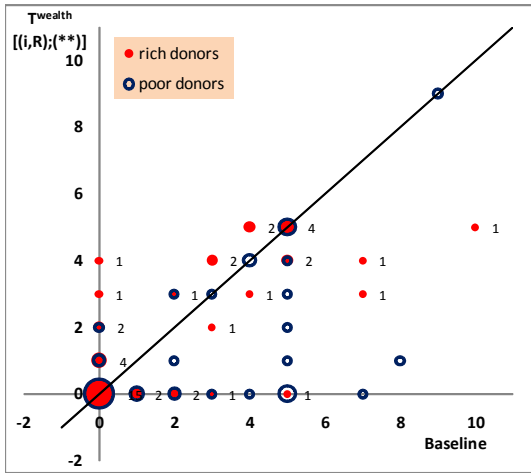
**(i): Average donation. Information about wealth**



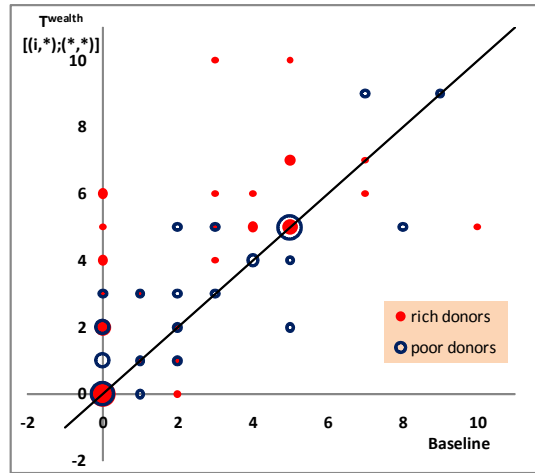
**3ii): Recipient is Poor vs Baseline**



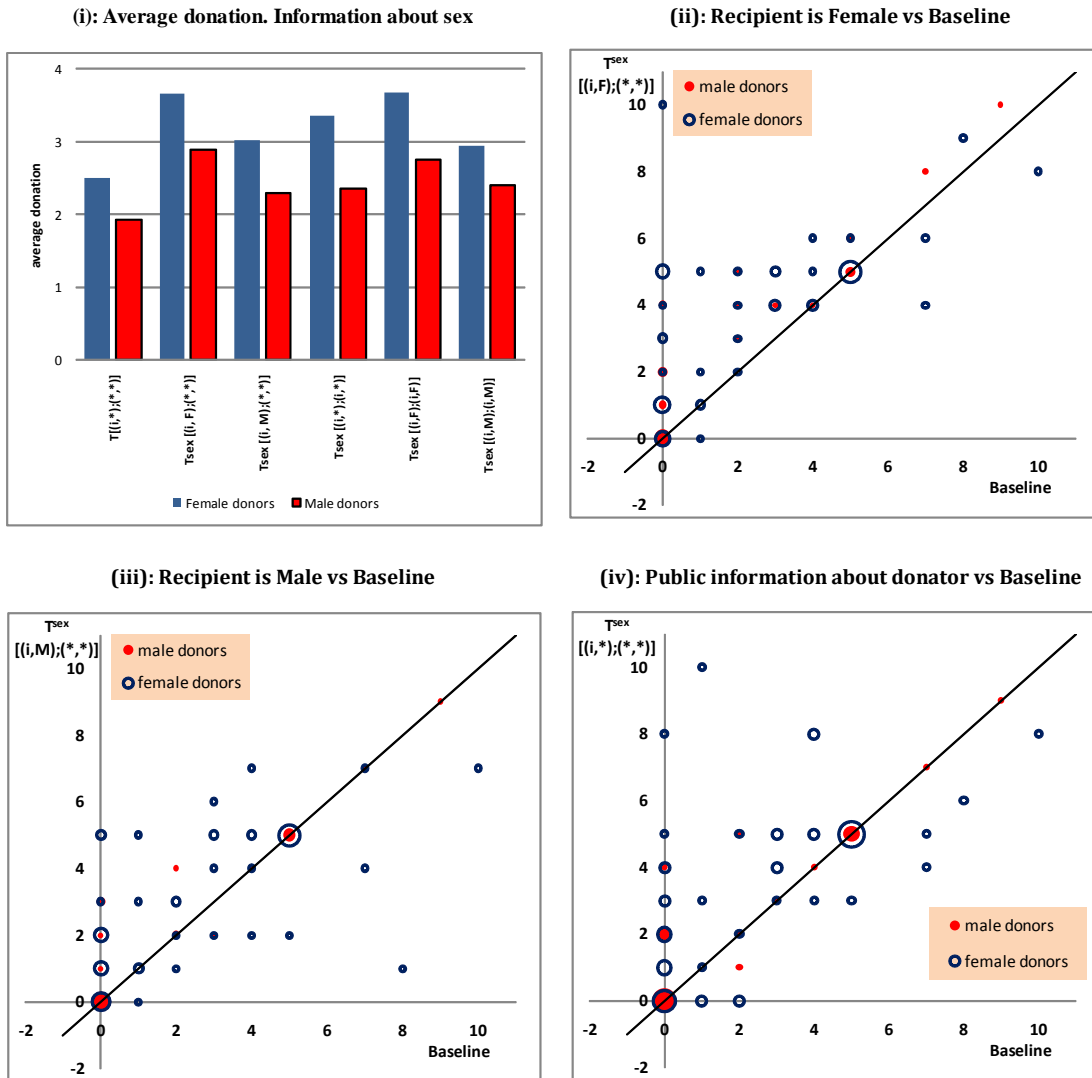
**(iii): Recipient is Rich vs Baseline**



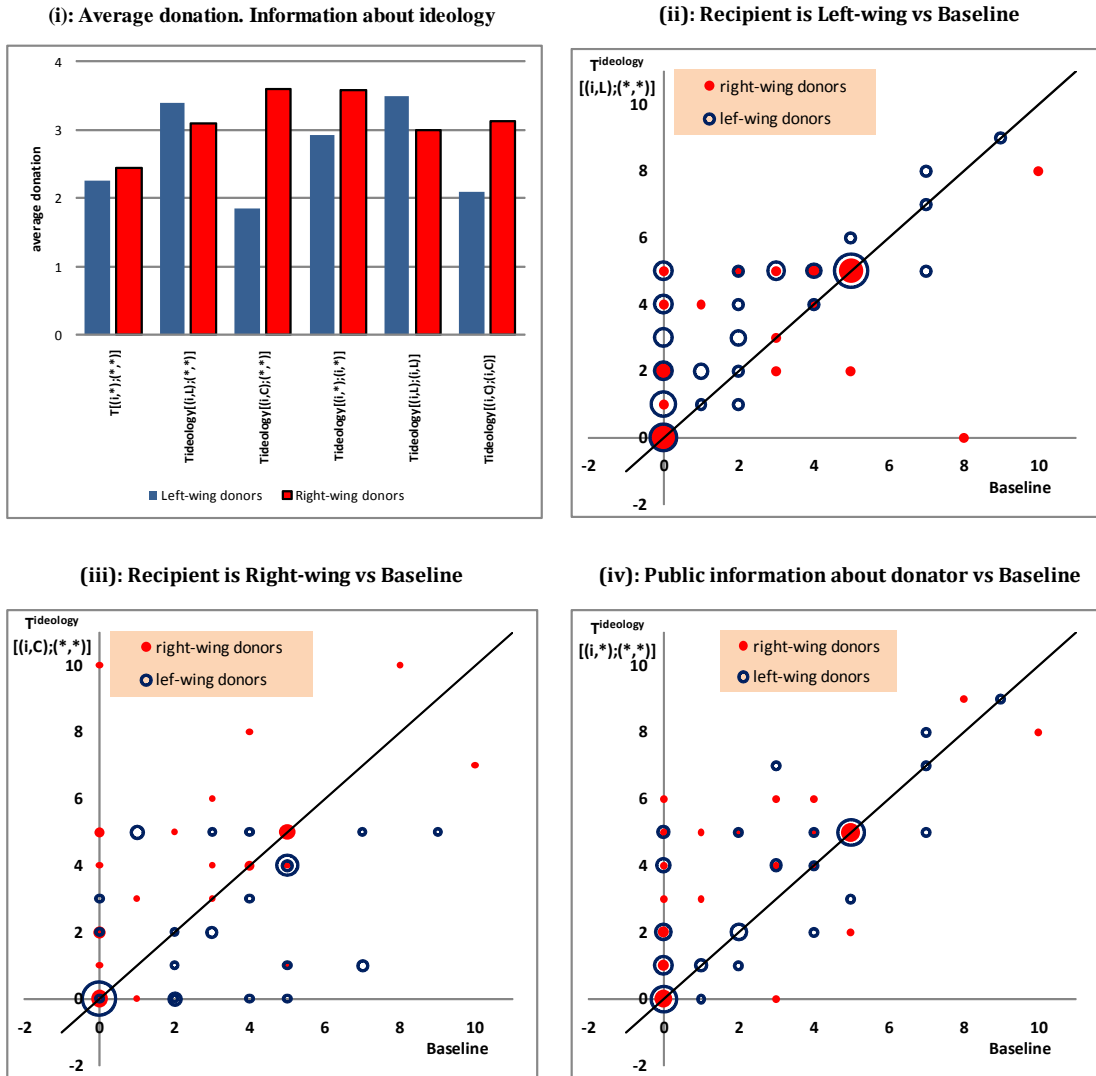
**(iv): Public information about donator vs Baseline**



**Figure 4.d: Donations in treatment with information about sex**



**Figure 4.e: Donations in treatment with information about ideology**



## APPENDIX

Results of the estimation Tobit model. Estimated coefficients and Robust standard errors in parentheses. Dependent variable: level of the donation.

