

“Do Conditional Cash Transfer Programs Affect Fertility and Marriage?
Long Term Impacts of a Mexican Cash Transfer Program”

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1. Introduction.

Conditional cash transfer (CCT) programs were first introduced in Brazil and Mexico more than a decade ago. CCT programs aim, in addition to alleviating current poverty, to reduce future poverty by increasing human capital accumulation of children and youth from poor families and thereby increasing their income when they become adults. Their main innovation, linking cash benefits to families' investments in human capital (particularly schooling), has been by any measure wildly popular. Well over thirty countries now have as part of their social policy CCT programs, most of which include substantial schooling conditionalities.

While education and health impacts of CCTs have been extensively studied (see Parker and Todd 2014), surprisingly little is known about the effects of CCTs on demographic outcomes, particularly beyond short run effects. This paper uses the Mexican Family Life Survey (MxFLS) to estimate fertility and marriage impacts of the Mexican conditional cash transfer program *Oportunidades* (previously named Progresa). Using three rounds of the longitudinal MxFLS (2002, 2005 and 2009), we provide impact estimates in rural areas after more than 10 years of program operations on fertility and marriage patterns of women of child bearing age.

Why would *Oportunidades* affect fertility and marriage? Conditional cash transfer programs provide monetary transfers to household in extreme poverty that are linked to investment in the human capital of children and other family members. In the case of *Oportunidades*, an additional important program aspect is that benefits are given directly to the female (mother) of the household. There are a number of program features which may affect marriage and fertility.

Economic theory suggests that transfer programs can impact the fertility decisions of beneficiary households by changing the available resources of the household, as well as modifying the parental preferences regarding the quality and quantity of children and those of children (through education). Skoufias (2005) and Todd et al. (2006) have explored the possible causal mechanisms behind these effects in terms of the increments in the resources available to the beneficiary households (income effect), the change in the relative price of child work or education (substitution effect) or through intergenerational mechanisms (by increasing the expected income of children at adult age). There are other possible mechanism for instance higher school enrolment might lead to more knowledge about contraceptive methods, and thus affect teenage pregnancy (Caldwell, 1980; Barber, 2007; Lagarde, 2009); regular health checks and access to health facilities may increase the access of women to contraceptive methods, as well as to prenatal and postnatal care, reducing maternal and child mortality (Fernald et al., 2009). A final aspect is that by providing females with resources, *Oportunidades* may change bargaining power within the household.

Between 1970 to 2005, Mexico experienced a rapid and continuous decrease in fertility. In early 1970's the total fertility rate was close to 7 children per woman and by 2010 it had reached 2.8 children per woman (CONAPO, 2013). The main factor attributed to this reduction a widespread introduction of family planning methods. However, beginning with the inter census measurement in 2005 the country's overall fertility rate stopped declining (Parada, 2012), coinciding with the general period in which *Oportunidades* began. Note that levels of adolescent

pregnancy are relatively high in Mexico at about 69 per 1000 women aged 15 to 19 (Arceo-Gómez and Vázquez-Campos, 2012).

Our study provides some of the first estimates of impacts in the medium term (after more than a decade of program benefits) of conditional cash transfers on fertility and marriage analyzes in the rural population of Mexico, where number of children born remain high. We take advantage of variation in the roll out of the program to combine information on community program beneficiary status with the longitudinal MxFLS. We carry out difference in difference estimators in which we compare fertility/marriage of females in communities which were selected to receive *Oportunidades* in the initial years of program operation (1997-1998) “early beneficiaries” (T1998) with outcomes of females in communities selected to receive *Oportunidades* in 2004 or later “late beneficiaries” (T2004+). Administration information on when a community began to receive *Oportunidades* was obtained from the Program.

In the next section we review previous literature and then turn to a description of the program and the main hypotheses. In Section 4, we describe the MxFLS and section 5 describes the methodology used. Section 6 contains the results and Section 7 concludes.

2. Background Literature:

While there are now more than 30 CCT programs operating around the world, the literature about the impact of CCT programs on fertility rates, marriage and contraception is limited and restricted to short run impacts. Stecklov et al. (2007) analyze the case of three CCT programs in Latin America (Honduras, Mexico and Nicaragua) on childbearing. The authors find that, in the

case of Honduras, the CCT program has increased the fertility rate by around 2 to 4 percentage points. However, no effect was found in the other two countries. Baird (2009) analyses the one-year impacts of a randomized program in Malawi, which gives cash transfers to women aged 13-22 to stay or return to school. This study finds that the transfer resulted in high declines of early marriage, teenage pregnancy and self-reported sexual activity.

