HOUSING SUBSIDIES, LABOR SUPPLY AND HOUSEHOLD WELFARE. EXPERIMENTAL EVIDENCE FROM ARGENTINA

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CAF DEVELOPMENT BANK OF LATIN AMERICA

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ABSTRACT

We study the impact of a social housing policy program implemented in Argentina, exploiting the random assignment rule to identify the policy's causal effect on labor market and other socio-economic outcomes. In particular, this paper evaluates an intervention that combines access to quality housing at a heavily subsidized cost, the granting of property rights, and re-location in a suburb of Rosario, Argentina's third largest city. In a preliminary analysis, based on administrative social security records, we find that the policy generates a reduction in registered employment by more than 7 percentage points, especially for women and beneficiaries over 50 years of age. We went further and conducted a purposely-designed household survey among a sample of beneficiaries in order to understand the underlying mechanisms and welfare implications of these results. All in all, our analysis points to the existence of an income effect and confirms the registered fall in formal employment and labor force participation. We do not find an increase in informalization, although beneficiaries' perceived access to local job opportunities are signicantly reduced.

SUBSIDIOS A LA VIVIENDA, PARTICIPACIÓN LABORAL Y BIENESTAR. EVIDENCIA EXPERIMENTAL PARA ARGENTINA.

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RESUMEN

El presente trabajo estudia el impacto de un programa de vivienda social implementado en la provincia de Rosario, Argentina, haciendo uso de una lotería para identificar el efecto causal del programa en la participación laboral y otras variables socio-económicas del hogar. La intervención combinaba acceso a una vivienda de calidad a un precio altamente subsidiado a la vez que el otorgamiento de título de propiedad de dicha vivienda. En un primer análisis utilizando datos administrativos, se observa una reducción de 7 puntos porcentuales en el empleo formal, especialmente para mujeres y hombres de más de 50 años. Con el objeto de estudiar qué era lo que generaba esta reducción, se realizó una encuesta específica. La misma muestra que la caída en el empleo formal se debe a una reducción en la participación y no a un pasaje a la informalidad. Además, los beneficiarios perciben una reducción en las oportunidades laborales en la nueva localización.

Housing Subsidies, Labor Supply and Household Welfare

Experimental Evidence from Argentina[*]

María Laura Alzúa	Julián Amendolaggine	Guillermo Cruces	Catrihel Greppi
CEDLAS-FCE-UNLP,	*CEDLAS-FCE-UNLP,*	*CEDLAS-FCE-UNLP,*	*CEDLAS-FCE-UNLP,*
and CONICET	*and CONICET*	*CONICET and IZA*	*and CONICET*

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Abstract

We study the impact of a social housing policy program implemented in Argentina, exploiting the random assignment rule to identify the policy's causal effect on labor market and other socio-economic outcomes. In particular, this paper evaluates an intervention that combines access to quality housing at a heavily subsidized cost, the granting of property rights, and re-location in a suburb of Rosario, Argentina's third largest city. In a preliminary analysis, based on administrative social security records, we find that the policy generates a reduction in registered employment by more than 7 percentage points, especially for women and beneficiaries over 50 years of age. We went further and conducted a purposely-designed household survey among a sample of beneficiaries in order to understand the underlying mechanisms and welfare implications of these results. All in all, our analysis points to the existence of an income effect and confirms the registered fall in formal employment and labor force participation. We do not find an increase in informalization, although beneficiaries' perceived access to local job opportunities are significantly reduced.

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1 Introduction

Decent housing in developing countries is one of the most serious deficits faced by the poor (UN Habitat 2010). Credit market imperfections, volatile economic conditions and labor informality, among other factors, create barriers for access to housing. In Latin America, housing policies have taken several forms and cater to different publics. In the region there have been several social housing programs for, but not limited to, the poorer population. Most of these programs have either granted land titles to already occupied squatters or provided some sort of subsidies to facilitate access (Bouillion et al, 2012) There have also been several policies that have attempted to improve the quality of existing housing facilities (Galiani et al, 2015, Galiani et al, 2013, Cattaneo et al, 2009).

Understanding the behavioral effects of policies that ease access to housing is of utmost importance, since such programs are seen as an important tool to help poorer individuals living in developing countries. While there have been some progress in the assessment of such effects, evidence is still scarce (Olsen, 2003 and Jacob and Ludwig, 2013). One of the most relevant behavioral effects of housing programs is the effect on labor supply. Jacob and Ludwig (2013) finds that a lottery that assigned rent subsidies to poor families in the U.S. reduced the number of hours worked and income among recipients. The evidence for developing countries is also limited. Franklin (2015) showsthat a government housing program in South Africa resulted in an increase in income and Galiani and Schargrodsky (2004) found no changes in labor supply after the implementation of a land titling program in Argentina.

The labor supply response to a (housing) subsidy consists of both a substitution and income effect. The total effect of the housing subsidy on labor supply is ultimately an empirical question. On one hand, there is an in-kind component of the house transfer. The amount of the transfer may increase the out-of-pocket expenditures towards such housing (i.e. housing investments). For example, household recipients may have been living with relatives before receiving their house and thus may experience an increase in work effort once they access new housing. On the other hand, labor supply could be reduced. Such reductions may be caused by the income effect, which will increase leisure, or by frictions such as the cost of moving or relocating or longer commute time to work.

We investigate the effect of a housing program in Argentina, a middle income country with a very volatile economy, where, as a result,housing constitutes the main saving mechanism available for families. We analyze a small program that granted subsidized access to housing to lower middle class individuals living in Rosario, one of Argentina's major cities. In order to give our estimates a causal interpretation, we exploit a random assignment rule that the government of the province implemented for this social housing policy. Eligibility to participate of the lottery required proof of registered formal income equivalent to the national minimum wage at the time of assignment.

The policy under analysis consists in delivering a finished house, with access to basic public services, within a housing complex built on the outskirts of an urban center. The beneficiaries receive the house in exchange for a long-term credit at a subsidized value, and are entitled to its legal ownership after a certain time. The amount of the mortgage payment should be less than 20% of their income.

Using administrative data, we found that the program generated a 7 percentage point reduction in registered employment. This effect is larger among women and older beneficiaries (over 50 years of age). For such groups, the decrease amounts to 15 and 20 percentage points, respectively.

These results are in line with the hypothesis that the implicit subsidy in the cost of housing has a differential effect for groups with different labor supply income elasticities.

In order to determine whether this reduction in registered employment is associated with an increase in informal employment, unemployment or inactivity, we implemented a household survey. We specifically explored whether they reflect changes in labor supply decisions resulting from changes in non-labor income (i.e. an income effect), or whether such reductions were due to frictions. Our household survey was designed specifically for the purpose of this study and, therefore, focused on the labor supply of the lottery winners versus the non-winners, as well as their housing situation, social ties in the neighborhood and general level of satisfaction.

The reduction in labor force participation might have been accompanied by other intra-household dynamics, given the greater impact found for women's employment. For instance, beneficiary households may have altered their fertility decisions in the face of the wealth shock (a positive welfare effect). Based on our survey's information on household's structure, we discarded this hypothesis and actually found the opposite effect: beneficiary households seem to be postponing their fertility plans in response to the policy and have fewer members. This finding is related to the literature on property rights. Galiani and Schargrodsky (2010) found increased investment in physical and human capital by means of housing investment, a reduction of household size, and improvements in children's health and education.

In the second case, the location of the housing units in a relatively remote suburb of the city may have implied the destruction of local social capital and the loss of labor market connections due to relocation, which could explain the reduction in labor force participation. This is why we inquired about job satisfaction, transportation costs and commuting time, perception of local employment opportunities and levels of labor-market related connections in the local community, among other related issues. We find beneficiaries' perceived access to local job opportunities, as measured by their difficulty in finding a job, their commuting time, and their distance to close relatives, has been significantly reduced.

Our paper contributes to the literature in two dimensions. First, it adds to the body of evidence looking at the labor supply effects of social policies, more specifically, housing policies in middle income countries. Secondly, we are able to uncover the mechanisms behind the changes in labor supply concluding that frictions, in our specific case, caused by altering the location and commuting time, may induce changes in labor supply and that such effects should be taken into account when designing social programs.

The following sections discuss the broader research questions and the previous literature (1.2), the details and the context of the program (2), the administrative data sources used for the first part of the analysis (3), the methodology applied (4) and results (5), our survey analysis and conclusions about mechanisms underlying the employment outcomes (6).

2   Context and Data

2.1   Description of the Program

In Argentina, one out of four homes has some kind of housing deficit, and over 80 per cent of that deficit can be found in the urban areas of the country (Moya et al., 2010). Whereas in the 20th century, the predominant deficit was of a qualitative nature, over the last decade it has become mainly quantitative. The lack of development of a housing credit market and the weaknesses in

social housing policies are two important factors that explain that deficit after a decade of high economic growth (Cristini et al., 2011; Cristini et al., 2012).

Despite this deficit, Argentina is one of the countries in Latin America that has the highest public housing investment per capita, allocating nearly 1.5 per cent of the GDP to that item.1 The design of the housing policy in Argentina has changed significantly in recent years; changes include a decentralization towards the provinces of the National Housing Fund (FO.NA.VI in Spanish) in the 1990s and the later re-centralization during the last decade with the creation of the Planes Federales. 2 Apparently, those changes have had no relevant impact on the efficiency of the social housing policy (Cuenin and Moya, 2011). Argentina has implemented several programs aiming at improving the housing deficit mentioned above. Our focus is on the Northern Rosario Housing Program (*Programa Habitacional Rosario Norte* in Spanish), also called Area Zero (*Zona Cero*), which has been developed in a non-urbanized area of 167 hectares, in the north-western outskirts of the city of Rosario (Santa Fe), the third largest city of Argentina.

The Zona Zero program foresees the construction of 4,500 houses, basic infrastructure (public lighting and electric home service, drinking water, natural gas, sanitary and storm sewers and paved roads), health, and educational centers. Construction began in the 52 central hectares with 1,400 houses and a commercial area.

The houses follow a standard model that the provincial government uses in its social housing policy. Each unit has approximately 60 m^2, approximately 645 sq. feet, on plots of land of about 150 and 250 m^2, two bedrooms, a bathroom, a kitchen-dining room, a laundry, and a yard. Their construction and associated infrastructure have an estimated cost of \$165 million (about \$30 million USD).[1]

Figure 1: *Area Zero* of Rosario
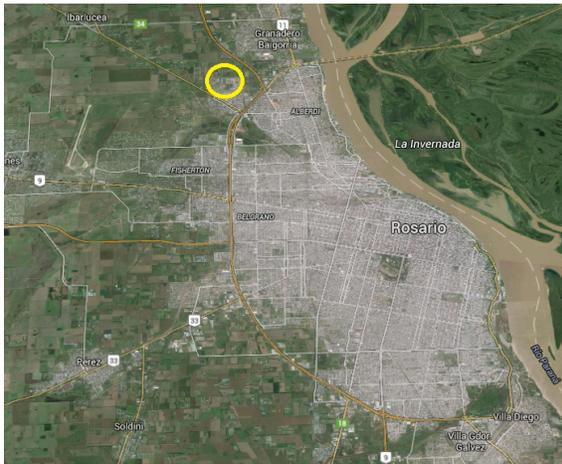
(a) Location in the city

(b) Standard model of houses

2.2   Assignment Method

The first 620 houses built in the area were allocated by means of a public lottery held in the last quarter of 2011. The lottery utilized the usual methodology implemented by the government of the

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[1]Resources were initially provided by the provincial government and later financed by the national government in the frame of the Pluriannual Program of Housing Construction (former Federal Housing Plan II).

province of Santa Fe. Houses were granted to their beneficiaries during 2012.