VARIABLES	Estimation	VARIABLES	Estimation	VARIABLES	Estimation
R	-0.0856 (0.664)	C	0.7443 (0.652)	M	-1.0200 (0.723)
$T^{\text{wealth}}[(i, j); (*, *)]; i=j$	3.1229 (0.384)***	$T^{\text{ideology}}[(i, j); (*, *)]; i=j$	2.1283 (0.343)***	$T^{\text{sex}}[(i, j); (*, *)]; i=j$	1.7810 (0.352)***
$R * T^{\text{wealth}}[(i, j); (*, *)]; i=j$	-3.7474 (0.486)***	$C * T^{\text{ideology}}[(i, j); (*, *)]; i=j$	-0.7857 (0.460)*	$M * T^{\text{sex}}[(i, j); (*, *)]; i=j$	-1.0472 (0.341)***
$T^{\text{wealth}}[(i, j); (*, *)]; i \neq j$	-1.6139 (0.552)***	$T^{\text{ideology}}[(i, j); (*, *)]; i \neq j$	-0.4087 (0.381)	$T^{\text{sex}}[(i, j); (*, *)]; i \neq j$	1.0023 (0.305)***
$R * T^{\text{wealth}}[(i, j); (*, *)]; i \neq j$	6.0182 (0.619)***	$C * T^{\text{ideology}}[(i, j); (*, *)]; i \neq j$	1.0688 (0.579)*	$M * T^{\text{sex}}[(i, j); (*, *)]; i \neq j$	0.6854 (0.378)*
$T^{\text{wealth}}[(i, *)]; (i, *)$	1.0433 (0.291)***	$T^{\text{ideology}}[(i, *)]; (i, *)$	1.4810 (0.326)***	$T^{\text{sex}}[(i, *)]; (i, *)$	1.2739 (0.366)***
$R * T^{\text{wealth}}[(i, *)]; (i, *)$	0.4597 (0.452)	$C * T^{\text{ideology}}[(i, *)]; (i, *)$	-0.2075 (0.369)	$M * T^{\text{sex}}[(i, *)]; (i, *)$	-0.4682 (0.351)
$T^{\text{wealth}}[(i, j); (i, j)]; i=j$	2.6711 (0.448)***	$T^{\text{ideology}}[(i, j); (i, j)]; i=j$	2.2353 (0.395)***	$T^{\text{wealth}}[(i, j); (i, j)]; i=j$	1.7995 (0.339)***

## APPENDIX

Results of the estimation Tobit model. Estimated coefficients and Robust standard errors in parentheses. Dependent variable: level of the donation.

VARIABLES	Estimation	VARIABLES	Estimation	VARIABLES	Estimation
$R * T^{\text{wealth}}[(i, j); (i, j)]; i=j$	-2.7152 (0.474)***	$C * T^{\text{ideology}}[(i, j); (i, j)]; i=j$	-1.4705 (0.440)***	Male *	-0.9440 (0.391)**
$T^{\text{wealth}}[(i, j); (i, j)]; i \neq j$	-1.3103 (0.536)**	$T^{\text{ideology}}[(i, j); (i, j)]; i \neq j$	0.0565 (0.365)	$T^{\text{sex}} [(i, j); (i, j)]; i \neq j$	0.8338 (0.290)***
$R * T^{\text{wealth}}[(i, j); (i, j)]; i \neq j$	5.1171 (0.652)***	Conservative * $T^{\text{ideology}}[(i, j); (i, j)]; i \neq j$	0.5925 (0.397)	$M * T^{\text{sex}} [(i, j); (i, j)]; i \neq j$	0.5798 (0.377)
Discomfort with wealth label	0.2263 (0.790)	Discomfort with ideology label	0.3118 (0.678)	Constant	1.3615 (0.676)**
Observations	1402				

Notes: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

$T^{\text{Type}}[(i, j); (i, j)] : i$  and  $j$  indicate a characteristic of the donor and recipient, respectively; the first pair  $(i, j)$  refers to the information known by the donor; the second to the information known by the recipient and  $Type$  is wealth, ideology or sex.



## CAPÍTULO 5:

### MORAL LICENSE AND MORAL CLEANSING:

### EXPERIMENTAL EVIDENCE<sup>9</sup>

#### I. INTRODUCTION

*How* and *why* moral behavior emerges is a critical question. Being nice is not costless: every single altruistic action generates a cost for the donor. Thus, each good deed needs a benefit to be triggered. Despite a number of classical evolutionary arguments such as kin selection –Hamilton rule- or reciprocal altruism (Fehr and Fischbauer, 2003) another series of papers deal with more self-centered arguments like identity, guilt-aversion or warm-glow, that describe the benefits of being moral (see Akerlof and Kranton, 2000, Charness and Dufwenberg, 2006 and Aguiar et al. 2010). In this paper we are interested on the moral self-licensing and moral cleansing literature that proposes a framework in which past moral behavior affects the costs of being moral in the present.

One motivation of good deeds is their positive effect on moral self-worth. But when past actions make people to feel confident about their moral behavior, their moral self-regard could be high enough to allow them engaging in morally dubious behaviors in the present (Zhong and Liljenquist, 2006; Merritt, Effron and Monin, 2010). This is the central argument of moral self-licensing literature. In a review of the evidence, Merritt *et al* (2010) present the two more frequent moral-licensing mechanisms used in the literature: the moral credits and the credentials models. The moral credits model uses a moral bank account metaphor: good deeds purchase “moral credits” that diminish the discomfort of engaging in bad deeds in the future. The credentials model states that prior actions affect the meaning of present actions. That is, an action in the past allows to interpreting the present action of a licensed person without morally ambiguity, in a context in which the same action may be a transgression for an unlicensed person. Note that in the first model, the licensed person

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<sup>9</sup> Jointly with P. Brañas-Garza and T. García-Muñoz

involves in what he considers a bad action; in the second model, the action does not hurt his self-image. Thus, we may expect a less number of transgressions of a licensed person under the moral credits than the credentials mechanism.

In turn, immoral behavior has a negative effect on moral self-worth. After doing bad deeds, people engage in moral behavior to recover self-worth; this mechanism is the so-called moral cleansing behavior (see Sachdeva, Ilic and Medin, 2009). One well documented example is that in response to sins, many religious practices require bodily purification.

Taking into account the two types of behavior, Sachdeva *et al.* (2009) consider “*moral behavior as being embedded within a larger system that contains competing forces. Moral or immoral action may emerge from an attempt to find balance among these forces*”. There is a symmetric process: every deviation from the normal state of behavior is balanced with a subsequent more moral action (moral cleansing) or less moral action (moral licensing). Sachdeva *et al.* (2009) show that after a positive (negative) priming subjects are less (more) prone to make donations to charities.

This paper provides sound evidence of this phenomenon. We analyze data from an economic experiment where subjects played a sequence of 16 dictator games with distinct recipients (sharing a pie under anonymity conditions). In every decision we capture the percentage of the money that the donator keeps for himself. All the games are identical in the format but framed. Besides a blind (baseline) game, we use three types of frames regarding the information given about gender (male/female), income (poor/rich) and political preferences (right/left) to generate 15 different environments. Each subject received the 16 instructions consecutively and in different random order.

Using an estimation technique to accurately measure the dynamics of these actions we estimate how a donation ( $d_{t-1}$ ) affects the subsequent one ( $d_t$ ). We find that donations over time follow an AR(1) process with negative coefficient that allows us stating two important conclusions:

- i.* the negative sign of immediate past actions ( $d_{t-1}$ ) on current choices ( $d_t$ ) indicates that in every round subjects revert what they did in the past;
- ii.* the length of the AR(1) indicates that only most immediate previous period affects present behavior. Hence, subjects tend to balance today what they did yesterday. This is not a long memory process.

The rest of the paper is organized as follows. Section 2 explains the experiment design and procedures. Third section shows the results and the fourth concludes. The econometric method is present in the appendix.

## II - THE EXPERIMENT

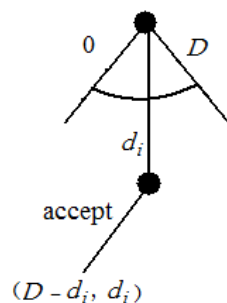
### II.A - The dictator game

In the dictator game (Forsythe et al., 1994), the first player, "the proposer", determines an allocation (split) of some endowment (such as a cash prize). The second player, "the responder", simply receives the share of the pie left by the proposer. The responder's role is entirely passive.<sup>10</sup>

Formally, given a pie of size  $D$ , the dictator must decide any value of  $d_i \in [0, D]$  to pass to the recipient. Therefore the final distribution of benefits is as follows:

$$(D - d_i, d_i),$$

where  $D - d_i$  is the dictator's benefit. Since the Nash equilibrium is giving zero, any strictly positive donation,  $d_i > 0$ , is interpreted as pure altruism.



### II.B - Participants

176 subjects participated in the experiment (dictators and recipients). We will focus only in the sample of 88 dictators (32 % of women) since recipients do not play any role in our analysis. The participants were undergraduate students of several degrees at the

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<sup>10</sup> As a result, the dictator game is not formally a game at all. To be a game, every player's outcome must depend on the actions of at least some others. Since the proposer's outcome depends only on his own actions, this situation is one of decision theory and not game theory.

*Universidad de la República* (Uruguay). All of them were volunteers who answered to a public call.

## **II.C - Procedures and materials**

The experiment consisted of four sessions where subjects were given verbal and printed information: they had to take 16 decisions and each one was explained in one sheet of a printed booklet. They were not allowed to speak to one another and they were seated in such a way that they could not see the written responses of the other subjects.

The baseline treatment consisted of a standard dictator game in which each participant was a dictator or a recipient (the participants knew that no one will play both roles). The dictator had to allocate 10 bills of 20 Uruguayan pesos (around 10 American dollars) between himself and a randomly chosen student placed at other room. Following List (2007) instructions, the task was explained in one sheet of a printed booklet and the possible payoffs were presented on a line in which the subject had to mark their decision with a circle. The amount of money ranked from 0 pesos (left-end) to 200 pesos (right-end) and the donations were restricted to multiples of 20 including zero.