For the Mexican case Schultz, 2004 in his pioneering study of the effect of *Oportunidades* on school enrollment analyzed if there was an effect of the program on fertility in the first 18 months of the program. His results suggested a very small negative effect on teenage pregnancy, on the order of 0.6 percentage points. Hernandez-Prado et al. (2005) find a positive effect of *Oportunidades* in knowledge and use of family planning methods, although the effect was only observed in the short run and not significant in urban areas. Gonzalez de la Rocha, et al. (2008) analyses the effect of *Oportunidades* on age of marriage and fertility decisions among indigenous, non-indigenous and mestizo communities using qualitative methods. Her qualitative evidence suggests a small reduction in the probability of young women to become mothers, particularly among indigenous groups.

Feldman et al. (2009) analyses the effect of *Oportunidades* on contraceptive use and birth spacing among female household heads receiving the transfer of the program. These authors find that by 2000 beneficiaries had a larger probability of using contraceptives than the control group, although this effect seem to have disappeared by 2003. They find no effect on birth spacing. Darney, et al. (2013) study the effect of *Oportunidades* on pregnancy and contraceptive use among young women in rural Mexico (using ENADID, a Demographic Survey). These authors

find that the program does not have a direct effect on the probability of pregnancy or contraceptive use among teenagers, although via the education effect the program may be influencing fertility of this group. However, Lamadrid-Figueroa, et al. (2015) use a heterogeneous impacts model to estimate the effects of *Oportunidades* on the use of contraceptive methods among young women, finding that the program has large and significant impacts among the poorest households, but insignificant effects among those close to the eligibility threshold of the program.

Finally, for the case of marriage, Bobonis 2011 studies impacts on marriage during the first two years of *Oportunidades*. He shows while there is no overall effect of the program on the proportion of women in a union (married or cohabitating), this masks changes in both marriage and divorce. In particular the program increases the probability of separation/divorce for those intact unions at baseline (although the effect is only 0.32 percentage points as few households separate over the two year period). The program increases significantly the probability of cohabitating for separated/divorced women at baseline and the probability of marriage for single women at baseline, although the effects are quite small.

3. Program Description and Hypotheses:

Oportunidades began operating in small rural communities in 1997. It gradually expanded to urban areas and now covers about 6 million families, about a third of all families in Mexico. The program provides cash payments to families conditional on children regularly attending schools and on family members visiting health clinics for checkups. Program take up was exceedingly

high when the program began, with 97 percent of families in rural areas who were offered the program participating.

Table 1 shows the monthly grant levels for children between the third grade and the twelfth grade in the second semester of 2009 (the exchange rate was about 12 pesos per U.S. dollar at that time). Originally, the program provided grants only for children between the third and ninth grades, but in 2001, the grants were extended to grades 10-12. At grades seven and above, the grants are slightly higher (by about 13 percent) for girls than boys. Program rules allow students to fail each grade once, but if a student repeats a grade twice, the schooling benefits are discontinued permanently. In terms of magnitude, the school subsidies constitute the majority of program benefits. However, the program also provides some additional subsidies for school supplies and a transfer that is the same for all households linked to regular visits to health clinics. Children and youth age 21 and younger are eligible to receive the school subsidies.

There is a maximum limit of monthly benefits for each family equivalent to 1460 for families with children in primary school and junior high school and 2355 for those with at least one child in high school (grades 10-12). Benefits are provided directly to female beneficiaries by wire transfer in offices and modules, which are physically located near the communities. In most urban areas, benefits are transferred directly to beneficiary bank accounts. The design feature that benefits are provided to women, generally mothers, was motivated by the early literature on intra-household allocations, e.g. Thomas (1990) that showed that income in the hands of women has greater effects on child well-being than income in the hands of men.

Hypotheses on the impacts of the Program on fertility and marriage

The Program generates two opposing effects on fertility. First, because the program provides higher economic benefits to families with a larger number of children, it creates incentives to have more children (up to a limit because of the maximum amount of benefits), a price effect in the words of economic theory. Additionally, by increasing total family income, there is an income effect which works in the opposite direction. Economic theory suggests that with increases in overall income, parents prefer to invest more in each child and have fewer children. In the case of *Oportunidades*, the transfers are however conditional to the investment in human capital of children, the program thus changes the relative costs of investing in children (subsidizes). This is an additional price effect which may contribute to reducing fertility.