To be able to be part of the 2011 lottery, beneficiaries had to sign up at the Registry of Permanent Registration (Registro Unico de Inscripción Permanente or RUIP in Spanish) of the province between March and September, from which a list of eligible applicants was created.[2] Among other requirements, applicants had to show that they had a total minimum formal income of \$2,350 per family at the time of registration (\$540 USD, equivalent to the national minimum wage).[3]

In October 2011, 405 houses were allocated among nearly 10,000 eligible applicants from the general public (the remaining 215 spots were reserved for beneficiaries with disabilities and security forces workers). The draw took place in the facilities of the Lottery of Santa Fe, and was broadcast live by the website of the provincial government. More specifically, out of the 9,536 applicants, 405 were selected as beneficiary households (*titulares* in Spanish) and 205 as substitute beneficiaries (*suplentes* in Spanish).

Following the provincial regulations[4], applicants elected by lottery as *titulares* would have the right to be allocated a house provided requirements to obtain the final admission verification were fulfilled, after presenting the necessary documentation to verify the data supplied at the moment of registration in the RUIP. *Suplentes* (substitute households) were elected by lottery in order to cover any eventual vacancy in case those elected as beneficiaries did not meet the necessary requirements.

After verifying that beneficiaries' fulfilled all requirements, a process that included visiting their current residences, reviewing cadastral (real estate) and judicial records, home visits conducted by social workers, houses were granted. This housing allocation took place in different phases during 2012, as their construction was being completed. However, applicants only obtained their property titles in 2014, after a provincial resolution made the legal transfer of houses official. Sale contracts were not signed until the end of 2015. All this process is summarized in figure 4.

Figure 2: Timeline
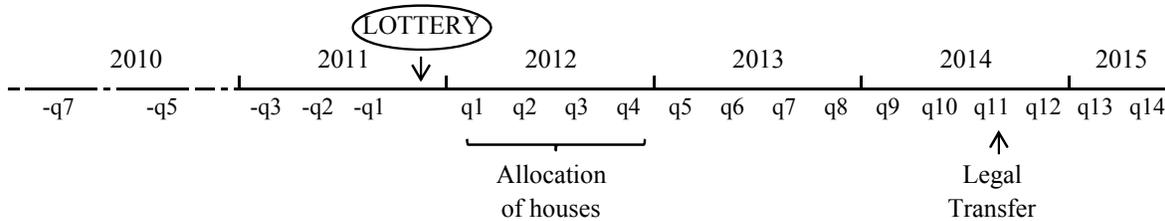
The program's beneficiaries received their houses in exchange for a credit from the province which was similar to the construction cost of the building, and which had to be repaid within a 20-30 year period, depending on household income. In particular, a monthly installment to be paid could not exceed 20 percent of income. According to the contract, those installments would be

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[2]Between March 31st and September 7th of 2011, anupdating of data and registration at RUIP of new applicants was carried out . Between September 5th and September 18th, the provisional list of suitable applicants was published on the provincial government's website and in each of the six Municipal District Centers of Rosario. This allowed wrongly excluded applicants to claim accordingly. On October 20th the final list was made public.

[3]Applicants should meet the following requirements, namely: be over 18 years of age, have a permanent family group, work or live in the city of Rosario and show that they received income from the state. Additionally, applicants could not be owners of other property, nor be beneficiaries of another housing scheme of any other government.

[4]Rules for the Allocation, Tenure and Use of Social Housing (Resolution 2198/2001).

annually adjusted following the evolution of the construction and salary index, although beneficiaries would not have to pay interest for the financing of the debt.

Due to administrative delays, beneficiaries who received their houses in 2012 did not start to pay monthly installments until the end of 2015. This means that they occupied the properties, but did not make any payment for three years. In practice, the program meant an implicit wealth and income transfer to the beneficiaries, in addition to easing access to housing financing costs.

2.3 Data Sources and Sample Characteristics

2.3.1 Administrative Data Sources

The first part of our analysis is based on administrative records from different government offices. We use lottery data for lottery winners, losers and replacements, which includes the list of applicants participating in the lottery, the list of applicants selected as *titulares* and *suplentes* (made public by the government of Santa Fe), and the resolution in which the transfer of housing was made official and legally binding.[5]

The registry of applicants eligible for the 2011 lottery for the 405 houses available to the general public was built upon the 9,536 applicants registered in the Registry of Permanent Registration (RUIP) of the city of Rosario. Data available for each of these households includes the identity of the family member that registered with the provincial government and her spouse. However, it does not include any information about other family members. When one counts both spouses, the registry of eligible applicants contains 17,231 individuals.

Even though there are other small programs with lotteries in the province of Santa Fe, and other jurisdictions also follow the same policy for the allocation of housing beneficiaries, we selected the 2011 Area Zero lottery based on two objectives. First, it provides a sample large enough to statistically identify the possible causal effects of the program over a set of outcomes. Secondly, the available data for Area Zero's lottery allows us to evaluate possible differential effects and reallocations within the household, since we are able to observe the effects of the program on both spouses.

The first set of estimations are based on a strategy similar to that used by Hirshleifer et al. (2014) or by Alzúa et al. (2016)[6] by making use of the administrative records of registered employment of the Integrated Social Argentine System (SIPA in Spanish) from the National Social Security Administration (ANSES in Spanish). We focus only on individuals who participated in the lottery of 405 houses available to the general public since, given the different characteristics of the other groups (i.e. policemen and the individuals with disabilities), we would not be able to rule out the existence of different employment patterns for these special beneficiaries. Furthermore, we restrict our sample to those households whose applicants (both spouses) have registered in the RUIP and have a valid identification number associated with their employment records. Out of the 7,695 couples registered as eligible candidates, we have data for 301 *titulares* and for 209 *suplentes*. We also have access to a random sample of the control group (i.e. registered couples that did not get selected as beneficiaries in the lottery), which is about twice the size of the beneficiary group's sample. Together, our evaluation sample contains 1,600 couples, or 3,200 individuals.

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[5]Resolution 2492/2014.

[6]In Alzúa et al. (2016), administrative records are used to complement the information provided by surveys in the evaluation of Entra21, an active labor market policy directed at Argentina's youth.

2.3.2 Administrative Sample Characteristics and Experimental Balance

The following table indicates the number of households available in the evaluation sample.

Table 1: Elegible Couples and Couples in the Evaluation Sample

Random groups	Elegible Couples	Couples in the Evaluation Sample
Titular=1	317	301
Suplente=1	213	209
Control group	7,165	1,090
N	7,695	1,600

For that evaluation sample, we have data information on registered employment from SIPA registers for 21 quarters between 2009 and 2015 (7 quarters previous to the lottery and 14 quarters after the lottery and up until the second quarter of 2015). For simplicity's sake, and to be able to interpret results in terms of our relevant timeline, each quarter will be referred to according to the amount of quarters before and after the lottery, as shown in 2.

The last quarter available (i.e. the 2nd quarter of 2015) allows us to evaluate the program's potential effects almost three years after the lottery and over two years after the allocation of the houses.

In table 2 we show the number of women and men that signed and registered in the Registry of Permanent Registration (RUIP) for the lottery. We observe that, for our three groups, women were twice as likely to sign up for the lottery as their male counterparts.

Table 3 shows balance results between beneficiaries and non-beneficiaries (i.e. between *titulares*, *suplentes* and control groups) in the only observable pre-treatment characteristics, the applicants' age at the time of the lottery, and in the employment outcomes previous to the lottery. The sample of beneficiary couples is balanced with respect to the control group in terms of applicants' age and in terms of pre treatment employment outcomes.

2.3.3 Survey Sample Characteristics and Experimental Balance

In order to understand the mechanisms behind the Social Housing Policy in Santa Fe's labor results and its welfare implications, we conducted a purposely-designed survey. All in all, we surveyed a sub-sample made up of 1572 individuals (815 couples) from the *titulares*, *suplentes* and control groups in December 2015 (i.e., 4 years after the housing allocation).[7]

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[7]The sub-sample of controls was selected randomly, while we tried to survey as many effective cases as possible from the treatment group.

Table 2: Registrations by Gender

Enrolled at RUIP	Women	Men	Total
Titular	225	92	317
Suplente	141	72	213
Control	4,918	2,247	7,165
N	5,284	2,411	7,695

Table 3: Balance in age and pre-treatment employment outcomes (evaluation sample)

	Age at lottery (1)	Employed in Q=-9 (2)	Employed in Q=-5 (3)	Employed in Q=-1 (4)	Always Employed (5)	Some Q Employed (6)	Sum of Qs Employed (7)
Titular=1	0.741	-0.016	0.007	-0.013	-0.015	0.005	-0.053
	[0.667]	[0.019]	[0.019]	[0.019]	[0.019]	[0.020]	[0.115]
Suplente=1	0.677	-0.020	0.005	-0.017	-0.007	0.004	-0.039
	[0.819]	[0.024]	[0.022]	[0.022]	[0.023]	[0.023]	[0.142]
N	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Mean Cont.	39.684	0.484	0.511	0.531	0.395	0.601	3.573

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group. Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 4 indicates the number of surveyed households in comparison to the number of households in the evaluation sample.

Table 4: Survey sample size relative to evaluation sample

Random groups	Couples in Evaluation Sample	Couples in Survey Sample
Titular=1	301	102
Suplente=1	209	104
Control group	1,090	609
N	1,600	815

Table 5 shows balance results between beneficiaries and non-beneficiaries (i.e. between *titulares*, *suplentes* and control groups) in applicants and partners' previous employment status, education level, age at the time of the lottery and gender.

Table 5: Balance in age and pre-treatment employment outcomes (survey sample)

	Employment Pre		Educ		Partner's Educ		Gender	Age
	Surveyed	Partner	Middle	High	Middle	High	Male	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Titular=1	-0.012	-0.005	0.021	-0.008	0.026	-0.026	0.011	1.358
	[0.028]	[0.028]	[0.039]	[0.037]	[0.039]	[0.045]	[0.007]	[1.524]
N	1,572	1,572	1,572	1,572	1,572	1,572	1,572	1,572
Mean Cont.	0.507	0.507	0.322	0.205	0.312	0.460	0.500	50.33

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group.
Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.
Employment Pre is the average employment in pre-lottery quarters.
Middle education: complete highschool. High education: from incomplete university studies. Low education
(incomplete highschool or less), not included in this table, is also balanced.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

3   Estimation

Since the housing allocation policy in the province of Santa Fe was implemented by means of a lottery using an applicant registry, this random rule can be exploited to evaluate the social housing policy impact in that province. The basic methodology consists in identifying the Intention to Treat parameter (ITT) by comparing average employment levels of the elected *titular* and *suplentes* couples (i.e. the treatment groups) with those of the couples that did not get selected in the lottery (i.e. the control group).