The rest of the treatments were identical to the baseline (blind) with the exception of the framing. In order to frame the task we used information that participants gave at the moment of the inscription to the experiment: sex, income category and ideological category. With this information we labeled the participants as women/men, rich/poor and right-wind/left-wind.<sup>11</sup>

In three treatments, the donator was told that the recipient will know the donator's sex, income category or ideological category, respectively. In six treatments, the donator knew one characteristic of the recipient (sex or income category or ideological category). In another six treatments, besides knowing one characteristic of the recipient, the donator was

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<sup>11</sup> We asked the participants to fill a questionnaire where they informed the socio-economic position of their household and their ideological position in a 10-steps scale where 1 was extreme poor/left and 10 was extreme rich/right. In order to build binary labels (poor/rich, left-wind/right-wind), the separation threshold was the median value of the reported distributions.

told that the recipient will know the game's framing (for example, the recipient will know that the donation was done from a woman to a man).

The entire booklet consisted of sixteen tasks that were presented in a different random order for each subject. The different random order is an important characteristic of the design: as in each round the donators are facing different frames, there is no room for an equalizing pattern in the course of the experiment common to all subjects.

We paid only one decision (randomly chosen) to each dictator which avoids the effect of accumulation of earnings in the course of the session. Besides, the use of different recipients and frames in each decision helped to maintain subjects' interest. Notice that once a decision is paid, the subsequent decisions cannot actually hurt or help the recipient. Thus, if the donor takes what he thinks a selfish (generous) decision, the subsequent action will not compensate the prior recipient because of two reasons: only one decision is paid and the recipients are different subjects.

The money transferred to recipients was given to them in a different session where they were cited. Considering all the games, the average dictators earning was US\$142.5 (7 bills) and, consequently, the mean recipient earning was US\$57.5 (3 bills).

### III - RESULTS

We use a dynamic panel data model to estimate the donation at period  $t$  where the immediate past donation ( $d_{t-1}$ ) is an explanatory variable of current decision:

$$d_{it} = \alpha_i + \gamma d_{i,t-1} + x_{it}'\beta + v_{it}, \quad i = 1, \dots, 88 \text{ individuals}, \quad t = 1, \dots, 16 \text{ rounds}$$

where  $\alpha_i$  denotes an unobserved individual-specific time-invariant effects, in our several models the regressors  $x_{it}$  will be treatment dummies and temporal trend and they are uncorrelated with  $v_{it} \forall i, t$  (strictly exogenous regressors), the disturbance terms  $v_{it}$  are independent and identically distributed  $\forall i, t$ . The individual effects can be of fixed or random nature. It not easy to choose between both model but random effects model is appropriated when individuals are chosen randomly from a large population. On the contrary, the fixed effect model is appropriated when analysis is focused in a specific set of

individuals, as it is our case. However, with random effects model we have obtained similar results.

We use two-step GMM estimators with the Windmeijer correction using lagged levels ( $t-2$ ,  $t-3$  and  $t-4$ ) of the dependent variable as instruments<sup>12</sup> (Arellano and Bond, 1991; Windmeijer, 2005; see appendix for a description of the technique).

Table 5.a shows the results of three models. In Model 1, the only covariate is the immediate past donation ( $d_{t-1}$ ); in Model 2 we also include the treatment dummies and in Model 3 we add a temporal trend. In the three estimations, the coefficient of past donation ( $d_{t-1}$ ) is negative, significant and less than one in absolute value. Besides, the trend is no significant. In the bottom part of Table 5.a we show Arellano-Bond tests to validate the instruments (see appendix). No any single test is rejected.

**Table 5.a: Estimated parameters**

	Model 1	Model 2	Model 3
<i>Round (t)</i>	-	-	0.205 (0.409)
<i>d<sub>t-1</sub></i>	<b>-0.089</b> <b>(0.028)</b>	<b>-0.088</b> <b>(0.032)</b>	<b>-0.074</b> <b>(0.033)</b>
<i>Constant</i>	<b>64.464</b> <b>(0.000)</b>	<b>62.736</b> <b>(0.000)</b>	<b>59.546</b> <b>(0.000)</b>
<i>Treatment controls</i>	not	yes	yes
<i>Arellano-Bond serial correlation test</i>	-0.665 (0.506)	-0.640 (0.522)	-0.504 (0.614)
<i>Instruments</i>	40	42	43
<i>Sample Size</i>	1217	1217	1217

*p-values* in parentheses.

The important result here is that time series of donations follow an stationary AR(1) process with negative coefficient. This means that in successive periods, donations move

<sup>12</sup> For this reason we lost the observations of the first two rounds.

around its mean but with a very noisy behavior, crossing constantly the mean. Hence, subjects tend to balance in a round what they did in the prior round.

Thus, we do not find a result favoring the consistency of preferences but an equalization behavior. The pattern of donations over time emerges as the result of a systematic process of equalization: moral licensing (being selfish after altruist) or cleansing (altruistic after selfish).

We also check if donations follow an AR(2) process: we find that the coefficients of  $d_{t-2}$  were never significant whereas the coefficients of  $d_{t-1}$  were still negative and significant (not reported, available upon request).

As a simple robustness test, we check how our results change (or not) when we use different sample sizes. Table 5.b shows the same models using the last 12 periods ( $t=5, 6, \dots, 16$ ) and the last 8 periods ( $t=9, 10, \dots, 16$ ). Recall that given that every individual played a different random order we miss different treatment's observations for each individual.

The main message is that we do not observe remarkable differences when we compare results from table 1 and 2. So, we may conclude that subjects tend to balance today what they did yesterday.

**Table 5.b: Robustness**

	<b><u>Rounds 5 to 16</u></b>			<b><u>Rounds 9 to 16</u></b>		
	Model 4	Model 5	Model 6	Model 4	Model 5	Model 6
<i>Round (t)</i>	-	-	0.088 (0.714)	-	-	0.161 (0.727)
<i>d<sub>t-1</sub></i>	<b>-0.101</b> <b>(0.053)</b>	<b>-0.097</b> <b>(0.066)</b>	<b>-0.097</b> <b>(0.040)</b>	<b>-0.120</b> <b>(0.075)</b>	<b>-0.123</b> <b>(0.060)</b>	<b>-0.129</b> <b>(0.015)</b>
<i>Dummy 1</i>	-	0.906 (0.682)	0.919 (0.677)	-	-0.139 (0.968)	-0.050 (0.988)
<i>Dummy 2</i>	-	<b>4.086</b> <b>(0.003)</b>	<b>3.989</b> <b>(0.004)</b>	-	<b>6.344</b> <b>(0.047)</b>	<b>6.034</b> <b>(0.023)</b>
<i>Constant</i>	<b>66.644</b> <b>(0.000)</b>	<b>64.775</b> <b>(0.000)</b>	<b>63.369</b> <b>(0.000)</b>	<b>68.726</b> <b>(0.000)</b>	<b>66.718</b> <b>(0.000)</b>	<b>65.155</b> <b>(0.000)</b>
<i>Arellano-Bond serial correlation test</i>	-0.614 (0.539)	-0.552 (0.581)	-0.577 (0.567)	-0.378 (0.705)	-0.350 (0.726)	-0.406 (0.685)
<i>Instruments</i>	37	39	40	25	27	28
<i>Sample Size</i>	1043	1043	1043	695	695	695

*p-values* in parentheses.

#### IV - CONCLUSIONS

This research joins the literature that focuses on the role of moral cleansing and moral self-licensing on behavior. Our results show that that over time, in a dictatorial game setting, the donations do not have a trend. However this stability across time cannot be interpreted as the result of strong preferences for altruism. In contrast, this stability emerges as the result of equalization. In the estimations, the past donation ( $d_{t-1}$ ) coefficient is always negative, significant and its absolute value is less than one- indicating that subjects who behaved nicely yesterday are selfish today and vice versa. In short, a systematic moral self-licensing and moral cleansing pattern emerges.



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## APPENDIX: DYNAMIC PANEL DATA

Panel data regressions allow us to study individual behavior in a repetitive environment. In turn, the use of dynamic panel data model allows the possibility of considering lags (donations done in previous round in our case). Arellano-Bond (1991) dynamic panel estimator is designed for a situation where the dependent variable depends on its own past realizations. The model is

$$d_{it} = \gamma d_{i,t-1} + x_{it}'\beta + \alpha_i + v_{it}, \quad i = 1, \dots, 88 \text{ individuals}, \quad t = 1, \dots, 16 \text{ rounds}$$

where  $\alpha_i$  captures unobservable heterogeneity and can be of fixed or random nature, the disturbance terms  $v_{it}$  are independent and identically distributed  $\forall i, t$  and the regressors  $x_{it}$  are uncorrelated with  $v_{it} \forall i, t$  (strictly exogenous regressors).

The dynamic structure of this equation make not valid the usual estimators in panel data (within estimators, generalized least squared estimators,...). Observe that, by construction,  $d_{i,t-1}$  is correlated with the unobserved individual effect  $\alpha_i$ . The first-differencing transformation removes the individual effect from the model:

$$\nabla d_{it} = \gamma \nabla d_{i,t-1} + \nabla x_{it}'\beta + \nabla v_{it}$$

In this model,  $\nabla d_{i,t-1}$  is correlated with  $\nabla v_{it}$  (by construction). Anderson and Hsiao (1982) proposed a Two Stage Least Squares estimator using lagged levels of  $d_{it}$  as instruments for  $\nabla d_{i,t-1}$ . But, when the panel has more than three periods, additional instruments are available and the model is overidentified (it has more instruments than parameters). Arellano and Bond (1991) used Generalized Method of Moments (GMM; Hansen, 1982) to obtain parameter estimators by moment conditions generated by lagged level of the dependent variable with first differences of the error  $v_{it}$ .<sup>13</sup>

In the case of non-identically distributed disturbances, a two-step GMM estimator is used. The two-step GMM estimator is efficient and robust under heteroskedasticity but its standard errors have downward bias. To solve this problema, Windmeijer (2005) proposed

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<sup>13</sup> They also used first-differences of strictly exogeneous regressors to create moment conditions.

a correction for the two-step standard errors. In the estimations of the models presented in the section III we use two-step GMM estimators with the Windmeijer correction.