For the case of adolescent girls eligible to receive the education grants from *Oportunidades*, the Program might affect the number of children born through increasing their level of accumulated schooling. A number of papers have shown that the Program has significant increases on schooling. In particular Behrman, Parker and Todd, 2011 have shown that the impact on adolescent girls of participating in the program for approximately 6 years is equivalent to about one grade of schooling. Because of these effects on schooling and the conditionality of the grants, we might expect effects of the Program on fertility to be different for the population of adolescent girls than for the population of female adults, whose schooling is unlikely to be affected by the Program.

With respect to impacts on marriage, the transfer provided directly to women might reduce marriage (or increase divorce) through providing women with more economic independence. On the other hand their greater level of income might make female beneficiaries more attractive

marriage partners. For adolescent females, the program additionally might impact marriage through higher education levels achieved with the program, in particular postponing the age of first marriage. Overall then, the direction of expected impacts on marriage is ambiguous.

4. Data:

For the empirical analysis, we use the Mexican Family Life Survey (MxFLS), rounds 2002, 2005 and 2009. The MxFLS is an on-going multi purpose and nationally representative longitudinal survey that collects a wide set of information on demographic and socioeconomic characteristics of individuals, households, and communities. The sample has national, rural-urban and regional representation. The first wave (MxFLS1) was conducted in 2002 and interviewed 8,440 households located in 150 communities. The second wave (MxFLS2) was conducted during 2005-2006 and achieved a 90% re-contact rate, interviewing 8,434 households across 247 localities. The third wave (MxFLS3) began in 2009.

The availability of the MxFLS provides a number of potential advantages for the study of *Oportunidades* impacts. First, it covers a longer period of time than previous studies. Second, the MxFLS is a nationally representative database so that impacts derived with its use provide nationally representative information of the impacts of *Oportunidades*, as opposed to the 7 Mexican states where the experimental design sample was drawn and on which nearly all impact studies are based. Finally, the panel design of the MxFLS includes the following up of all household migrants, an important issue for estimating impacts of *Oportunidades* on youth, given high out migration rates of households of origin of youth beneficiaries.

Study Sample:

The study sample consists of women in rural areas between the ages of 10 and 40 pre-program (1997) who are interviewed in all three years of the MxFLS ¹. We use this group to include both young girls who were eligible for receiving education grants from the program based on their school enrollment and attendance (girls age 10 to 18 pre-program) as well as older women of reproductive age (19-40 pre-program). We used the retrospective modules of MxFLS to construct pre-program indicators on marriage and fertility including: number of children born, pregnancies and whether a woman had a first marriage or union. The outcome variables of interest are thus: number of children born, pregnancies, whether the women had a first marriage or union by the survey round. The final sample size consists of 1650 women.

5. Methodology and Identification Strategy:

The methodology we use to evaluate program impacts relies on differences in the years of time of exposure to the *Oportunidades* program. That is, we estimate impacts by comparing results for girls/women living in household which began receiving *Oportunidades* in the early stages of the program (1997/1998) with those who began receiving the program later (2004 or later).

Our impact estimators compare being offered the program *Oportunidades* between the ages of 10 and 40 in 1997/1998 (“early” beneficiaries group-T1998) versus being offered the

¹ We investigated if not being interviewed was associated with having *Oportunidades*, by running a logistic regression with the outcome indicating if the person was interviewed as a function of being in the Program in addition to socio-demographic characteristics measured in 2002 (baseline), such as characteristics of the household head, household size, household expenditure, household assets, and dwelling characteristics). We did not find any significant differences in the odds of having *Oportunidades* between women that were and were not interviewed.

Program in 2004 or later (“late” beneficiaries group-T2004+), e.g. at least 7 years later. Note that the two groups differ both in terms of the length of time their household could receive *Oportunidades* and the age at which they could receive benefits. The younger group we analyze those 10 to 18 pre-program in 1997 would be age 17 to 25 at the time the comparison group begins to receive benefits.