To compute differences in outcome Y_i (employment rate, for example) between groups, we estimate the following OLS model:

$$Y_i = \alpha + \beta t_i + \delta s_i + \mu_i \tag{1}$$

Where regressors of interest are the binary variables that identify randomly assigned applicants as *titulares* (t_i) and *suplentes* (s_i). This basic model is implemented in the first panel of tables 3 and **??** and figures in section 4.1.

On the other hand, to compute potential heterogeneous effects of the program, we can estimate the following model:

$$Y_i = \alpha + \beta t_i + \delta s_i + \gamma t_i * (D_i - \bar{D}) + \rho s_i * (D_i - \bar{D}) + \mu_i \tag{2}$$

Where D_i is an indicator of group and $\bar{D}$ is the mean of this indicator in the whole sample. The use of this specification does not change estimation of causal effects for the whole sample ($\hat{\beta}$ y $\hat{\delta}$) and allow us to get the difference in outcomes for each of the groups in the coeficientes γ and ρ.

On the other hand, since we have a list of the beneficiary households that were effectively allocated a house among the households included in the evaluation sample, we can estimate the effect of the Local Average Treatment Effect (LATE), using the results of the lottery as an instrument for the allocation of houses (Angrist et al., 1996).

Table 6: LATE First Stage

Lottery Result	Assigned=1	First Stage
Titular=1	480	0.794***
Suplente=1	90	0.212***
Control	8	0.004
N	578	3,200

Note: First Stage results are computed by regressing our assigment variable
(Asignado=1) in the two binary variables that identify selected groups
in the lottery (Titular=1 and Suplente=1). [* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

The effective allocation of housing can be related to households' characteristics, but being selected as titular or suplente in the lottery is completely exogenous and explains variability in the effective allocation variable. Our first stage, shown in table 6, presents the coefficients of a regression of a binary variable that indicates whether households received a house (Asignado=1) on the two lottery status variables.

In order to exploit the temporal dimension of available data, we also estimate time series models of the form (McKenzie, 2012):

$$Y_{i,t} = \delta_t + \beta t_i + \delta s_i + \theta \overline{Y}_{i,pre} + \mu_{i,t} \tag{3}$$

Where $\overline{Y}_{i,pre}$ summarizes the pre-treatment outcome path in terms of the main outcome, taking the average of the 7 available quarters, and δ_t is a vector that includes quarter fixed effects for post-treatment periods included in the estimation.

4 Results

4.1 Administrative Data

The labor market outcomes analyzed in this section exploit the registered (formal) employment records from the social security datablase (SIPA), compiled by the social security administration (ANSES). The main outcome is individual registered employment, which includes public sector salaried employees as well as federal and provincial public sector employees, and employees in private households (domestic service). Although the available data does not allow us to observe the evolution of informal employment, which is above 30 percent in Argentina, according to the SEDLAC database (CEDLAS and World Bank), we use the most comprehensive definition of registered employment. Moreover, as households had to show, they had a registered income of $2,350 (Argentine pesos) to be a part of the eligible pool of candidates for the lottery, the incidence of informal employment is expected to be much lower in this sample.

Figure 4 in the appendix shows the evolution of registered employment before and after the lottery for individuals in the *titulares* group and for those in the control group. Registered employment levels are similar for both groups before the intervention, but they start to diverge after the lottery, specially two years after the housing allocation. The graph on the right allows us to evaluate if those differences are statistically significant, based on a linear regression of the labor outcomes for each period on the two binary variables that identify both groups of *titulares* and *suplentes*.[8]

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[8]Results for *suplentes* are omitted from Figures, although they form part of the regression estimates.

We present labor outcomes for men and women in the lower panels of Figure 4. Figures 5 and 6, on the other hand, show outcomes for applicants of different ages (being the cutoffs 40 and 50 years old).

Table **??** presents a summary of results for different specifications in order to test robustness. In all of them we get consistent results: that is, they are robust to different alternatives and indicate, in every case, a statiscally significant and economically relevant reduction in employment for households benefited from the housing policy.

Columns 1 to 4 of the table present the effects on registered employment at one, two or three years after the lottery; whereas, columns 5 to 7 show these results for three variables that summarize the whole post-lottery employment trajectory (i.e., if the applicant was always employed throughout the 14 quarters for which data is available, if the applicant was ever employed during that period, and the number of quarters during which the applicant was employed).

The probability of being employed two years after the housing allocation is between 4 and 5 percent lower for *titulares*, which is equivalent to an employment reduction of over 7 percent due to the housing policy.

From the gender and age heterogeneous effects analysis, shown in the lower panels of Table **??**, two notorious results can be observed. First, although the reduction in employment for *titulares* is similar for both men and women, the effect for women implies an employment fall of about 15 percent (since the female labor supply is much lower than male labor supply). Moreover, the program's effect is much higher for older individuals; in fact, it implies an employment fall of over 20 percent for individuals over 50 years old.

The main feature of our evaluation sample is that we do not analyze men and women's isolated outcomes but household's joint outcomes, since couples share the same household. If the effects for men and women were not related to intra-household joint decisions, we might observe a simple rearrangement between working men and women, but not an effect on the working profile of the couple as a whole.

Figure 7 presents an analysis of these joint effects, and it can be observed that the program has a visible impact on the share of households for which both spouses are employed and on the share of households for which none of the members are employed as well; whereas we observe no differences in the shere of households where only one member is employed. This housing policy seems to generate an economically signicant increase of over 30 percentage points in the share of households in which none of the members work.

4.2 Households Survey

4.2.1 Household Structure and Welfare

We are interested in testing different mechanisms that could be driving the decline in formal employment. One of the possible explanations is that the income effect generated by the policy might affect household dynamics, as we observe a greater decline in female employment relative to male employment. In particular, we would like to know if, after the wealth shock, beneficiary households changed their fertility decisions. If this was the case, it could be interpreted as a positive welfare effect. In order to be able to answer this question, we collected information on households' structure and composition and their changes in the post-policy period.

In table 8, we present a preliminary survey analysis that shows that beneficiary households have a relative probability higher than 94pp of owning a house from a social program (TOT) and a 43pp

Table 7: Effects on Employment Outcomes

	Employed in Q=4 (1)	Employed in Q=8 (2)	Employed in Q=12 (3)	Employed in Q=14 (4)	Always Employed (5)	Some Q Employed (6)	Sum of Qs Employed (7)
Titular=1	-0.017	-0.057***	-0.045**	-0.044**	-0.053***	-0.023	-0.471*
	[0.020]	[0.021]	[0.021]	[0.022]	[0.020]	[0.019]	[0.246]
Suplente=1	-0.016	-0.001	0.005	-0.004	-0.019	-0.001	-0.042
	[0.024]	[0.024]	[0.025]	[0.025]	[0.024]	[0.023]	[0.288]
N	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Mean Cont.	0.552	0.575	0.557	0.552	0.411	0.690	7.853
Females							
Titular=1	-0.003	-0.047	-0.061**	-0.052*	-0.030	-0.036	-0.449
	[0.030]	[0.031]	[0.030]	[0.031]	[0.026]	[0.033]	[0.377]
Suplente=1	0.018	-0.007	-0.001	-0.019	-0.006	-0.010	-0.004
	[0.035]	[0.036]	[0.036]	[0.036]	[0.031]	[0.038]	[0.446]
N	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.312	0.366	0.370	0.368	0.217	0.498	4.861
Males							
Titular=1	-0.032	-0.067**	-0.030	-0.035	-0.075**	-0.009	-0.494
	[0.028]	[0.029]	[0.029]	[0.030]	[0.032]	[0.022]	[0.332]
Suplente=1	-0.051	0.005	0.012	0.011	-0.032	0.007	-0.080
	[0.033]	[0.031]	[0.033]	[0.033]	[0.037]	[0.024]	[0.370]
N	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.793	0.784	0.744	0.736	0.606	0.883	10.846
Younger than 50							
Titular=1	-0.007	-0.047**	-0.032	-0.030	-0.044**	-0.014	-0.319
	[0.021]	[0.022]	[0.022]	[0.023]	[0.021]	[0.020]	[0.248]
Suplente=1	-0.017	0.005	0.015	-0.000	-0.020	0.007	-0.012
	[0.027]	[0.026]	[0.027]	[0.027]	[0.026]	[0.024]	[0.312]
N	2,716	2,716	2,716	2,716	2,716	2,716	2,716
Mean Cont.	0.567	0.586	0.568	0.565	0.417	0.711	8.026
Older than 50							
Titular=1	-0.076	-0.113*	-0.116*	-0.119*	-0.102*	-0.070	-1.299
	[0.058]	[0.064]	[0.064]	[0.064]	[0.055]	[0.064]	[0.800]
Suplente=1	0.009	-0.013	-0.019	-0.000	-0.008	-0.006	0.091
	[0.066]	[0.064]	[0.066]	[0.066]	[0.063]	[0.063]	[0.848]
N	484	484	484	484	484	484	484
Mean Cont.	0.465	0.513	0.494	0.475	0.380	0.570	6.832

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group.
Regressions do not include any additional control. Standard errors (in brackets) are clustered by household
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

lower probability of renting. There is no significant difference in the probability of currently paying for the house. Beneficiary households have more rooms per member (0.11) and report a subjective increase in life quality in the last five years.

In table 9, we explore fertility decisions of beneficiary households. For this, we asked whether they had any children younger than 4 years old. A significant (and positive) difference with respect to the control group may be interpreted as evidence in favor of the hypothesis of fertility's rescheduling. In other words, in the post-policy period, beneficiary households might have had more children than the control group.

Table 8: House property, infraestructure and life quality

| | Rooms/Members | House Property | | | | Quality of Life |
| | | Owns | Social House | Is Paying | Rents | |
	(1)	(2)	(3)	(4)	(5)	(6)
ITT	0.082*	0.659***	0.730***	-0.008	-0.335***	0.143***
	[0.044]	[0.041]	[0.043]	[0.021]	[0.035]	[0.055]
TOT	0.107*	0.852***	0.944***	-0.011	-0.435***	0.187**
	[0.057]	[0.040]	[0.033]	[0.027]	[0.043]	[0.074]
N	809	815	815	815	815	1,383
R-squared	0.013	0.248	0.486	0.002	0.054	0.010
Mean Cont.	0.452	0.154	0.0250	0.0480	0.424	0.388

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group. Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

However, even though the coefficients for the ITT and TOT are relatively large (-6pp and -7.8pp, respectively), the difference in the probability of having children less than 4 years old , with respect to the control group, is not statistically significant. In any case, the results would go against the hypothesis mentioned above: beneficiary households would be having fewer children after the policy (or postponing their fertility choices).

The effect on the size of the household, as measured by the number of household members, not only does not run in the same direction, but it is also considerably larger and significant: beneficiary households seem to have fewer members than those in the control group (-0.45 for the ITT and -0.58 for the TOT).

Furthermore, in order to delve into welfare implications, we inquired about the household's level of satisfaction with the neighborhood and the house. Even though we do not find significant differences in the former case, we do observe that beneficiary households are more satisfied with housing: this difference implies an intention to treat effect of 28pp and it adds up to almost 36pp for the treatment on the treated.