Arellano and Bond (1991) developed a test to detect serial correlation in the first-differenced disturbances. This situation would do some lags invalid as instruments: if the  $v_{it}$  are serially correlated of order 1 then,  $y_{i,t-2}$  is endogenous to  $\nabla v_{it}$  (by the presence of  $v_{i,t-1}$  in the difference) and  $y_{i,t-2}$  would be an invalid instrument. If the null hypothesis of this test (there is not serial correlation) is not rejected, the validation of the instrumental variables is confirmed. In tables 1 and 2, we present the statistics and their associated p-values of this test.

## CAPÍTULO 6:

### DYNAMIC PANEL DATA: A USEFUL TECHNIQUE IN EXPERIMENTS<sup>14 15</sup>

#### I - MOTIVATION

Panel estimation methods are used widely by experimental economics. A large proportion of experimental researches use repeated experiments involving a large number of periods and some of them use panel approach: repeated public good games (see for instance, Croson et al., 2005), bidding behavior (see Rassenti et al., 2003), ultimatum games (see Botelho et al., 2001; List and Cherry, 2000; Cooper et al., 2000), among others.

The advantage of panel data is that by utilizing information of the inter-temporal dynamics and the individuals, one can control the effects of unobserved or missing variables. In experiments, this double dimension (individual/time) helps us to capture the complexity of human behavior.

All the above-mentioned papers use “static” panel, that is, they don’t incorporate the temporal dependency (lags) of the dependent variable. Dynamic panel data models use the lags of the dependent variable as explanatory variables. Although the coefficients on lagged dependent variables might be far from our interest, becomes crucial to control dynamic of the process. The correct specification of the behavior let us to discover new or different relationships between the dependent and independent variables.

This paper presents this technique (section II) and, later on, it shows two examples (section III and IV) of how results may change when the temporal structures of the dependent variable are included. Section V discusses results.

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<sup>14</sup> Jointly with P. Braña-Garza and T. García-Muñoz

<sup>15</sup> Financial support was from the MCI (ECO2010-17049) and Junta de Andalucía-Excelencia (P07.SEJ.02547). We wish to thank Nacho García and María Rochina for helpful suggestions.

## II - ECONOMETRIC TECHNIQUE

### II.A - Static models

Static panel data regressions (Baltagi, 2008; Cameron and Trivedi, 2009) allow us to study individual behavior in a repetitive environment. Supposing that  $y_{it}$  is our variable of interest, static panel data models are described by

$$y_{it} = x_{it}'\beta + \alpha_i + v_{it}, \quad i = 1, \dots, N \text{ (individuals)}, \quad t = 1, \dots, T \text{ (time)}$$

where  $x_{it}$  is the  $it$ -th observation on  $k$  explanatory variables,  $\beta$  is the parameters vector,  $\alpha_i$  denotes unobserved individual-specific time-invariant effects and the remainder disturbances term  $v_{it}$  has zero mean, constant variance and is uncorrelated in time and individuals.

Depending on the nature of  $\alpha_i$ , two models can be distinguished:

- *Random Effect Model*: it assumes that  $\alpha_i$  are random variables (uncorrelated with  $v_{it}$ ). In these models, the regressors  $x_{it}$  are uncorrelated with individual effects,  $\alpha_i$ . We can estimate unbiased, consistent and efficient parameters  $\beta$  using Generalized Least Squares (GLS). Note that under the hypothesis of no correlation between the regressors and the individual effects, the Ordinary Least Squares (OLS) estimators are unbiased and consistent but not efficient.
- *Fixed Effects Model*: it assumes that  $\alpha_i$  are fixed parameters. In these models it is not necessary to assume no correlation between regressors and individual effects. Usually, Within Group (WG) estimators<sup>16</sup> are used to estimate the parameters. We can obtain them with an OLS estimation of a transformation of the model (1) where individual effects are removed:

$$y_{it} - \bar{y}_i = (x_{it} - \bar{x}_i)\beta + (v_{it} - \bar{v}_i) \quad (1)$$

where

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<sup>16</sup> The so called “fixed effects estimators”.

$$\bar{y}_i = \frac{1}{T} \sum_{t=1}^T y_{it} \quad \bar{x}_i = \frac{1}{T} \sum_{t=1}^T x_{it} \quad \bar{v}_i = \frac{1}{T} \sum_{t=1}^T v_{it}$$

WG estimators are unbiased and consistent.

All these methods (GLS, OLS, WG) have alternative versions which are robust under heteroscedasticity in disturbances. However, none of them has acceptable properties when a dynamic structure is introduced in the model.

## II.B - Dynamic models

The dynamic panel data models are useful when the dependent variable depends on its own past realizations:

$$y_{it} = \gamma y_{i,t-1} + x_{it}'\beta + \alpha_i + v_{it}, \quad i = 1, \dots, N \text{ (individuals)}, \quad t = 1, \dots, T \text{ (time)} \quad (2)$$

In this model,  $x_{it}$  are the regressors<sup>17</sup>,  $\alpha_i$  are fixed<sup>18</sup> individual effects and  $v_{it}$  has zero mean, constant variance and is uncorrelated in time and individuals.

As  $y_{i,t-1}$  is correlated with  $\alpha_i$  ( $y_{i,t-1}$  is function of  $\alpha_i$ ), GLS and OLS estimators are biased and inconsistent. WG estimators are also biased and inconsistent because in the transformed model, when using variable deviations from mean (see equation 1), the independent variable will be endogenous ( $\bar{y}_i$  is correlated with  $\bar{v}_i$ ).

An alternative transformation to remove individual effects  $\alpha_i$  is the so called “first-difference” transformation:

$$\Delta y_{it} = \gamma \Delta y_{i,t-1} + \Delta x_{it}'\beta + \Delta v_{it} \quad (3)$$

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<sup>17</sup> In this survey,  $x_{it}$  will be strictly exogenous ( $x_{it}$  are uncorrelated with  $v_{it} \forall i, t$ ). Situations where regressors are predetermined or endogenous could be also considered.

<sup>18</sup> Observe that, by construction,  $y_{i,t-1}$  is correlated with  $\alpha_i$ . Then it has no sense to estimate a random effects estimation method (one regressor is correlated with the individual effects).

Again WG and GLS estimators are inappropriate. The model suffers from an endogeneity problem because, by the dynamic structure of the equation (3),  $\Delta y_{i,t-1}$  are correlated with  $\Delta v_{it}$ .

To solve this problem, Anderson and Hsiao (1982) proposed to control endogeneity using  $\Delta y_{i,t-2}$  or  $y_{i,t-2}$  as instruments of  $\Delta y_{i,t-1}$ . In fact, lagged levels of the endogenous variable separated by three or more time instants can be used as instruments (Holtz-Eakin et al., 1988) and if the panel has three or more periods, we will have more available instruments than unknown parameters.

Arellano and Bond (1991) proposed a method that uses all possible instruments. Using the Generalized Method of Moments (GMM, Hansen, 1982), they obtain estimators through moment conditions generated by lagged levels of the dependent variable ( $y_{i,t-2}, y_{i,t-3}, \dots$ ) with  $\Delta v_{it}$ . These estimators are called difference GMM estimators.

As all instrumental variables regressions, GMM estimators are unbiased. Arellano and Bond (1991) compared the performance of difference GMM, OLS and WG estimators. Using simulations, they found that the GMM estimators exhibit the smallest bias and variance.

## **II.C - Exceptions: Heteroscedasticity and explicative variables that do not change across time**

There are two situations where the difference GMM model does not provide good estimators. This might be relevant for our experimental data.

- *Under heteroscedasticity:* when model errors are heteroscedastic, we do need a modified tool: a two-step GMM estimators.<sup>19</sup> These estimators are robust under heteroscedasticity but their standard errors are downward biased. This problem was solved by Windmeijer (2005) who proposed a correction for the two-step GMM estimators.

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<sup>19</sup> A first-step estimation is needed to obtain the covariance matrix of estimation error.

- *When using time invariant regressors.* When a given independent variable does not change across time (say gender), the variable is erased in equation (3), making this method useless to estimate its associated parameter. Arellano and Bover (1995) and Blundell and Bond (1998) proposed an alternative method. In addition to differentiate the model equation (see equation 3) and use lagged levels of  $y_{i,t-1}$  as instruments of  $\Delta y_{i,t-1}$ , they work with the “original” model (equation 2) and use the difference  $\Delta y_{i,t-1}$  as instruments of  $y_{i,t-1}$ . The estimators obtained in this way are called system GMM estimators.

Originally, this method was developed to improve the behavior of difference GMM estimators when the autoregressive parameter  $\gamma$  approaches unity. In this case, lagged levels of dependent variable are weak instruments. But this method has another advantage: time-invariant variables can be included as regressors (Roodman, 2006). In Section III, we will use these estimators.

## **II.D - Instruments validation**

Once difference or system GMM estimators are obtained, the validity of the model must be checked:

- Arellano and Bond (1991) proposed a test to detect serial correlation in the disturbances. Note that the presence of serial correlation in the disturbances affects the validity of some instruments: if  $v_{it}$  are serially correlated of order 1, then  $y_{i,t-2}$  is endogenous to  $\Delta v_{it}$  (by the presence of  $v_{i,t-1}$  in the difference) and, therefore,  $y_{i,t-2}$  would be an invalid instrument.
- They test serial correlation of the disturbances using difference  $\Delta v_{it}$  instead of level  $v_{it}$ . To test serial correlation of order 1 in levels, we must check for correlation of order 2 in differences. When the null hypothesis of this test (not serial correlation) is not rejected, the validation of the instrumental variables is confirmed.