While there is some self-reported individual level participation in the MxFLS, to avoid self-selection issues, we use community level information on the year of receipt of *Oportunidades* program to construct our treatment and comparison group. The *Oportunidades* program has had several different phases in which beneficiaries were incorporated into the Program. Table 5 shows the communities of the MxFLS by the year when the *Oportunidades* program began to operate in the community. It is noteworthy that nearly all rural communities in the MxFLS sampling frame by the year 2009 had *Oportunidades* operating in their community. Our empirical strategy takes advantage of this variation in time of benefits to compare changes in schooling over time for youth born in communities who began receiving the program in the early years versus youth born in communities who receive the program later on. There are several periods of large growth in terms of *Oportunidades* beneficiaries, occurring mainly in 1998 and 2004, with some slower incorporation in 2001 and 2002 and after 2004. Other years have much fewer communities becoming beneficiaries (Table 5).

Our estimator is thus an intent to treat estimator, rather than treatment on the treated estimator. Not all households in the communities are beneficiaries; only about 40% of households in communities where *Oportunidades* operates report being beneficiaries. This implies that the estimates are a minimum estimator of the impacts, given that the majority of those in the treated communities do not receive benefits (ignoring spillovers).

The order in which *Oportunidades* incorporates localities at a nationwide level is not random and thus it is important to analyze the extent to which conditions in the two groups of communities would be similar in the absence of the program. In fact, the explicit strategy used by *Oportunidades* was to prioritize the earlier incorporation of poorer communities, where poverty was explicitly defined using the “*Indice de Marginacion*”, developed by the Mexican Population Council. Five categories of margination/community level poverty were developed based on community level characteristics for instance the proportion of households with a dirt floor, the proportion with electricity. We make several restrictions when defining the sample in order to improve the comparability of the two groups. In particular, we restrict attention to girls/women in communities that have overall medium or low levels of community poverty (according to the margination index) because there are not sufficient communities in the later beneficiaries group with high levels of community poverty. We also restrict attention to the non-indigenous again because there are few indigenous in the later beneficiaries group. Thus, our results here are representative only of non-indigenous women in rural communities with medium or low levels of community poverty.

We carry out double difference estimators based on before and after program implementation, the identifying assumption is that, conditional on the control variables, changes in fertility/marriage in the absence of the program would be similar for women in communities receiving the treatment early than for women in communities receiving the treatment later. The percentage of girls between the ages of 10 and 14 married or with children pre-program is very low, effectively precluding significant differences between the early and late beneficiaries group when using longitudinal difference in difference estimators for this age group. To better control for potential pre program differences between our defined groups, we measure pre program

differences using data for youth who are the same age pre program in 1997 as after program in 2009 (age 22 to 26). E.g. we control for preprogram differences in fertility and marriage before the program using older children's data from 1997, and thus potentially better capture any differences between the two groups in the absence of the program. For all indicators, we estimate impacts by round of the MxFLS comparing the impacts over time for the rounds 2002, 2005 and 2009.

While we make a number of restrictions described above to insure the groups are as comparable as possible, we use matching methods to take into account potential remaining differences in observed characteristics between the early beneficiaries and late beneficiaries groups. In particular, we make use of DIDM estimators (Heckman, Ichimura and Todd, 1997). The approach is analogous to the standard DID regression estimator, but does not impose functional form restrictions in estimating the conditional expectation of the outcome variable and reweights the observations according to the weighting functions implied by the matching estimators. We use both nearest neighbor matching and local linear matching with bootstrapping to calculate standard errors for the main estimates presented here, reporting here only results based on nearest neighbor matching.

Tables 2 and 3 show descriptive statistics of our main impact variables of interest showing levels of number of children, pregnancies and proportion married pre program and after program. Pre-program about 10 percent of adolescent girls aged 10 to 18 have ever been married and about 7 percent have had a child. Pre program for women aged 19 to 40 about 78 percent have been married and on average have had slightly less than 3 children.

Table 4 shows descriptive statistics of a number of characteristics of early and late beneficiaries for characteristics unlikely to be affected by the program and presents t tests for

significant differences between the groups. Variables with significant differences pre-program include for girls age 10 to 19 pre-program include years of completed education (at about 3.7 for later beneficiaries and 3.0 for earlier beneficiaries). Mother and father education levels are also significantly lower for early beneficiaries versus later beneficiaries.