On the other hand, the probability of having made any improvements to the house –an indirect indicator of satisfaction and welfare- was more than 15pp higher for the treated group (ITT) and almost 20pp when we calculate the treatment on the treated.

4.2.2 Levels of Activity and Welfare

Another feasible theory behind the registered decline in formal unemployment could be an increase in informal employment, as opposed to a decline in labor force participation. It is worth noting that, from the household's perspective, implications on welfare are not deterministic.

On the one hand, an increase in informality could imply a positive impact due, for example, to an increase in labor flexibility. In order to look into these issues and go beyond our results for formal employment, we included some questions about the level of activity of the households in the post-policy period. We present these results in table 10.

In the post-policy period, we observe that beneficiaries have a 7pp lower probability of having a formal job (-9pp in the TOT). These results are very similar to the ones found with administrative

Table 9: Household Structure and Welfare

	Household		Satisfaction		
	Children<4	Members	Neighborhood	House	Improvements
		(1)	(3)	(4)	(5)
ITT	-0.060	-0.450***	0.067	0.277***	0.154***
	[0.053]	[0.155]	[0.050]	[0.041]	[0.050]
TOT	-0.078	-0.585***	0.088	0.359***	0.199***
	[0.068]	[0.200]	[0.066]	[0.057]	[0.063]
N	1,572	815	815	815	815
Mean Cont.	0.444	4.842	0.609	0.567	0.209

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group.
Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

data, which could imply that it has to do with labor force participation, as opposed to informality issues. In fact, if we condition on having a job, the difference is not significant anymore.

Moreover, the probability of being without a job but looking for one (i.e. being unemployed) is statistically similar for beneficiary and control households. However, we do observe that beneficiaries have a much higher probability of being inactive (not working and not looking for a job): 5.8pp in the ITT and 7.6pp in the TOT. These coefficients are, again, very similar to those found with administrative data for formal employment.

In order to be able to translate these results in terms of a household's welfare, we asked members about their level of satisfaction with their daily activities. Our results indicate that beneficiary individuals have a much higher probability of being satisfied (8.7pp in the ITT and 11.3pp in the TOT), which could be an indicator of an increase in welfare despite (or even due to) the fall in labor force participation. That is, beneficiary households work less on average, are not searching for a job, and are more satisfied with their activity levels. This result could be related to prior labor conditions and reflect an increase in leisure consumption because of the policy (i.e. income effect).

Table 10: Levels of Activity and Welfare

	Level of Activity				Satisfaction
	Formal/works	Formal	Unemployed	Inactive	
	(1)	(2)	(3)	(4)	(5)
ITT	-0.031	-0.070*	0.008	0.058*	0.087***
	[0.042]	[0.037]	[0.025]	[0.031]	[0.028]
TOT	-0.035	-0.090*	0.009	0.076*	0.113***
	[0.052]	[0.049]	[0.033]	[0.041]	[0.036]
N	1,194	1,572	1,572	1,572	812
Mean Cont.	0.750	0.750	0.108	0.124	0.854

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group.
Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

In table 11, we show these employment results have to do with both members of the couple being more inactive (4,5pp ITT and 5.8pp TOT), as opposed to only one of the members having left the workforce.

Table 11: Levels of Activity for the Couple

	Both work	Both worked (one doesn't)	Both unemployed	Both inactive
	(1)	(2)	(3)	(4)
ITT	-0.080	0.078	0.010	0.045*
	[0.055]	[0.049]	[0.015]	[0.025]
TOT	-0.103	0.100	0.013	0.058*
	[0.072]	[0.063]	[0.020]	[0.034]
N	1,514	1,506	1,514	1,514
R-squared	0.004	0.004	0.001	0.011
Mean Cont.	0.569	0.196	0.0110	0.0180

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group.

Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

4.2.3 Local Opportunities

The observed fall in formal employment could be reflecting a general worsening in labor market results if local opportunities were reduced because of re-allocation of households. This could be related, in turn, with the loss of social capital and labor connections. To be able to answer these questions, we asked about their perception about local opportunities in their current and previous neighborhoods.

Results are shown in Table 12. We find that beneficiary households have a greater probability of reporting difficulties in finding a job in case of need (7.9pp in the ITT and 10.3pp in the TOT). In fact, beneficiaries would have found it easier to find a job in their old neighborhoods and more difficult in their new neighborhoods, as shown in column 3. We do not find significant differences in self-reported difficulty to ask either for help or money from a neighbor, given their current location.

Table 12: Local Opportunities

	Find a Job			Easy to Ask a Neighbor	
	Difficult Before	Difficult After	Easy Before Difficult After	For Help	For Money
	(1)	(2)	(3)	(4)	(5)
ITT	-0.105*	0.079**	0.144***	0.078	0.015
	[0.055]	[0.039]	[0.055]	[0.050]	[0.046]
TOT	-0.135*	0.103**	0.187***	0.102	0.020
	[0.069]	[0.050]	[0.070]	[0.064]	[0.060]
N	769	779	740	805	799
Mean Cont.	0.553	0.787	0.787	0.228	0.225

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group.

Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

A possible explanation for this increase in the perceived difficulty of finding a job might have to do with the loss of connections and increase in commuting time due to relocation. In order to

test this hypothesis, we first computed commuting time to the city center for both beneficiaries and control groups. We find that beneficiaries have a much larger probability of being more than twenty minutes away from the city center, where most jobs are located in Rosario (and ITT of 6.2pp and a TOT of 7.5pp). We also computed the number of blocks to their closest relative, as defined by the relative they visit the most. In this case, we find that beneficiares have a higher probability of being more than 20 blocks from their relatives in their current location (and ITT of 1.9pp and a TOT of 2.4pp).

Table 13: Commuting Time and Connections

	Commuting Time to City Center	Blocks to Closest Relative
	(1)	(2)
ITT	0.620***	0.189***
	[0.041]	[0.025]
TOT	0.750***	0.244***
	[0.041]	[0.032]
N	994	1,572
Mean Cont.	0.264	0.670

Note: The Table presents results for the Titular=1 and Suplente=1 groups in relation to the control group.

Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

5 Mechanisms and Interpretation

The goal of our survey was to understand the cause of a reduction in formal employment among beneficiaries of the social housing policy in Santa Fe. Since understanding mechanisms involves testing multiple hyphotesis, and most outcomes are related (i.e. they proxy for a broader outcome or channel), we face multiple inference problems. We implement a Multiple Comparison test as proposed by List et al (2015) in table 23. In general, our main results hold.[9]

First, we do not find a change in household fertility patterns. In fact, beneficiary households seem to be having fewer children in the post-policy period, though the difference is not significant. However, we find that beneficiary households have fewer members than the control group and the effect is important in magnitude (-4.5); an effect that could be interpreted in the light of the literature related with property rights.

In particular, Galiani and Schargrodky (2010) find that property rights increase housing investment and reduce household size, both through a reduced fertility of households' heads and a diminished presence of extended family members. The authors explain these observed effects with different reasons. In particular, they argue that the access to insurance markets and pension systems can protect people during bad times and retirement. Households that do not have access to these forms of insurance try to cover with other means, such as extended family or using children as future insurance. They interpret the use of housing investment as a saving tool, securing shelter for the old and potentially improving credit access, which should reduce the need for an extended family.

Another reason they provide is the fact that the lack of property rights may be linked with the inability to prevent relatives from residing in their houses because of bargaining power issues, or impede the division of wealth among family members. The former might force claimants to live together and retain usufructuary rights.

As for household's welfare, we find beneficiaries are much more satisfied with their housing, both directly and indirectly (as implied by the fact they made more housing improvements in the post-policy period).

Another hypothesis could be related to a potential increase in labor informality, as opposed to a fall in labor force participation. However, we do not find a significant difference in the probability of having a formal job.. In fact, we find beneficiaries have a much higher probability of being inactive: not working and not looking for a job. This effect is 5.8pp in the ITT and 7.6pp in the TOT. This could imply that we are facing a labor force participation effect, as opposed to informality issues and is consistent with the literature behind wealth and income effects. Cesarini et al. (2015), for instance, find that winning a lottery prize (a positive income shock) reduces labor earnings, with the reduction being immediate and persistent. Beneficiary individuals are much more satisfied with their levels of activity. All in all, these results could be indicating an increase in leisure consumption because of the housing policy, interpreted as a positive income shock.

This increase in inactivity could be related to relocation in the province and a consequent loss of connections and increase in commuting time. In fact, we find that beneficiary households are now further away from their relatives and their commuting time has significantly and considerably increased.

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[9]We also replicate estimations of ITT and TOT effects including covariates shown in table 5. Point estimates remain virtually the same. These results are available upon request.

6 Conclusion

Understanding the behavioral effects of policies that ease access to housing is of utmost importance, since such programs are seen as an important tool to help poorer individuals living in developing countries. While there have been some progress in the assessment of such effects evidence is still small.

Despite the role of housing in a household's welfare, the importance of the housing deficit in Argentina and the magnitude of the public expenditure destined to the construction of subsidized housing, the empirical evidence of the effects of housing policies in Argentina remains particularly scarce. This project tries to fill that gap by evaluating a housing policy program in Argentina by looking at the labor supply effects. In order to obtain causal estimates, we exploit the lottery used by the government to choose among eligible beneficiaries.

The analysis conducted with administrative records indicates that the negative effect on registered employment is large and stable over time. The policy generates an employment reduction of over 7 percentage points, concentrated mainly on women and on individuals over 50 years old.

These results are consistent with the hypothesis that the effects of an implicit subsidy on the cost of housing are heterogeneous for groups with different income elasticities in their labor supply. We also present evidence that the program affects employment decisions in the home, as effects on the joint profile of employment of the couple are identified.

Given that this first analysis exploited access to administrative records, these effects only applied to registered employment. We implemented a purposely-designed survey in order to uncover the mechanisms behind the change in labor supply. This survey included questions that allowed us to evaluate effects on informal work, unemployment, and inactivity, and explore possible channels through which these labor market effects took place. Other aspects of a household's welfare possibly affected by the intervention were also evaluated, such as beneficiaries' satisfaction or housing conditions, since those are some of the explicit objectives of subsidized housing policy.

The survey asked broadly about the employment situation of participants in the lottery, including questions about informality, hours of work, type of activity, entrepreneurship, reasons for inactivity of those individuals who do not work, perceptions about the ability to get a new job in relation to the neighborhood where they live, besides questions about their housing situation, their social ties in the neighborhood and their level of satisfaction. We included questions about the labor market situation of individuals, which asked to both members of couples, to establish possible heterogeneous effects by gender within the household and their relation to the bargaining power of women, among other related issues.

Using survey data, we found that the program participation is associated with a reduction in households' labor participation, as opposed to an increase in informality. Furthermore, beneficiaries show a higher satisfaction with their new labor force status. This is consistent with the literature related to positive wealth and income effects.

Finally, we also found that the location of the new residence, farther away from the city center where most of the jobs are located, is one of the main barriers to accessing a new job. This last finding points to the importance of frictions arising from residential reallocation and should be considered when designing housing programs.