Sargan test (Sargan, 1958) verifies the validity of the instrument subsets. It is based on the observation that residuals should be uncorrelated with the instruments (null hypothesis). When this hypothesis is not rejected, the validation of instrumentals is confirmed.

### III - EXAMPLE 1: GUILLEN *ET AL* (2010)

Guillen et al (2010) report evidence about the cooperative behavior in a repeated public goods game. Subjects play 10 periods in groups of four players with a constant group composition. In each period, the players decide how much allocate to a public account (between 0 to 50 units). Ten additional periods are played after a surprise restart. The group composition remains the same than in the first 10 periods. Hence, this is the classical example of lab experiment where subjects play for several rounds getting feedback after each decision.

The paper explores two main treatments: the baseline (which is identical to Croson et al., 2005) and the threat where subjects are informed that there is a positive probability that they will play with automata who would cooperate until any group member contributes less than 45 units. The experiment was conducted at the LINNEX (Valencia) with 60 subjects.

Using individual contributions as the dependent variable ( $y_{it}$ ), they propose a static panel data model where the explanatory variables are the *Period* and a dummy representing the *Threat* treatment:

$$y_{it} = \beta_0 + \beta_1 \cdot Period_t + \beta_2 \cdot Threat_t + \alpha_i + v_{it}, i = 1, \dots, 60 \quad t = 1, \dots, 10$$

To estimate this model they use random effects GLS regression with cluster-robust standard errors.

Columns a.1 and b.1 in Table 6.a replicate the results showed in the original paper. They found a positive and significant effect of the threat on cooperative behavior. This is true for the first 10 rounds but also for the second 10 rounds after the surprising restart.

Columns a.2 and b.2 in Table 1 show the dynamic panel data estimations. Observe that the dummy *Threat* is time-invariant. As we explained in Section II, as difference GMM

estimators remove this type of variable, we use system GMM estimators. To control for heteroscedasticity we use the Two-Step version with Windmeijer correction. We also present the associated p-values Arellano-Bond serial correlation (of order 2 in difference) test and Sargan test. The validity of the instruments is not rejected.

**Table 6.a:** Estimated parameters

	First 10 periods		Last 10 periods	
	a.1	a.2	b.1	b.2
$\gamma$	-	<b>0.30 (0.00)</b>	-	<b>0.35 (0.00)</b>
Period <sub>t</sub>	<b>-2.47(0.00)</b>	<b>-1.61 (0.00)</b>	<b>-2.60 (0.00)</b>	<b>-1.04 (0.00)</b>
Threat <sub>t</sub>	<b>12.44 (0.00)</b>	-13.18 (0.35)	<b>14.94 (0.00)</b>	<b>26.52 (0.01)</b>
$\beta_0$	<b>29.51 (0.00)</b>	<b>31.51 (0.00)</b>	<b>29.02 (0.00)</b>	<b>15.43 (0.03)</b>
AB serial correlation test	-	0.66	-	0.59
Sargan test	-	0.06	-	0.19
Instruments	-	46	-	52
N	600	540	600	600
<i>technique</i>	<i>SPD</i>	<i>DPD</i>	<i>SPD</i>	<i>DPD</i>

p-value in parenthesis

Now we compare the results obtained with static and dynamic panel data. How do the results change due to the new methodology?

- Along the first 10 periods we see that the dummy *Threat* is not significant. There is not a treatment effect. Once we capture the dynamic of the behavior this dummy is not significant.
- After the surprising restart we find a very interesting result. Once all the players have already learnt to play the game then the *Threat* dummy becomes highly significant (and doubles its value).

Additionally, we obtain precious information from the autorregresive structure of the behavior. The significant and positive value of the AR(1) coefficient<sup>20</sup> indicates that although the trend (*Period* variable) is negative, the slope is smoothed by the positive coefficient  $\gamma$ .

Therefore, the use of a dynamic panel data model let us properly identify the treatment effects and how these effects change across time and after a surprise restart.

#### IV - EXAMPLE 2: BRAÑAS-GARZA *ET AL* (2011)

Brañas-Garza et al (2011) report a Dictator game with 88 dictators taking 16 decisions about how to allocate 10 bills of 20 Uruguayan pesos (around 10 American dollars) between himself and a random and unknown recipient. The authors assume that the decisions are uncorrelated since there is not any feedback throughout the game and only one of them (randomly chosen) is implemented at the end.

All the games are identical in the format but framed. Besides a blind (baseline) game, they use three types of frames to generate 15 different environments that vary according the information given about gender, income (poor/rich) and political preferences (right/left). Dictators were matched with a different recipient every single round (strangers) and the sixteen tasks were presented to each subject in a different random order.

Using individual donations as the dependent variable ( $y_{ij}$ ), they use a dynamic panel data model to estimate the donation at period  $t$ :

$$y_{it} = \gamma \cdot y_{i,t-1} + x'_{it} \cdot \beta + \alpha_i + v_{it}, \quad i = 1, \dots, 88 \quad t = 1, \dots, 16$$

where  $\alpha_i$  are fixed individual effects, the regressors  $x_{it}$  are three treatment dummies and a temporal trend (*Period*), and all regressors are strictly exogenous.

To estimate this model they use two-step<sup>21</sup> difference GMM estimators with the Windmeijer correction. The results are presented in Table 2, columns a.2 and b.2 (the

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<sup>20</sup> We proved with higher order but it was not significant.

<sup>21</sup> *To control possible heterocedasticity*

difference of these two models is the temporal trend that is included only in column b.2). To prove the validity of the instrument, p-values of Arellano-Bond serial correlation test (of order 2 in difference) and Sargan test are presented. The validity is not rejected.

WG estimators provide a consistent estimator of static fixed effects models:

$$y_{it} = x_{it}' \cdot \beta + \alpha_i + v_{it}, \quad i = 1, \dots, 88 \quad t = 1, \dots, 16$$

Columns a.1 and b.1 in Table 6.b show the results of the static model<sup>22</sup>.

**Table 6.b:** Estimated parameters

	a.1	a.2	b.1	b.2
$\gamma$	-	<b>-0.07 (0.03)</b>	-	<b>-0.09 (0.00)</b>
Period	0.07 (0.67)	0.19 (0.43)	-	-
Treatment 1	<b>15.67 (0.00)</b>	<b>12.28 (0.00)</b>	<b>15.62 (0.00)</b>	<b>12.07 (0.00)</b>
Treatment 2	<b>15.80 (0.00)</b>	<b>13.21 (0.00)</b>	<b>15.76 (0.00)</b>	<b>13.11 (0.00)</b>
Treatment 3	<b>15.27 (0.00)</b>	<b>14.54 (0.00)</b>	<b>15.20 (0.00)</b>	<b>14.71 (0.00)</b>
$\beta_0$	<b>45.54 (0.00)</b>	<b>45.16 (0.00)</b>	<b>46.24 (0.00)</b>	<b>48.08 (0.00)</b>
AB serial correlation test	-	0.49	-	0.42
Sargan test	-	0.83	-	0.80
Instruments	-	44	-	43
N	1402	1220	1402	1220
<i>technique</i>	<i>SPD</i>	<i>DPD</i>	<i>SPD</i>	<i>DPD</i>

p-value in parenthesis

As in the previous example we compare results from static and dynamic approaches:

- In the models where the *Period* is included (say a.1 and a.2) we find that the trend is never significant but the dummies (treatments) are.

<sup>22</sup> For possible heteroscedasticity, cluster-robust standard errors are used

- In dynamic models (say a.2 and b.2) time series of donations follow an stationary AR(1) process with negative coefficient.

Why this is important? The later means that in successive periods, donations move around its mean but with a very noisy behavior, crossing constantly the mean. Hence, experimental subjects tend to balance in a round what they did in the prior round.

As authors comment in their study, the use of dynamic panel data make possible to find a result favoring an equalization behavior. The pattern of donations over time emerges as the result of a systematic process of equalization: moral licensing (being selfish after altruist; Merrit et al., 2010) or cleansing (altruistic after selfish; Sachdeva et al., 2009). The use of static setting does not allow unravel this result.

## V - DISCUSSION

In this short survey, we have shown that the use of dynamic panel data model in the context of experiments allows unraveling new relationship between experimental variables and to highlights new path in the behaviors.

One critical issue in these methods (difference and system GMM) is to choose how many instruments to use. These estimators generate moment conditions, with the instrument count quadratic in T. Obviously it may cause several problems in finite samples (Roodman, 2006). First, a finite sample may lack adequate information to estimate such a large matrix well and, second, the bias present in all instrumental variables regressions becomes more pronounced as the instrument count rises. There is no a general rule in the literature about how many instruments use. In Roodman (2006) we find a nice advice: the instruments count must be smaller than the individual units in the panel.

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## **CAPÍTULO 7:**

### CONCLUSIONES

Los capítulos precedentes reúnen un artículo representativo de mis trabajos sobre estudios empíricos de transferencias aplicado al caso uruguayo y mi reciente trabajo en economía experimental.

El capítulo 2 realiza una propuesta para el estudio de registros de historias laborales incompletas y la aplica al caso uruguayo. Una de los aportes de este trabajo es el método propuesto, que permite estimar historias laborales completas a partir de registros incompletos, en el contexto de que en la región latinoamericana los registros son incompletos. Esto ha hecho que la mayoría de los trabajos se limiten a analizar la densidad de contribuciones registradas a la fecha (por ejemplo, Rofman & Lucchetti, 2006). El otro aporte es la verificación de la existencia de un número importante de contribuyentes de los cuales se prevé que no cumplirán el mínimo requerido de períodos de contribuciones para acceder a una pensión de retiro. Este grupo se forma fundamentalmente de personas de bajos ingresos.