While as mentioned before, our sample consists not of the ultra poor, but rather of those who are eligible for *Oportunidades* but live in less marginated communities, the descriptive statistics demonstrate a relatively disadvantaged population. Parental education levels of adolescents are only on average about three to four years of schooling and for the parents of women aged 19 to 40 pre-program are only about 2 to 3 years of schooling.

The DIDM propensity score matching estimators are estimated in two stages. In the first stage, the propensity score is estimated using a logistic model and a set X consisting of pre-program (1997) characteristics. The second stage uses nearest neighbor matching and local linear regression to construct matched no-treatment outcomes for each treated individual.

In terms of the variables used for matching, we are somewhat limited in that since the MxFLS began in 2002 (and thus was not carried out before the rural program began), we include only variables likely to have been unaffected by the Program in 1997, the year the Program began. This precludes the inclusion of variables in the propensity score of variables which might have been affected by the Program such as household income and durable goods. The variables we use for matching thus include individual variables (age, gender, preprogram education, Raven score) and parental characteristics, in particular maternal and paternal education. Table 6 gives the estimated propensity score model for the early beneficiaries (T1998) versus late beneficiaries

Figures 1.1 and 1.2 show the distributions of propensity scores in the two groups. Comparison of the distributions shows they are very similar. In addition to matching by propensity score, we implement exact matching by level of the community poverty index and by age. This ensures that treatment individuals are matched with control individuals of the same age living in communities with similar levels of poverty.

6. Results.

Table 7 displays the main effects of the Program on number of children born, number of pregnancies and on the probability of having had a first marriage/first union for girls 10 to 18 years old in 1997 (Panel A), and for women between 19 to 40 years of age (Panel B) during the period studied. Columns 1 through 6 show the effects based on difference in difference propensity score matching with the choice of nearest neighbor ranging from 1 to 3 neighbors. Results are presented by year of the MxFLS, e.g. impacts are presented for 2002, 2005 and 2009 and thus show how the estimated impacts change overtime.

The overall results are suggestive that there are positive effects of Progresa/Oportunidades on increasing the number of children born. These effects are concentrated for the age group 19-40 pre-program. The size of the significant and positive effect on number of children born and on pregnancies is about 0.2, representing an increase of about 5 percent from pre-program levels. These impacts are apparent by 2002 and continue in similar size and significance levels in the periods of 2005 and 2009. There are, however, no significant

impacts on the probability of being married for the group of women 19-40 pre-program in any of the specifications or years studied.

With respect to adolescents, the results in general show few significant impacts, with the exception of positive impacts on years of attained schooling, as would be expected consistent with previous studies of CCT impacts on schooling. These impacts increase over time, as would be expected given that education accumulates over time, e.g. one would expect greater impacts on accumulated schooling with greater time in the Program. By 2009, the impact of the program on completed years of schooling is equal to about 0.4 grades of schooling. There are however no significant effects on number of children born or on marriage in any of the years of analysis for the group of adolescents 10-18 pre program, with the exception of one significant positive coefficient on marriage using nearest neighbor results with one match. Our results thus far do not show evidence that the Program reduces fertility or leads to postponing marriage for adolescent girls through increasing the level of accumulated schooling, although of course such effects might be masked by opposing effects on fertility through the increases in transfers received by the family with greater number of children.

Overall then, these results are consistent with the hypothesis that the higher economic benefits of the Program provided over the longer run are leading to an increase in the number of children for women of child bearing age. The impacts are relatively large at about 0.15 to 0.2 children. However, given the effects are intent to treat, effects of treatment on the treated might be even larger. The positive and significant effect on the number of pregnancies and the number of children born is consistent with the hypothesis that because the program provides higher

economic benefits to families with a larger number of children, it creates incentives to have more children. This price effect seems to dominate any income effect in terms of parents preferring to invest more in each child and have fewer children.

VI. Concluding Remarks and future work

Conditional cash transfer programs are now common in developing countries all over the world. They distinguish themselves from other anti-poverty programs through the dual objectives of both alleviating current poverty and alleviating poverty in the future through conditioning transfers to human capital. While important effects on schooling accumulation and health have been documented in a number of countries, as of yet, there is little evidence on direct impacts on demographic outcomes, particularly beyond impacts in the short run.