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A   Appendix

Table 14: Eligible couples in the lottery and Evaluation Sample

Random Groups	Total	Sample	Check
Titular=1	317	301	
Suplente=1	213	209	
Control group	7,165	1,090	6,885
N	7,695	1,600	7,395

Table 15: Balance in Evaluation Sample of Control Group

	Age (1)	Age Groups (2)	Employed in Q=-5 (3)	Employed in Q=11 (4)
Sample=1	-0.170	-0.074	0.003	0.002
	[0.438]	[0.076]	[0.010]	[0.011]
N	13,577	13,770	13,770	13,770
Mean Cont.	48.896	5.416	0.509	0.553

Note: Results from a regression of the dependent variables in the variable
Sample=1, which identifies individuals from the Control Group in the
Evaluation Sample. Standard errors (in brackets) are clustered by household.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Figure 3: Pre and Post-lottery Employment Outcomes
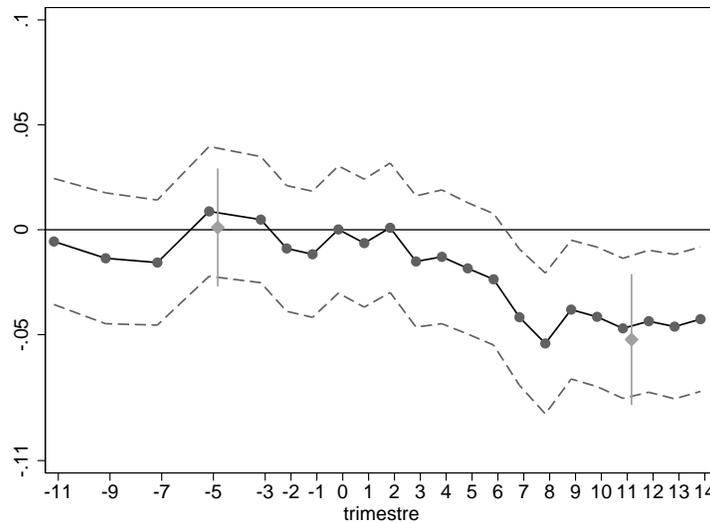
Note: Results for the difference between Titular=1 and control groups for the evaluation
sample (complete series), and for the whole registry of eligible applicants (Q=-5 and Q=11).
Regression without any additional control variable. Confidence intervals at 90 per cent,
with standard errors clustered by household.

Figure 4: Pre and Post-lottery Employment Outcomes by Gender
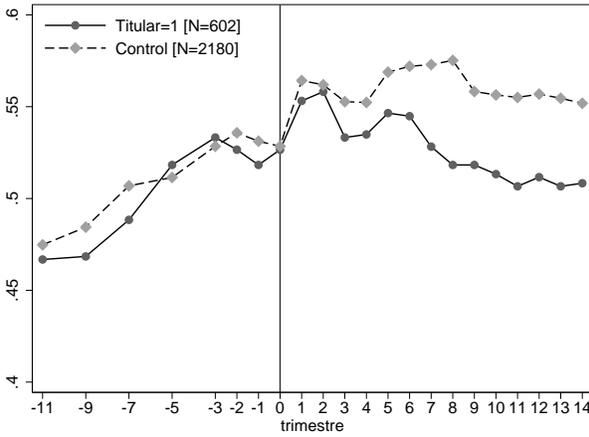
(a) Evolution of Employment Levels
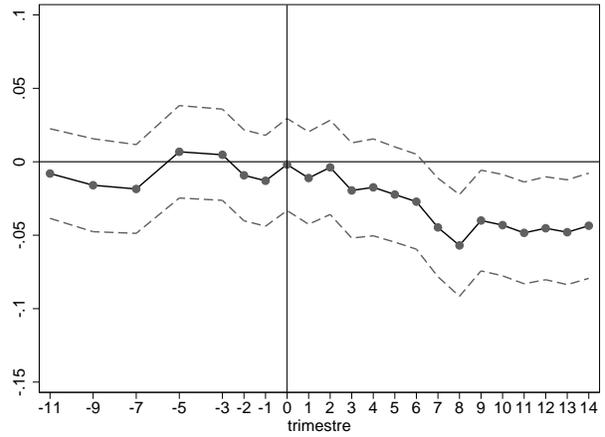
(b) Effects by Quarter
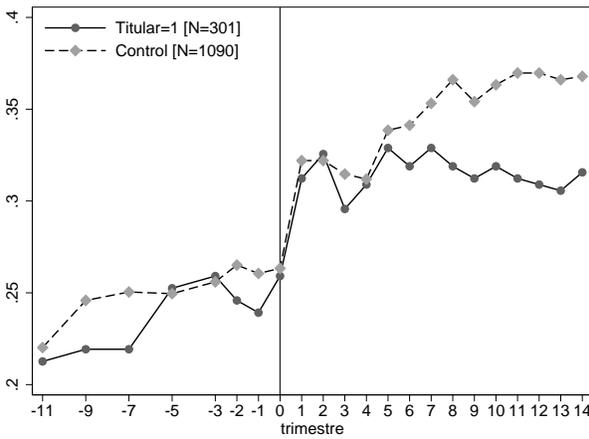
(a) Evolution of Employment Levels for Women
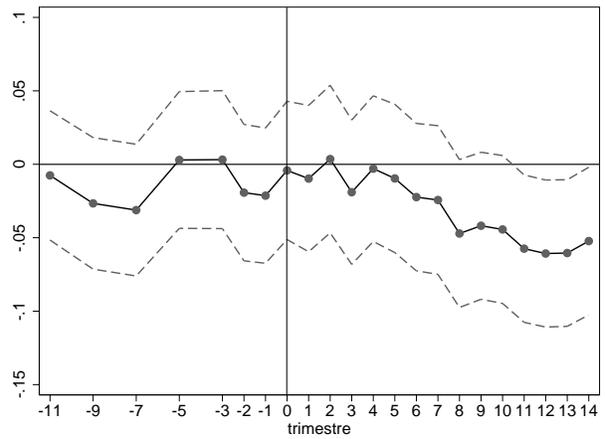
(b) Effects by Quarter for Women
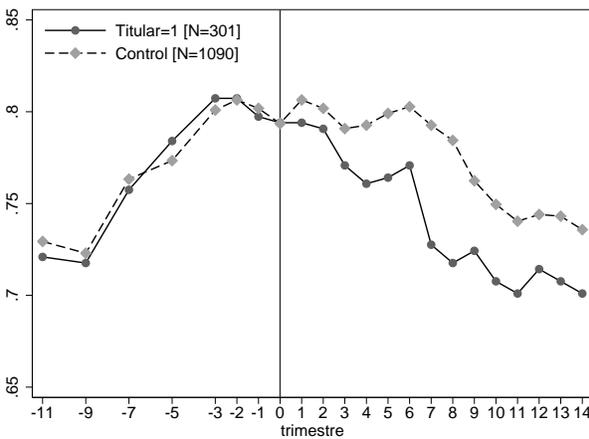
(a) Evolution of Employment Levels for Men
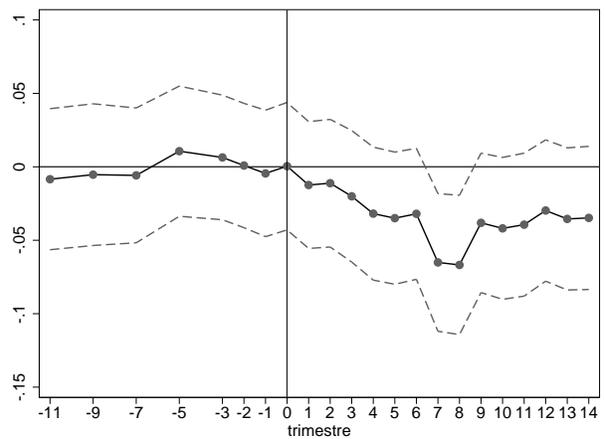
(b) Effects by Quarter for Men

Note: In panel (a), simple averages for each group. In panel (b), results for the difference between groups estimated in a regression without any additional control variable. Confidence intervals at 90 per cent, with standard errors clustered by household.

Figure 5: Pre and Post-lottery Employment Outcomes by Age
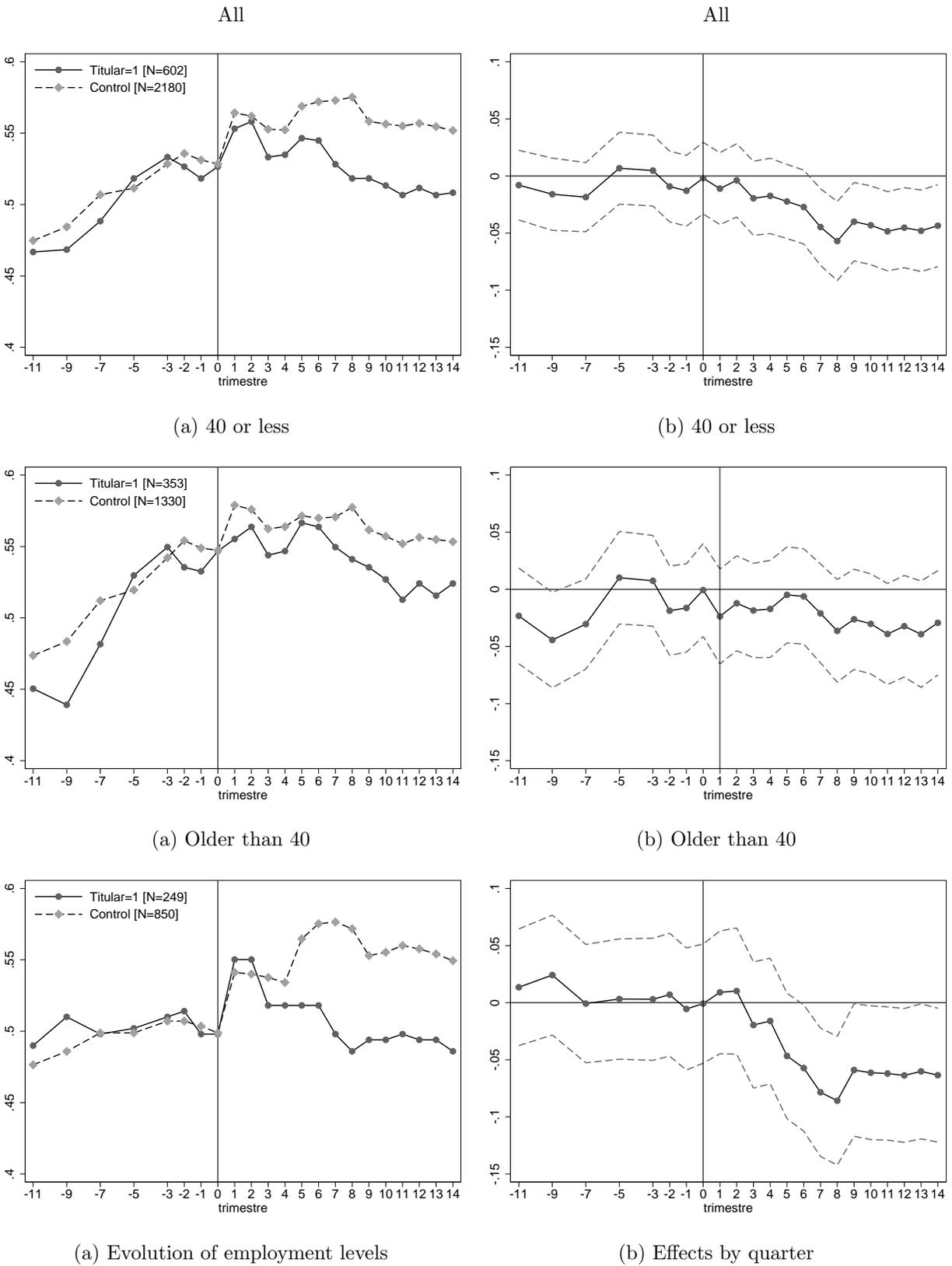
All   All

(a) 40 or less   (b) 40 or less

(a) Older than 40   (b) Older than 40

(a) Evolution of employment levels   (b) Effects by quarter

Note: In panel (a), simple averages for each group. In panel (b), results for the difference between groups
estimated in a regression without any additional control variable. Confidence intervals at 90 per cent,
with standard errors clustered by household.