Este resultado es consistente con la extensión de la informalidad en el país y en la región latinoamericana en general. Nótese que antes de las reformas de la seguridad social de los años noventa del siglo XX, no se contaba con registros de historia laboral. Los trabajadores podían acceder a pensiones de retiro por pruebas testimoniales por lo que la exigencia de contribuciones no aplicaba con criterios rígidos. Con las reformas se crearon los registros de historia laboral lo que aumentó el costo de la informalidad. En este sentido, uno de los desafíos de las reformas fue hacer creíble el futuro uso de las historias laborales. En el capítulo 2 se discute en qué medida aspectos del diseño de los programas desmotivan la contribución aún en el caso de que el uso de las historias laborales sea creíble. Como es habitual en esta literatura, la discusión se basa en individuos racionales que deciden contribuir o no contribuir en función de un análisis costo-beneficio, en particular en la propuesta del modelo de Albrech et al (2008).



Luego de una veintena de años trabajando en temas de transferencias públicas y privadas en el marco de individuos racionales, en donde el altruismo es posible, el trabajo emprendido en la tesis doctoral me ha permitido conocer mejor las motivaciones por detrás del altruismo. El trabajo consistió en realizar un experimento en el que los sujetos realizaron 16 *dictator games* con diferente marco (*frame*).

Uno de los aspectos que este trabajo me ha aportado es el haber realizado un experimento. El capítulo 3 presenta en detalle el diseño del experimento y el procedimiento de cómo se llevó a cabo. Más allá de la experiencia ganada, el experimento ha permitido hacer conocer la economía experimental en el país allanando el camino para esta línea de investigación.

En cuanto a los datos obtenidos, han hecho posible trabajar en tres productos. En capítulo 4 se presenta un análisis de las decisiones comparando las donaciones en diferentes contextos. Los resultados indican que la publicidad del sexo, grupo de renta o grupo ideológico del donante motiva aumentar la donación, sugiriendo que las personas son sensibles a la imagen social de su grupo. El rol de la imagen social ha sido puesto en relieve por Andreoni & Bernheim (2009). Expresado de otra manera, las personas son sensibles a la percepción que tendrán los demás del grupo al que pertenecen, y desean que su grupo sea percibido como generoso.

Los resultados también indican que las personas son sensibles a las características del receptor. El concepto de identidad social proporciona un marco para explicar que la pertenencia a un grupo lleva a desear favorecer a los del mismo grupo a expensas de los de “afuera” (Charness, Rigotti & Rustichini, 2007; Chen & Li, 2009). Al dividir a los sujetos según si eran de izquierda o de derecha, su comportamiento fue consistente con estos efectos de pertenencia. Algo similar ocurrió con los sujetos catalogados como pobres. No así los ricos, que tendieron a favorecer a los pobres tal como se espera de individuos adversos al riesgo (Fehr & Schmidt, 1999). En cuanto a la distinción por sexo, las mujeres parecen tener un sentido de pertenencia mientras que los hombres tienden a favorecer más a las mujeres que a los de su mismo sexo.

El capítulo 5 analiza los mismos datos pero aprovechando que las decisiones fueron tomadas en rondas sucesivas de orden aleatorio, distinto para cada individuo, pagándose solamente una. Utilizando modelos dinámicos de datos de panel, se realiza una estimación que arroja que cada decisión afecta la siguiente. En particular, el efecto es negativo: a una

acción generosa sigue una mezquina, y luego otra generosa. Este tipo de comportamiento es consistente con un comportamiento moral dinámico tal que, desvíos desde un estado moral “normal” se compensan posteriormente para volver a la “normalidad”. El comportamiento *self-licensing moral* refiere a que una buena acción “autoriza” una posterior mala acción (Zhong and Liljenquist, 2006; Merritt, Effron and Monin, 2010). El comportamiento *moral cleansing* refiere a que una mala acción requiere una posterior buena acción como mecanismo de “limpieza” (Sachdeva, Iliev and Medin, 2009).

Finalmente, el capítulo 6 presenta las ventajas de utilizar modelos dinámicos de panel para analizar los datos provenientes de experimentos repetidos (Arellano & Bond, 1991). Por un lado, compara los resultados del capítulo 5 con los obtenidos con un modelo estático. Por otro lado, recoge los resultados de Guillén et al (2010) obtenidos a partir de una estimación de un modelo estático y los compara con una estimación de un modelo dinámico. Los dos casos funcionan como ejemplos en los que la especificación de un modelo dinámico permite revelar relaciones que no se obtienen con los modelos estáticos.

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## **CAPITULO 8:**

### **RESÚMENES EN ESPAÑOL**

#### **I - CAPÍTULO 2: HISTORIAS LABORALES Y ACCESO A LAS PENSIONES CONTRIBUTIVAS: EL CASO URUGUAYO**

En los años noventa del siglo XX, la región latinoamericana implementó reformas de su seguridad social tendientes a estrechar las pensiones de retiro con las contribuciones al sistema. Incluyeron además un mínimo de años de servicio para acceder al retiro. Algunos años después comenzó un debate en torno a que historias laborales incompletas y altamente fragmentadas amenazan con dejar a muchos contribuyentes de los regímenes de pensiones sin una pensión mínima. Sin embargo, la inexistencia de registros laborales previos a la implementación de la reforma ha constituido una limitación para una medición rigurosa sobre lo extendido de historias cortas. En el estudio realizado, se propone una metodología para evaluar este riesgo, identificar los grupos vulnerables y estudiar los posibles factores determinantes de las historias de contribuciones, utilizando la información incompleta que brindan en la actualidad los registros de historia de laboral de las instituciones de seguridad social.

La metodología propuesta tiene dos pasos. En el primero, se propone dividir la muestra en grupos poblacionales (según nivel educativo y sexo) de manera de tener varios individuos representativos. Para cada uno estimamos las tasas de transición entre contribuir y no contribuir a la seguridad social. En el segundo paso, se propone utilizar las tasas de transición predichas para simular historias laborales completas de los individuos representativos. Esto permite computar las funciones de distribución del número de períodos de contribución a diferentes edades.

Aplicando esta metodología sobre los registros de la principal institución de seguridad social del Uruguay, el Banco de Previsión Social, se obtiene que la mayoría de los contribuyentes de esta institución podría no cumplir con el mínimo de años de cotización

requeridos actualmente para acceder a una pensión (jubilación) común al llegar a las edades habituales de retiro.

## II - CAPÍTULO 4: SOLIDARIDAD E INFORMACIÓN

El objetivo de este trabajo es analizar el efecto de la información sobre la solidaridad, de forma de explorar el papel de la aversión a la inequidad, la identidad y la imagen social. Para ellos se realizaron 16 *dictator game*.

La información refiere al grupo de renta, sexo e ideología al que pertenecen los individuos. En todos casos, la información es auténtica: se trabaja con las características reales de los involucrados. Para definir los grupos de renta (pobre o rico) se contó con información brindada por los participantes: en particular, en la inscripción al experimento, reportaron la posición económica de su hogar en una escala del 1 al 10. Utilizando el valor de la mediana como umbral, se dividió a todos los participantes (donadores y receptores) en ricos y pobres. En forma similar, se dividió a los participantes en izquierda y derecha.

El marco general de los 16 *dictator game* es el mismo en todos los juegos, pero los participantes enfrentan diferente información en cada uno. En un caso, el tratamiento ciego, no tienen información alguna. En tres tratamientos, el participante es informado que el receptor sabrá su sexo, grupo de renta o grupo ideológico. En seis tratamientos se le dice que el receptor es hombre, mujer, rico, pobre, de izquierda o de derecha, alternativamente. En otros seis, además de conocer una característica del receptor, se informa al participante que el receptor sabrá que el participante tenía información.

El trabajo encuentra evidencia de que existe solidaridad con las personas del mismo grupo (por encima del grupo opuesto) cuando se las divide por ideología, indicando la presencia de un efecto pertenencia o identidad. En los casos en que las personas se identificaron más próximas a las posiciones extremas, se observó incluso una disminución de la donación al grupo opuesto. El mismo comportamiento se encontró para los participantes catalogados como pobres. Efectos de pertenencia o identidad también se encontraron para las mujeres, pero en este caso la solidaridad con su grupo no se acompaña de un “castigo” hacia los hombres.

A su vez los hombres y los ricos favorecen en mayor medida a las personas del grupo opuesto. Este último resultado indicaría que la aversión a la inequidad lidera los eventuales efectos de pertenencia.

Finalmente, la imagen social parece tener efecto: todos los participantes aumentan su donación cuando son informados que el receptor sabrá el grupo de pertenencia del donante.

### III - CAPÍTULO 5: *MORAL LICENSE* Y *MORAL CLEANSING*: EVIDENCIA EXPERIMENTAL

La literatura sobre *moral licensing* y *moral cleansing* provee un marco para explicar la dinámica de la conducta moral. Una razón para llevar cabo buenas acciones es su efecto positivo sobre la valoración de uno mismo. Pero cuando acciones pasadas hacen que una persona se sienta a gusto con su conducta moral, su valoración puede ser suficientemente elevada para “autorizarle” (o facilitarle) en el presente incurrir en conductas moralmente dudosas (o directamente malas acciones). Este es el argumento central de la literatura sobre *moral self-licensing*. A su vez, el comportamiento inmoral tiene un efecto negativo sobre la auto-valoración moral. Por eso, luego de incurrir en malas acciones, las personas tienden a realizar buenas acciones: este mecanismo de “limpieza” es el llamado comportamiento *moral cleansing*. En síntesis, los desvíos desde un “estado moral normal” son compensados por una acción posterior.

Para analizar si las acciones son afectadas por acciones pasadas, se utilizan datos de un experimento en el cual los participantes realizaron 16 *dictator games*. Las donaciones fueron realizadas en orden aleatorio, y dicho orden fue diferente para los distintos participantes. Al comienzo del experimento, los participantes fueron informados de que una sola donación (escogida por sorteo) sería pagada.