This paper provides evidence on the topic of fertility and marriage impacts for the Mexican *Oportunidades* conditional cash transfer program using the Mexican Family Life Survey rounds 2002, 2005 and 2009. We begin with a sample of those aged 10 to 40 when the program began and follow them until the ages of 22 to 52 in 2009, distinguishing the group of adolescent girls age 10-18 pre-program from women aged 19 to 40 pre-program. To estimate program impact, we take advantage of variation in the phase in of the *Oportunidades* program. Specifically, we compare girls/women in communities who began receiving the program in 1997 or 1998 and compare them with girls/women in communities who began receiving the program in 2004 or later. We restrict attention to rural areas.

Our results suggest relatively large effects of the *Oportunidades* program on increasing fertility of adult women after a number of years of program participation. We find no similar effects on the number of children born for adolescent girls aged 10 to 18 pre-program. We also find no effects of the program on marriage patterns for either group of girls/women.

These results are important as they provide some important initial evidence of the possible long term impacts of conditional cash transfers on demographic outcomes. While fertility and marriage effects of welfare programs have been extensively studied in the United States and other developed contexts, there are fewer studies in developing contexts. Whereas the literature generally concludes that unconditional cash transfers in developed contexts generate few negative incentives on marriage and fertility (for instance Moffitt, 1998), conditional cash transfers have additional price effects, through the subsidizing of schooling, that unconditional cash transfer programs do not.

Our future research will explore impacts on related mechanisms which might help to explain the apparent increases in fertility we have observed. In particular, we will examine evidence of program impacts on number of children desired, used of contraception, and birth spacing (all information available in the MxFLS). We will also carry out more detailed analysis for different sub-groups including whether increases in births reflects increases in child bearing of women without children pre-program or increases in the number of children for women who already have children pre-program. We will also analyze the extent to which program impacts may be larger for women in households who are eligible for greater sizes of transfers due to their pre-program family size/education attainment.

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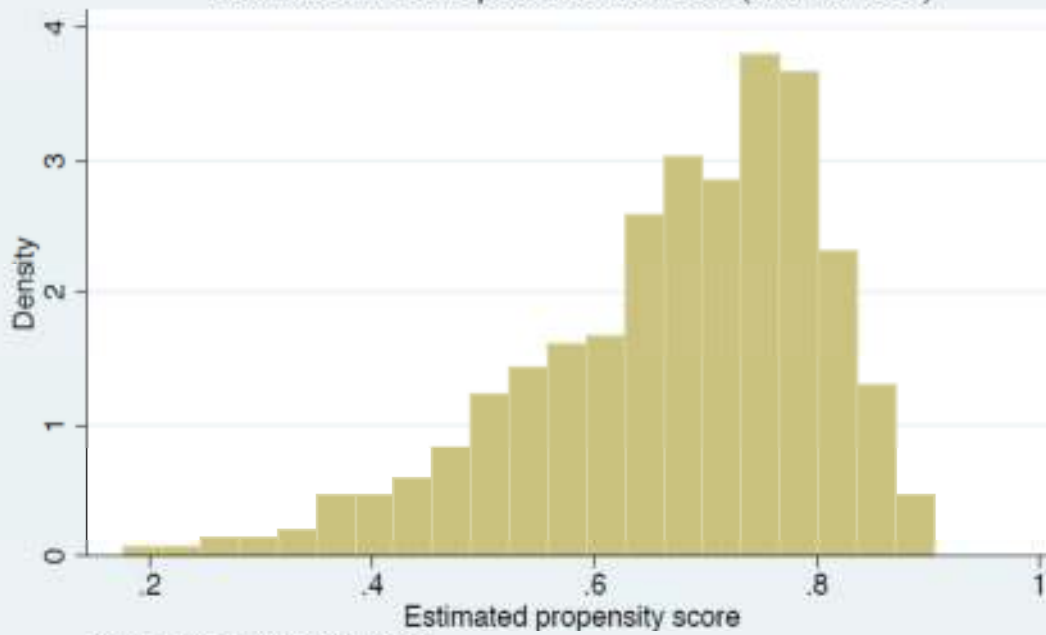
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Fig 1.1 Propensity Score Density