Figure 6: Pre and Post-lottery Employment Outcomes, by Age (50)
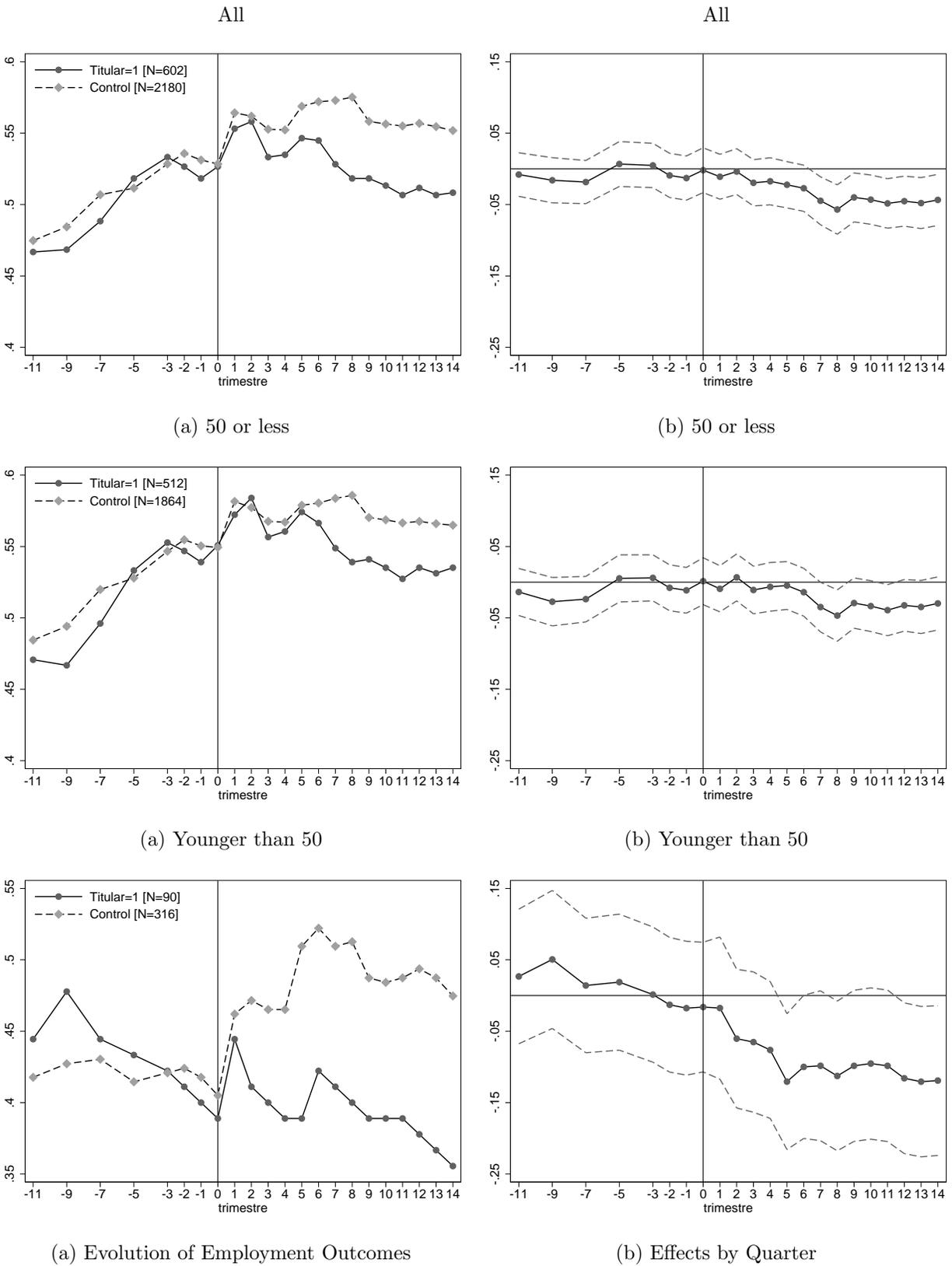
All

(a) 50 or less

All

(b) 50 or less

(a) Younger than 50

(b) Younger than 50

(a) Evolution of Employment Outcomes

(b) Effects by Quarter

Note: In panel (a), simple averages for each group. In panel (b), results for the difference between groups estimated in a regression without any additional control variable. Confidence intervals at 90 per cent, with standard errors clustered by household.

Figure 7: Pre and Post-lottery Employment Outcomes for Couples
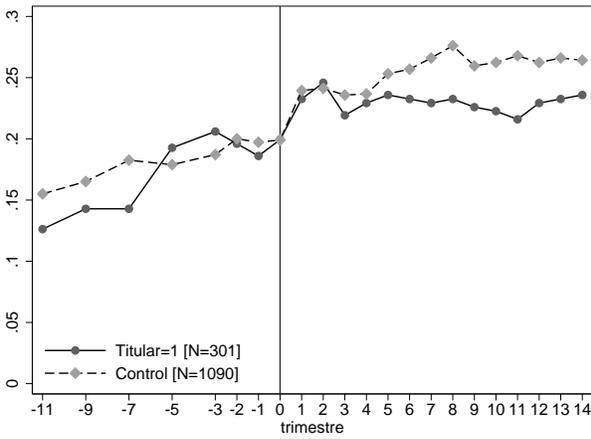
Couples where Both Members are Employed   Couples where Both Members are Employed
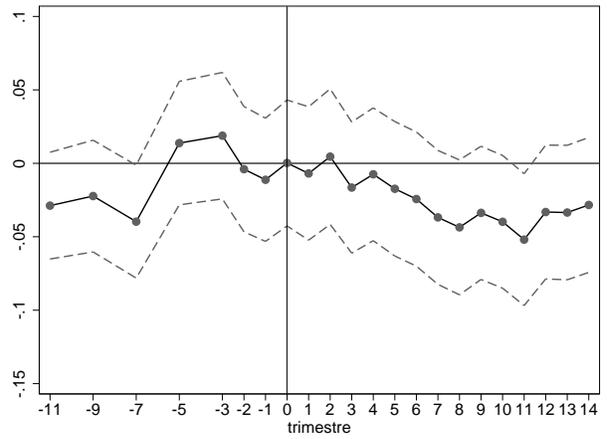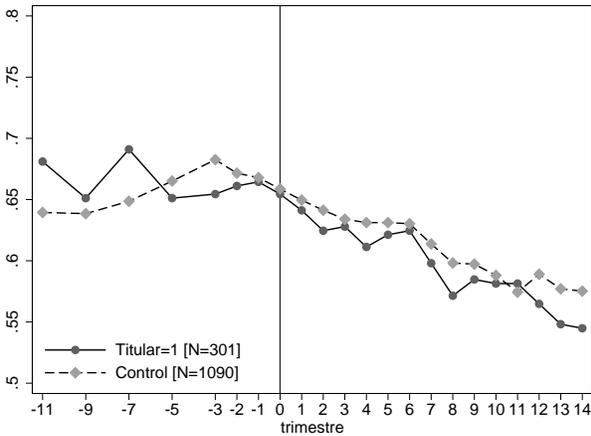
(a) Couples where One Member is Employed   (b) Couples where One Member is Employed
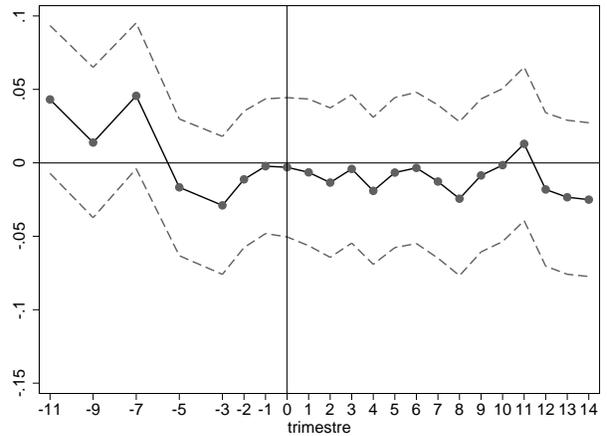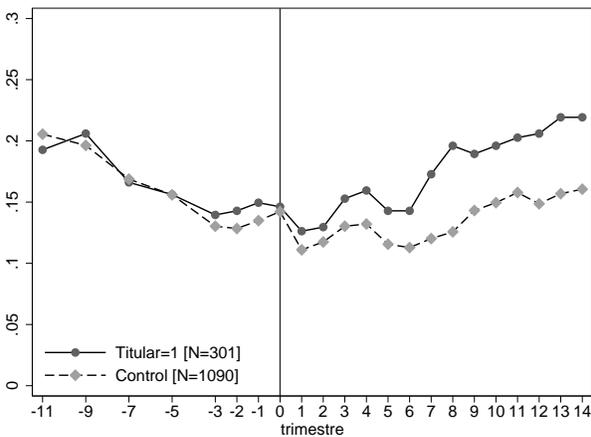
(a) Couples where No Member is Employed   (b) Couples where No Member is Employed
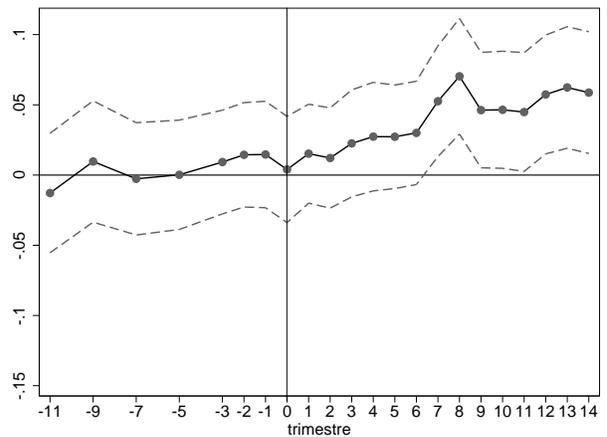
(a) Evolution of Employment Levels   (b) Effects by Quarter

Note: In panel (a), simple averages for each group. In panel (b), results for the difference between groups
estimated in a regression without any additional control variable. Confidence intervals at 90 per cent,
with standard errors clustered by household.

Figure 8: Pre and Post Treatment Labor Outcomes for Couples

Young Couples where Both Members Work

Older Couples where Both Members Work

Young Couples where One Member Works

Older Couples where No Member Works

Young Couples where No Member Works

Older Couples Where No Member Works

Note: Simple averages for each group. Young couple: man is younger than 50 years old.