Utilizando métodos de análisis de paneles dinámicos, se encuentra que las donaciones pasadas (la inmediata anterior) afecta la donación presente en la manera prevista por la literatura mencionada. En cada ronda, los sujetos compensan acciones generosas con acciones egoístas y acciones egoístas con generosas (generoso → egoísta → generoso).

#### IV - CAPÍTULO 6: DATOS DE PANEL DINÁMICOS: UNA TÉCNICA ÚTIL PARA EXPERIMENTOS

Un importante número de trabajos de economía experimental utiliza datos de experimentos repetidos y varios de ellos recurren a métodos de estudios de panel. Los datos de panel tienen la ventaja de que al incorporar individuos y tiempo, permite controlar efectos no observables o datos perdidos. En general, en la economía experimental los datos son analizados bajo técnicas para modelos estáticos.

A diferencia de los modelos estáticos de panel, los modelos dinámicos incorporan rezagos de la variable dependiente como variables explicativas. Esto permite analizar los coeficientes, si ello es de interés, y más importante aún, controlar la dinámica del proceso. En este corto trabajo, se presenta el método de estudios de paneles dinámicos y se le aplica a bases de datos de experimentos.

En este trabajo se comparan los resultados obtenidos con modelos estáticos y dinámicos utilizando dos bases de datos de experimentos. Las estimaciones indican que los modelos dinámicos representan una especificación más correcta de los comportamientos en estudio y permiten revelar nuevas o diferentes relaciones que las obtenidas con los modelos estáticos.

**ANEXO:**

INSTRUCCIONES DEL EXPERIMENTO



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~~kr~~

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## I N S T R U C C I O N E S

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Hemos invitado a alrededor de 200 estudiantes a participar en un experimento en el marco de una investigación que estamos realizando en el Departamento de Economía de la Facultad de Ciencias Sociales (dECON). El propósito de esta investigación es estudiar cómo las personas toman decisiones en determinados contextos.

Te vamos a solicitar que realices una serie de tareas que consisten en tomar decisiones. Las instrucciones para realizarlas son simples. Todas tus decisiones serán anónimas y no te podremos identificar. Los datos se tratarán de manera totalmente anónima. Nadie conocerá ni las decisiones ni los resultados obtenidos de ningún participante.

Realizando estas tareas tenés la posibilidad de ganar una cierta cantidad de dinero. No lo pierdas ya que lo necesitaremos para calcular el dinero que te corresponde. El monto se calculará y se entregará de **manera confidencial**.

Podés preguntarnos en cualquier momento las dudas que tengas levantando primero la mano. Fuera de esas preguntas, cualquier tipo de comunicación del salón está prohibida.

Como recordarás, en una encuesta previa te solicitamos información referente a tu situación económica y preferencias políticas. Usando la información de toda la muestra de estudiantes como vos, hemos etiquetado a los participantes como de izquierda, si pertenecen al 50% más a la izquierda, y de derecha, al resto. De ahora en adelante usaremos el término izquierda/derecha para definir esas preferencias. Igualmente, hemos definido como pobres al 50% con menor ingreso y como ricos al 50% con mayor ingreso.

## LA TAREA

La tarea se realiza en parejas. Hay participantes ubicados en este salón (a los que llamaremos tipo A) y participantes ubicados en otro salón (a los que llamaremos tipo B). Vos sos tipo A.

Tu pareja será un tipo B elegido de manera aleatoria. Ni ahora ni después (nunca) vas a saber quien es tu pareja. Además, tu pareja nunca sabrá quién sos vos.

Los participantes tipo A como vos se enfrentan a la tarea siguiente:

*“Has sido provisionalmente dotado de 200 pesos, para vos y tu pareja (tipo B). Tu decisión es muy simple: decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Tu decisión puede ser cualquiera entre \$0 y \$200 en billetes de \$20.”*

Por favor, poné un círculo alrededor de la cantidad que querés **transferir** a tu pareja:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

## HOY

Ahora vas a enfrentarte a esa decisión X veces. Es decir, X veces vas a tener que decidir qué cantidad de dinero (si alguna) vas a pasar al participante tipo B. En cada ocasión, tu pareja B será distinta. Además debes saber que los B nunca son A.

De todas las decisiones que realices, sólo se ejecutará una, que eligiremos aleatoriamente. Vos te llevarás el dinero de esa decisión a tu casa, y tu pareja (la que salga de ese sorteo) recibirá el dinero que vos decidiste en esa tarea. La pareja B va a recibir el dinero de verdad.

Por favor, no hables con nadie hasta que la sesión no haya terminado. No te preocupes por lo que hagan los demás. Ahora, una por una, se te irán dando las decisiones.

# Tarea I

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

## Información de tu pareja

Hombre

Mujer

Pobre

Rico

**izquierda**

Derecha

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea ge/ge

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre **tu pareja**. La característica marcada con un círculo es lo único que sabrás de B.

Observá además que aparece también alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti.

## Información tuya

**Hombre**

Mujer

Pobre

Rico

Izquierda

Derecha

## Información de tu pareja

**Hombre**

Mujer

Pobre

Rico

Izquierda

Derecha

Con esta información sobre tu pareja B y sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea P

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre **tu pareja**. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

## Información de tu pareja

Hombre

Mujer

Pobre

Rico

Izquierda

Derecha

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200

## Tarea D

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

### Información de tu pareja

Hombre

Mujer

Pobre

Rico

Izquierda

**Derecha**

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea in/in

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quiénes sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B.

Observá además que aparece también alguna característica tuya según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti.

## Información tuya

Hombre  
Mujer  
Pobre  
**Rico**  
Izquierda  
Derecha

## Información de tu pareja

Hombre  
Mujer  
Pobre  
**Rico**  
Izquierda  
Derecha

Con esta información sobre tu pareja B y sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200



# Tarea o-gen

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti. Si no hubiera ninguna característica marcada, entonces él no sabrá nada.

## Información tuya

Hombre

Mujer

Pobre

Rico

Izquierda

Derecha

Sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

6

# Tarea 0

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

## Información de tu pareja

Hombre

Mujer

Pobre

Rico

Izquierda

Derecha

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea H

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

## Información de tu pareja

Hombre

Mujer

Pobre

Rico

Izquierda

Derecha

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

## Tarea win/win

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre **tu pareja**. La característica marcada con un círculo es lo único que sabrás de B.

Observá además que aparece también alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti.

### Información tuya

Hombre  
Mujer  
Pobre  
Rico  
Izquierda  
**Derecha**

### Información de tu pareja

Hombre  
Mujer  
Pobre  
Rico  
Izquierda  
**Derecha**

Con esta información sobre tu pareja B y sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea o-wind

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti. Si no hubiera ninguna característica marcada, entonces él no sabrá nada.

## Información tuya

Hombre

Mujer

Pobre

Rico

Izquierda

**Derecha**

Sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea win/win-

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre **tu pareja**. La característica marcada con un círculo es lo único que sabrás de B.

Observá además que aparece también alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti.

## Información tuya

Hombre  
Mujer  
Pobre  
Rico  
Izquierda  
**Derecha**

## Información de tu pareja

Hombre  
Mujer  
Pobre  
Rico  
**Izquierda**  
Derecha

Con esta información sobre tu pareja B y sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

## Tarea in/in-

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quiénes vos.

Abajo aparece información sobre **tu pareja**. La característica marcada con un círculo es lo único que sabrás de B.

Observá además que aparece también alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti.

### Información tuya

Hombre  
Mujer  
Pobre  
**Rico**  
Izquierda  
Derecha

### Información de tu pareja

Hombre  
Mujer  
**Pobre**  
Rico  
Izquierda  
Derecha

Con esta información sobre tu pareja B y sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea R

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

## Información de tu pareja

Hombre

Mujer

Pobre

Rico

Izquierda

Derecha

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200



## Tarea ge/ge-

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quiénes sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B.

Observá además que aparece también alguna característica tuya según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti.

### Información tuya

Hombre  
 Mujer  
 Pobre  
 Rico  
 Izquierda  
 Derecha

### Información de tu pareja

Hombre  
 Mujer  
 Pobre  
 Rico  
 Izquierda  
 Derecha

Con esta información sobre tu pareja B y sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea o-inc

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece alguna característica **tuya** según nos declaraste en el formulario de inscripción. Le vamos a dar esta información a tu pareja. La característica marcada con un círculo es lo único que B sabrá de ti. Si no hubiera ninguna característica marcada, entonces él no sabrá nada.

## Información tuya

Hombre

Mujer

Pobre

**Rico**

Izquierda

Derecha

Sabiendo que B tendrá esa información sobre vos, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés **transferir**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

# Tarea M

Para esta tarea, te vamos a emparejar en forma aleatoria con un participante tipo B. Recordá que ni ahora ni después (nunca) vas a saber quien es tu pareja, ni tu pareja sabrá quién sos vos.

Abajo aparece información sobre tu pareja. La característica marcada con un círculo es lo único que sabrás de B. Si no hubiera ninguna característica marcada, entonces no sabés nada.

## Información de tu pareja

Hombre

**Mujer**

Pobre

Rico

Izquierda

Derecha

Con esta información sobre tu pareja B, tenés que llevar a cabo la tarea. Decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Por favor, poné un círculo alrededor de la cantidad que querés transferir:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

adracoss89@hotmail.com

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## I N S T R U C C I O N E S

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Hemos invitado a alrededor de 200 estudiantes a participar en un experimento en el marco de una investigación que estamos realizando en el Departamento de Economía de la Facultad de Ciencias Sociales (dECON).

Te vamos a solicitar que realices una serie de tareas que consisten en tomar decisiones. Todas tus decisiones serán anónimas y no te podremos identificar. Los datos se tratarán de manera totalmente anónima. Nadie conocerá ni las decisiones ni los resultados obtenidos de ningún participante.

Realizando estas tareas tenés la posibilidad de ganar una cierta cantidad de dinero. El monto se calculará y se entregará de **manera confidencial**.