Figure 9: Households Survey: Distribution Graphs

Satisfaction with Neighborhood

Satisfaction with House

Commuting Time to City Center

Blocks to Closest Relative
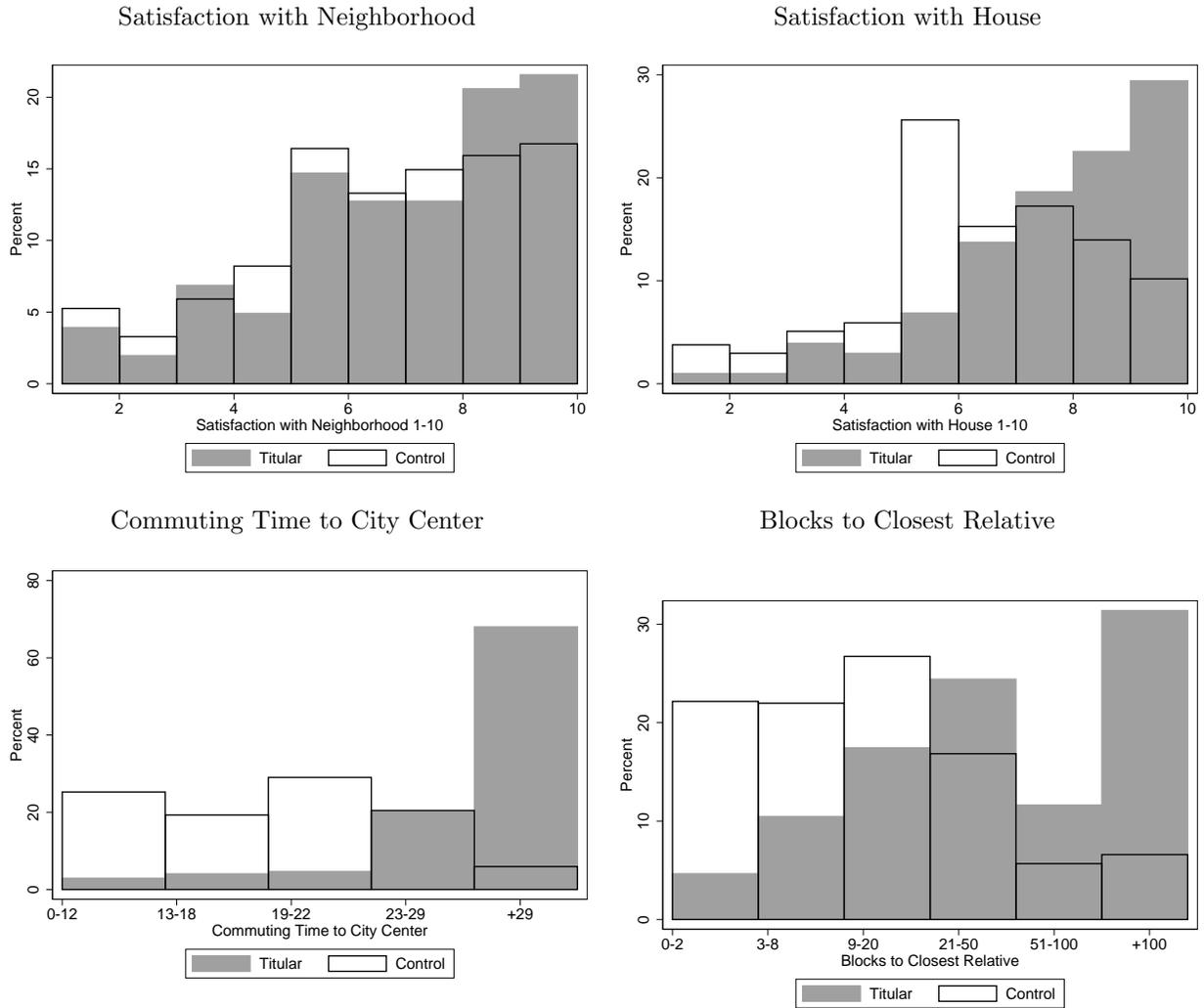
Note: Commuting time to city center is computed as the distance (in minutes) from current neighborhood to the center of Rosario. Source: Google Maps.

Table 16: Effects on Labor Outcomes by Gender Groups

	Employed in Q=4 (1)	Employed in Q=8 (2)	Employed in Q=12 (3)	Employed in Q=14 (4)	Always Employed (5)	Some Q Employed (6)	Sum of Qs Employed (7)
ITT							
Titular=1	-0.017	-0.057***	-0.045**	-0.044**	-0.053***	-0.023	-0.471*
	[0.020]	[0.021]	[0.021]	[0.022]	[0.020]	[0.019]	[0.246]
Suplente=1	-0.016	-0.001	0.005	-0.004	-0.019	-0.001	-0.042
	[0.024]	[0.024]	[0.025]	[0.025]	[0.024]	[0.023]	[0.288]
LATE							
Assigned=1	-0.023	-0.071***	-0.056**	-0.054**	-0.067***	-0.028	-0.590*
	[0.025]	[0.027]	[0.027]	[0.027]	[0.025]	[0.025]	[0.310]
N	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Mean Cont.	0.552	0.575	0.557	0.552	0.411	0.690	7.853
Females							
ITT							
Titular=1	-0.003	-0.047	-0.061**	-0.052*	-0.030	-0.036	-0.449
	[0.030]	[0.031]	[0.030]	[0.031]	[0.026]	[0.033]	[0.377]
Suplente=1	0.018	-0.007	-0.001	-0.019	-0.006	-0.010	-0.004
	[0.035]	[0.036]	[0.036]	[0.036]	[0.031]	[0.038]	[0.446]
LATE							
Assigned=1	-0.003	-0.059	-0.076**	-0.066*	-0.038	-0.046	-0.560
	[0.038]	[0.038]	[0.038]	[0.038]	[0.032]	[0.041]	[0.474]
N	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.312	0.366	0.370	0.368	0.217	0.498	4.861
Males							
ITT							
Titular=1	-0.032	-0.067**	-0.030	-0.035	-0.075**	-0.009	-0.494
	[0.028]	[0.029]	[0.029]	[0.030]	[0.032]	[0.022]	[0.332]
Suplente=1	-0.051	0.005	0.012	0.011	-0.032	0.007	-0.080
	[0.033]	[0.031]	[0.033]	[0.033]	[0.037]	[0.024]	[0.370]
LATE							
Assigned=1	-0.042	-0.083**	-0.037	-0.043	-0.095**	-0.011	-0.620
	[0.035]	[0.036]	[0.037]	[0.037]	[0.041]	[0.027]	[0.420]
N	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.793	0.784	0.744	0.736	0.606	0.883	10.846

Note: The ITT panel presents results for the Titular=1 and Suplente=1 groups in relation to the control group.

In the LATE panel, the allocation (Assigned=1) is instrumented whith the lottery results. Regressions do not

include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 17: Effects on Labor Outcomes by Age Groups

	Employed in Q=4 (1)	Employed in Q=8 (2)	Employed in Q=12 (3)	Employed in Q=14 (4)	Always Employed (5)	Some Q Employed (6)	Sum of Qs Employed (7)
ITT							
Titular=1	-0.017	-0.057***	-0.045**	-0.044**	-0.053***	-0.023	-0.471*
	[0.020]	[0.021]	[0.021]	[0.022]	[0.020]	[0.019]	[0.246]
Suplente=1	-0.016	-0.001	0.005	-0.004	-0.019	-0.001	-0.042
	[0.024]	[0.024]	[0.025]	[0.025]	[0.024]	[0.023]	[0.288]
LATE							
Assigned=1	-0.023	-0.071***	-0.056**	-0.054**	-0.067***	-0.028	-0.590*
	[0.025]	[0.027]	[0.027]	[0.027]	[0.025]	[0.025]	[0.310]
N	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Mean Cont.	0.552	0.575	0.557	0.552	0.411	0.690	7.853
Younger than 50							
ITT							
Titular=1	-0.007	-0.047**	-0.032	-0.030	-0.044**	-0.014	-0.319
	[0.021]	[0.022]	[0.022]	[0.023]	[0.021]	[0.020]	[0.248]
Suplente=1	-0.017	0.005	0.015	-0.000	-0.020	0.007	-0.012
	[0.027]	[0.026]	[0.027]	[0.027]	[0.026]	[0.024]	[0.312]
LATE							
Assigned=1	-0.009	-0.057**	-0.039	-0.037	-0.055**	-0.016	-0.394
	[0.026]	[0.027]	[0.027]	[0.028]	[0.026]	[0.024]	[0.307]
N	2,716	2,716	2,716	2,716	2,716	2,716	2,716
Mean Cont.	0.567	0.586	0.568	0.565	0.417	0.711	8.026
Older than 50							
ITT							
Titular=1	-0.076	-0.113*	-0.116*	-0.119*	-0.102*	-0.070	-1.299
	[0.058]	[0.064]	[0.064]	[0.064]	[0.055]	[0.064]	[0.800]
Suplente=1	0.009	-0.013	-0.019	-0.000	-0.008	-0.006	0.091
	[0.066]	[0.064]	[0.066]	[0.066]	[0.063]	[0.063]	[0.848]
LATE							
Assigned=1	-0.100	-0.152*	-0.157*	-0.158*	-0.137*	-0.093	-1.713
	[0.081]	[0.090]	[0.091]	[0.090]	[0.077]	[0.089]	[1.130]
N	484	484	484	484	484	484	484
Mean Cont.	0.465	0.513	0.494	0.475	0.380	0.570	6.832

Note: The ITT panel presents results for the Titular=1 and Suplente=1 groups in relation to the control group.
In the LATE panel, the allocation (Assigned=1) is instrumented whith the lottery results. Regressions do not
include any additional control. Standard errors (in brackets) are clustered by household.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 18: Effects on Labor Outcomes (Includes Pre-Treatment Controls)

	Employed in Q=4 (1)	Employed in Q=8 (2)	Employed in Q=12 (3)	Employed in Q=14 (4)	Always Employed (5)	Some Q Employed (6)	Sum of Qs Employed (7)
ITT							
Titular=1	-0.016	-0.056***	-0.044**	-0.041**	-0.052***	-0.020	-0.453**
	[0.016]	[0.019]	[0.020]	[0.020]	[0.018]	[0.016]	[0.203]
Suplente=1	-0.017	-0.002	0.006	-0.002	-0.019	-0.000	-0.048
	[0.019]	[0.022]	[0.023]	[0.023]	[0.021]	[0.020]	[0.238]
LATE							
Assigned=1	-0.021	-0.069***	-0.054**	-0.052**	-0.065***	-0.025	-0.568**
	[0.020]	[0.025]	[0.025]	[0.025]	[0.023]	[0.021]	[0.256]
N	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Mean Cont.	0.552	0.575	0.557	0.552	0.411	0.690	7.853
Females							
ITT							
Titular=1	0.000	-0.045	-0.060**	-0.051*	-0.028	-0.031	-0.417
	[0.024]	[0.028]	[0.028]	[0.029]	[0.022]	[0.028]	[0.311]
Suplente=1	-0.007	-0.027	-0.021	-0.036	-0.025	-0.032	-0.326
	[0.028]	[0.033]	[0.033]	[0.032]	[0.024]	[0.032]	[0.359]
LATE							
Assigned=1	0.000	-0.058*	-0.075**	-0.065*	-0.036	-0.040	-0.536
	[0.030]	[0.035]	[0.035]	[0.036]	[0.028]	[0.035]	[0.391]
N	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.312	0.366	0.370	0.368	0.217	0.498	4.861
Males							
ITT							
Titular=1	-0.031	-0.064**	-0.025	-0.030	-0.075***	-0.006	-0.457*
	[0.021]	[0.026]	[0.026]	[0.026]	[0.029]	[0.016]	[0.255]
Suplente=1	-0.025	0.025	0.031	0.030	-0.010	0.027	0.230
	[0.025]	[0.028]	[0.031]	[0.031]	[0.033]	[0.020]	[0.301]
LATE							
Assigned=1	-0.040	-0.078**	-0.030	-0.036	-0.094**	-0.006	-0.558*
	[0.026]	[0.033]	[0.033]	[0.033]	[0.036]	[0.020]	[0.322]
N	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.793	0.784	0.744	0.736	0.606	0.883	10.846