Podés preguntarnos en cualquier momento las dudas que tengas levantando primero la mano. Fuera de esas preguntas, cualquier tipo de comunicación entre ustedes está prohibida.

Como recordarás, en una encuesta previa te solicitamos información referente a tu situación económica y preferencias políticas. Usando la información de todos los inscriptos, hemos etiquetado a los participantes como de izquierda, si pertenecen al 50% más a la izquierda, y de derecha, al resto. De ahora en adelante usaremos el término izquierda/derecha para definir esas preferencias. Igualmente, hemos definido como pobres al 50% con menor ingreso y como ricos al 50% con mayor ingreso.

## LA TAREA

La tarea se realiza en parejas. Hay participantes ubicados en este salón (a los que llamaremos tipo B) y participantes ubicados en otro salón (a los que llamaremos tipo A). **Vos sos tipo B.**

Los participantes tipo A se enfrentaron a la tarea siguiente:

*Has sido provisionalmente dotado de 200 pesos, para vos y tu pareja (tipo B). Tu decisión es muy simple: decidí que proporción, si alguna, de los 200 pesos querés transferir a tu pareja. Tu decisión puede ser cualquiera entre \$0 y \$200 en billetes de \$20.*

*Por favor, poné un círculo alrededor de la cantidad que querés **transferir** a tu pareja:*

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

*Ahora vas a enfrentarte a esa decisión varias veces. Es decir, varias veces vas a tener que decidir qué cantidad de dinero (si alguna) vas a pasar al participante tipo B. En cada ocasión, tu pareja B será distinta. Además debes saber que los B nunca son A.*

*De todas las decisiones que realices, sólo se ejecutará una, que elegiremos aleatoriamente. Vos te llevarás el dinero de esa decisión a tu casa, y tu pareja (la que salga de ese sorteo) recibirá el dinero que vos decidiste en esa tarea. La pareja B va a recibir el dinero de verdad.*

Como vos sos un participante B y tu pareja es un participante A elegido de manera aleatoria, al final de esta sesión de entregaremos lo que ha donado. Ni ahora ni después (nunca) vas a saber quién es tu pareja. Además, tu pareja nunca sabrá quién sos vos.

## TU TAREA

**Tu tarea** es muy simple: adivinar cuál fue el valor más frecuente que transfirieron los participantes A.

Vas a enfrentarte a esta tarea 16 veces. De todas las tareas que realices, elegiremos 2 aleatoriamente. Por cada vez que adivines, te llevarás \$ 100 a tu casa.

A continuación, aparecen las preguntas y tenés que redondear tu respuesta.

N°	Redondeá el valor que te parece que más frecuentemente se transfirió en cada caso
<b>R1</b>	<p data-bbox="284 275 901 306"><i>¿Cuánto transfirieron los participantes A <b>ricos</b>?</i></p> <p data-bbox="284 337 1409 368">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>R2</b>	<p data-bbox="284 404 925 435"><i>¿Cuánto transfirieron los participantes A <b>pobres</b>?</i></p> <p data-bbox="284 466 1409 497">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>R3</b>	<p data-bbox="284 532 1380 611"><i>¿Cuánto transfirieron los participantes A <b>ricos</b> cuando les dijimos que <b>B iba a saber</b> que A era rico?</i></p> <p data-bbox="284 642 1409 673">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>R4</b>	<p data-bbox="284 704 1404 783"><i>¿Cuánto transfirieron los participantes A <b>pobres</b> cuando les dijimos que <b>B iba a saber</b> que A era pobre?</i></p> <p data-bbox="284 814 1409 845">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>R5</b>	<p data-bbox="284 876 1340 907"><i>¿Cuánto transfirieron los participantes A <b>ricos</b> cuando les dijimos que B era <b>rico</b>?</i></p> <p data-bbox="284 938 1409 969">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>R6</b>	<p data-bbox="284 1004 1364 1036"><i>¿Cuánto transfirieron los participantes A <b>ricos</b> cuando les dijimos que B era <b>pobre</b>?</i></p> <p data-bbox="284 1067 1409 1098">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>R7</b>	<p data-bbox="284 1133 1364 1164"><i>¿Cuánto transfirieron los participantes A <b>pobres</b> cuando les dijimos que B era <b>rico</b>?</i></p> <p data-bbox="284 1195 1409 1226">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>R8</b>	<p data-bbox="284 1261 1388 1292"><i>¿Cuánto transfirieron los participantes A <b>pobres</b> cuando les dijimos que B era <b>pobre</b>?</i></p> <p data-bbox="284 1324 1409 1355">\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>



Nº	Redondeá el valor que te parece que más frecuentemente se transfirió en cada caso
<b>S1</b>	¿Cuánto transfirieron los <b>hombres</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S2</b>	¿Cuánto transfirieron las <b>mujeres</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S3</b>	¿Cuánto transfirieron los <b>hombres</b> cuando les dijimos que <b>B iba a saber</b> que A era un hombre? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S4</b>	¿Cuánto transfirieron las <b>mujeres</b> cuando les dijimos que <b>B iba a saber</b> que A era una mujer? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S5</b>	¿Cuánto transfirieron los <b>hombres</b> cuando sabían que <b>B era un hombre</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S6</b>	¿Cuánto transfirieron los <b>hombres</b> cuando sabían que <b>B era una mujer</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S7</b>	¿Cuánto transfirieron las <b>mujeres</b> cuando sabían que <b>B era un hombre</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200
<b>S8</b>	¿Cuánto transfirieron las <b>mujeres</b> cuando sabían que <b>B era una mujer</b> ? \$0 \$20 \$40 \$60 \$80 \$100 \$120 \$140 \$160 \$180 \$200

<b>Nº</b>	Redondeá el valor que te parece que más frecuentemente se transfirió en cada caso
<b>P1</b>	<p>¿Cuánto transfirieron los participantes A de <b>derecha</b>?</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>P2</b>	<p>¿Cuánto transfirieron los participantes A de <b>izquierda</b>?</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>P3</b>	<p>¿Cuánto transfirieron los participantes A de <b>derecha</b> cuando les dijimos que <b>B iba a saber</b> que A era de derecha??</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>P4</b>	<p>¿Cuánto transfirieron los participantes A de <b>izquierda</b> cuando les dijimos que <b>B iba a saber</b> que A era de izquierda?</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>P5</b>	<p>¿Cuánto transfirieron los participantes A de <b>derecha</b> cuando les dijimos que <b>B era de derecha</b>?</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>P6</b>	<p>¿Cuánto transfirieron los participantes A de <b>derecha</b> cuando les dijimos que <b>B era de izquierda</b>?</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>P7</b>	<p>¿Cuánto transfirieron los participantes A de <b>izquierda</b> cuando les dijimos que <b>B era de derecha</b>?</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>
<b>P8</b>	<p>¿Cuánto transfirieron los participantes A de <b>izquierda</b> cuando les dijimos que <b>B era de izquierda</b>?</p> <p>\$0   \$20   \$40   \$60   \$80   \$100   \$120   \$140   \$160   \$180   \$200</p>

### TAREA ADICIONAL

En esta tarea, tenés que tomar 10 decisiones que aparecen en 10 filas de la siguiente tabla. Tenés que elegir la opción que preferís (opción **C** u opción **D**) en cada fila. Cada opción representa una lotería (ganás una cantidad con cierta probabilidad que se especifica al costado). Tu tarea es elegir cuál lotería preferís en cada fila.

Por favor, para cada decisión (o sea, en cada fila) marcá la opción preferida en la casilla que se encuentra a la derecha de la opción correspondiente.

De las 10 decisiones, te pagaremos una seleccionada de manera completamente aleatoria y esa decisión determinará tu pago.

	<b>Opción C</b>		<b>Opción D</b>
<i>Decisión 1:</i>	\$40 con probabilidad 0.1 y \$32 con probabilidad 0.9	<input type="checkbox"/>	\$77 con probabilidad 0.1 y \$2 con probabilidad 0.9
<i>Decisión 2:</i>	\$40 con probabilidad 0.2 y \$32 con probabilidad 0.8	<input type="checkbox"/>	\$77 con probabilidad 0.2 y \$2 con probabilidad 0.8
<i>Decisión 3:</i>	\$40 con probabilidad 0.3 y \$32 con probabilidad 0.7	<input type="checkbox"/>	\$77 con probabilidad 0.3 y \$2 con probabilidad 0.7
<i>Decisión 4:</i>	\$40 con probabilidad 0.4 y \$32 con probabilidad 0.6	<input type="checkbox"/>	\$77 con probabilidad 0.4 y \$2 con probabilidad 0.6
<i>Decisión 5:</i>	\$40 con probabilidad 0.5 y \$32 con probabilidad 0.5	<input type="checkbox"/>	\$77 con probabilidad 0.5 y \$2 con probabilidad 0.5
<i>Decisión 6:</i>	\$40 con probabilidad 0.6 y \$32 con probabilidad 0.3	<input type="checkbox"/>	\$77 con probabilidad 0.6 y \$2 con probabilidad 0.4
<i>Decisión 7:</i>	\$40 con probabilidad 0.7 y \$32 con probabilidad 0.3	<input type="checkbox"/>	\$77 con probabilidad 0.7 y \$2 con probabilidad 0.3
<i>Decisión 8:</i>	\$40 con probabilidad 0.8 y \$32 con probabilidad 0.2	<input type="checkbox"/>	\$77 con probabilidad 0.8 y \$2 con probabilidad 0.2
<i>Decisión 9:</i>	\$40 con probabilidad 0.9 y \$32 con probabilidad 0.1	<input type="checkbox"/>	\$77 con probabilidad 0.9 y \$2 con probabilidad 0.1
<i>Decisión 10:</i>	\$40 con probabilidad 1 y \$32 con probabilidad 0	<input type="checkbox"/>	\$77 con probabilidad 1 y \$2 con probabilidad 0