Note: The ITT panel presents results for the Titular=1 and Suplente=1 groups in relation to the control group.
In the LATE panel, the allocation (Assigned=1) is instrumented whith the lottery results. Regressions include
additional vector of observable characteristics such as age, sex and seven dummy variables that describe the
pre-lottery employment history. Standard errors (in brackets) are clustered by household.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 19: Time Series Effects on Labor Outcomes

| | Pre-Lottery | Post-Lottery | | | |
| | | Short Term | Medium Term | All | All w/o Pre |
	(1)	(2)	(3)	(4)	(5)
ITT					
Titular=1	-0.004	-0.014	-0.041**	-0.027*	-0.030*
	[0.016]	[0.013]	[0.018]	[0.014]	[0.017]
Suplente=1	-0.002	-0.005	0.008	0.002	0.000
	[0.020]	[0.015]	[0.020]	[0.016]	[0.020]
N	22,400	22,400	22,400	44,800	44,800
LATE					
Assigned=1	-0.005	-0.018	-0.050**	-0.034*	-0.037*
	[0.020]	[0.017]	[0.022]	[0.018]	[0.021]
N	22,400	22,400	22,400	44,800	44,800
Females					
ITT					
Titular=1	-0.013	-0.002	-0.044*	-0.023	-0.032
	[0.025]	[0.021]	[0.025]	[0.022]	[0.027]
Suplente=1	0.027	-0.016	-0.019	-0.018	-0.000
	[0.030]	[0.023]	[0.030]	[0.025]	[0.032]
N	11,200	11,200	11,200	22,400	22,400
LATE					
Assigned=1	-0.015	-0.003	-0.056*	-0.030	-0.040
	[0.031]	[0.026]	[0.032]	[0.027]	[0.034]
N	11,200	11,200	11,200	22,400	22,400
Males					
ITT					
Titular=1	0.006	-0.025	-0.035	-0.030*	-0.027
	[0.023]	[0.017]	[0.023]	[0.018]	[0.022]
Suplente=1	-0.030	0.005	0.035	0.020	0.002
	[0.030]	[0.020]	[0.026]	[0.021]	[0.026]
N	11,200	11,200	11,200	22,400	22,400
LATE					
Assigned=1	0.006	-0.031	-0.043	-0.037	-0.033
	[0.029]	[0.021]	[0.029]	[0.023]	[0.028]
N	11,200	11,200	11,200	22,400	22,400

Note: Time series models following (3). The ITT panel presents results for the Titular=1 and Suplente=1 groups in relation to the control group. In the LATE panel, the allocation (Assigned=1) is instrumented whith the lottery results. Regressions in columns (1) and (5) include age and sex as controls, while the other columns also include the pre-lottery employment average. Standard errors (in brackets) are clustered by household.
[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 20: Effects on the Share of Couples with Both Working Members

	Share in Q=-9 (1)	Share in Q=-1 (2)	Share in Q=4 (3)	Share in Q=8 (4)	Share in Q=12 (5)	Share in Q=14 (6)
ITT						
Titular=1	-0.022	-0.011	-0.007	-0.044	-0.033	-0.028
	[0.023]	[0.025]	[0.027]	[0.028]	[0.028]	[0.028]
Suplente=1	0.007	-0.006	0.017	0.006	0.025	0.004
	[0.028]	[0.030]	[0.033]	[0.034]	[0.034]	[0.033]
N	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.165	0.197	0.237	0.276	0.262	0.264
Older than 40						
Tit*Older	0.047	-0.011	-0.040	-0.068	-0.037	-0.039
	[0.046]	[0.050]	[0.054]	[0.055]	[0.055]	[0.056]
Sup*Older	-0.019	-0.026	-0.064	-0.024	-0.100	-0.073
	[0.056]	[0.059]	[0.064]	[0.068]	[0.067]	[0.066]
Older than 50						
Tit*Older	0.084	0.030	-0.012	0.041	0.059	0.043
	[0.061]	[0.058]	[0.063]	[0.070]	[0.071]	[0.069]
Sup*Older	0.083	0.046	-0.017	0.049	0.033	0.073
	[0.070]	[0.066]	[0.072]	[0.082]	[0.082]	[0.081]
LATE						
Assigned=1	-0.027	-0.014	-0.008	-0.054	-0.040	-0.035
	[0.029]	[0.032]	[0.035]	[0.035]	[0.035]	[0.035]
N	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.165	0.197	0.237	0.276	0.262	0.264

Note: The ITT panel shows results for the Titular=1 and Suplente=1 groups in relation to the control group. The next two panels present results for differences by age in program effects using a model like (2). Groups are defined according to the age of man of the couple. In the LATE panel, the allocation (Assigned=1) is instrumented whith the lottery results. Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 21: Effects on the Share of Couples with Some Working Member

	Share in Q=-9 (1)	Share in Q=-1 (2)	Share in Q=4 (3)	Share in Q=8 (4)	Share in Q=12 (5)	Share in Q=14 (6)
ITT						
Titular=1	0.013	-0.003	-0.020	-0.027	-0.024	-0.030
	[0.031]	[0.031]	[0.032]	[0.032]	[0.032]	[0.032]
Suplente=1	-0.055	-0.022	-0.067*	-0.014	-0.039	-0.015
	[0.037]	[0.036]	[0.037]	[0.037]	[0.038]	[0.037]
N	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.639	0.668	0.631	0.598	0.589	0.575
Older than 40						
Tit*Older	-0.003	-0.010	0.015	0.023	-0.011	-0.013
	[0.062]	[0.062]	[0.064]	[0.065]	[0.065]	[0.065]
Sup*Older	0.071	0.065	0.156**	0.029	0.074	0.081
	[0.074]	[0.073]	[0.074]	[0.075]	[0.075]	[0.075]
Older than 50						
Tit*Older	-0.051	-0.088	-0.151*	-0.215**	-0.268***	-0.253***
	[0.085]	[0.085]	[0.085]	[0.084]	[0.082]	[0.082]
Sup*Older	-0.044	0.012	0.029	-0.072	-0.078	-0.100
	[0.094]	[0.093]	[0.094]	[0.094]	[0.094]	[0.094]
LATE						
Assigned=1	0.013	-0.005	-0.028	-0.034	-0.032	-0.039
	[0.039]	[0.039]	[0.040]	[0.041]	[0.041]	[0.041]
N	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.639	0.668	0.631	0.598	0.589	0.575

Note: The ITT panel shows results for the Titular=1 and Suplente=1 groups in relation to the control group. The next two panels present results for differences by age in program effects using a model like (2). Groups are defined according to the age of man of the couple. In the LATE panel, the allocation (Assigned=1) is instrumented whith the lottery results. Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 22: Effects on the Share of Couples without Working Members

	Share in Q=-9 (1)	Share in Q=-1 (2)	Share in Q=4 (3)	Share in Q=8 (4)	Share in Q=12 (5)	Share in Q=14 (6)
ITT						
Titular=1	0.010	0.015	0.027	0.070***	0.057**	0.059***
	[0.026]	[0.023]	[0.023]	[0.025]	[0.026]	[0.026]
Suplente=1	0.048	0.028	0.050*	0.008	0.014	0.012
	[0.032]	[0.028]	[0.029]	[0.026]	[0.028]	[0.028]
N	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.196	0.135	0.132	0.126	0.149	0.161
Older than 40						
Tit*Older	-0.044	0.022	0.024	0.046	0.048	0.052
	[0.053]	[0.047]	[0.048]	[0.051]	[0.052]	[0.053]
Sup*Older	-0.052	-0.039	-0.092	-0.005	0.026	-0.008
	[0.064]	[0.056]	[0.058]	[0.052]	[0.056]	[0.058]
Older than 50						
Tit*Older	-0.033	0.058	0.163**	0.174**	0.209***	0.211***
	[0.077]	[0.079]	[0.079]	[0.080]	[0.081]	[0.081]
Sup*Older	-0.039	-0.058	-0.012	0.023	0.045	0.027
	[0.086]	[0.082]	[0.082]	[0.077]	[0.081]	[0.082]
LATE						
Assigned=1	0.014	0.020	0.037	0.088***	0.072**	0.074**
	[0.033]	[0.029]	[0.030]	[0.032]	[0.032]	[0.033]
N	1,600	1,600	1,600	1,600	1,600	1,600
Mean Cont.	0.196	0.135	0.132	0.126	0.149	0.161

Note: The ITT panel shows results for the Titular=1 and Suplente=1 groups in relation to the control group. The next two panels present results for differences by age in program effects using a model like (2). Groups are defined according to the age of man of the couple. In the LATE panel, the allocation (Assigned=1) is instrumented whith the lottery results. Regressions do not include any additional control. Standard errors (in brackets) are clustered by household.

[* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$]

Table 23: Survey Multiple Comparisons Test

			p-values		
				Adjusted	
	DI	Unadj.	T3 (List)	Bonf	Holm
Children <4	0.053	0.479	0.859	1.000	1.000
Members	0.420	0.006	0.067	0.204	0.078
Satisfaction/neighborhood	0.061	0.233	0.735	1.000	1.000
Satisfaction/house	0.257	0.000	0.000	0.011	0.009
House improvements	0.150	0.004	0.052	0.147	0.061
Formal job	0.039	0.342	0.816	1.000	1.000
Formal job if works	0.077	0.042	0.330	1.000	0.420
Unemployed	0.016	0.517	0.763	1.000	1.000
Inactive	0.052	0.072	0.399	1.000	0.504
Satisfaction/activity levels	0.076	0.019	0.179	0.657	0.213
Difficult/find a job before	0.099	0.069	0.429	1.000	0.552
Difficult/find a job after	0.077	0.056	0.394	1.000	0.504
Easy before & difficult after	0.135	0.012	0.121	0.397	0.140
Easy/ ask for help	0.063	0.204	0.737	1.000	1.000
Easy/ borrow	0.008	0.861	0.861	1.000	0.861
Commuting time	0.601	0.000	0.000	0.011	0.007
Blocks to closest relative	0.180	0.000	0.000	0.011	0.007

Note: Multiple comparison test, List et al 2015.