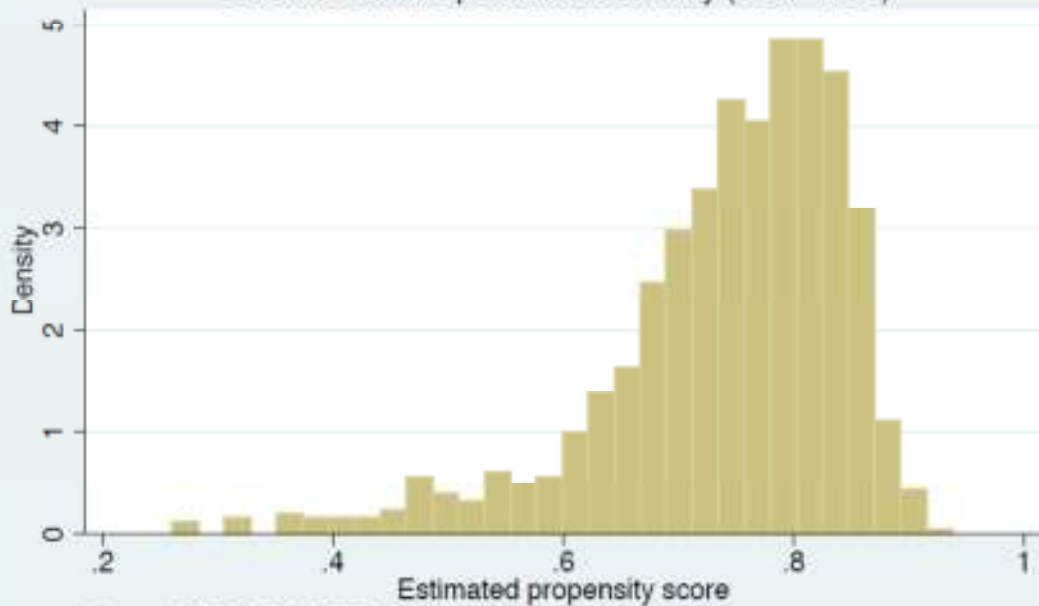
Localities without Oportunidades: Late (2004 or later)



Source: MxFLS 2002, 2005, 2009

Fig 1.2 Propensity Score Density

Localities with Oportunidades: Early (1997-1998)



Source: MxFLS 2002, 2005, 2009

TABLE 1: Monthly amount of Oportunidades schooling grants (pesos) in second semester of 2009

Grade	Boys	Girls
Primary		
3 rd year	140	140
4 th year	165	165
5 th year	210	210
6 th year	280	280
Secondary		
1 st year	410	430
2 nd year	430	480
3 rd year	455	525
Upper Secondary (High School)		
1 st year	690	790
2 nd year	740	840
3 rd year	785	895

TABLE 2: Descriptive Statistics of fertility-related outcome variables for Mexican rural women aged 10 to 18 in 1997

Outcome	Oportunidades Beneficiaries			Oportunidades Non-Beneficiaries			Diff-in-Diff	
	Obs.	Mean	Std. Error.	Obs.	Mean	Std. Error.	Mean	Std. Error.
Number of Children Born in 1997	395	0.068	0.017	136	0.066	0.024		
<i>Diff (2002 vs. 1997)</i>		0.377	0.041		0.243	0.053	<i>0.135**</i>	<i>0.066</i>
<i>Diff (2005 vs. 1997)</i>		0.661	0.051		0.537	0.072	<i>0.124</i>	<i>0.091</i>
<i>Diff (2009 vs. 1997)</i>		1.015	0.058		0.890	0.083	<i>0.125</i>	<i>0.105</i>
Number of Pregnancies by 1997	379	0.053	0.016	135	0.074	0.027		
<i>Diff (2002 vs. 1997)</i>		0.361	0.040		0.267	0.055	<i>0.095</i>	<i>0.068</i>
<i>Diff (2005 vs. 1997)</i>		0.646	0.052		0.585	0.075	<i>0.061</i>	<i>0.094</i>
<i>Diff (2009 vs. 1997)</i>		1.055	0.060		0.963	0.088	<i>0.092</i>	<i>0.110</i>
First Marriage/First Union by 1997	389	0.100	0.015	129	0.109	0.027		
<i>Diff (2002 vs. 1997)</i>		0.306	0.023		0.302	0.041	<i>0.004</i>	<i>0.049</i>
<i>Diff (2005 vs. 1997)</i>		0.504	0.025		0.504	0.044	<i>0.000</i>	<i>0.054</i>
<i>Diff (2009 vs. 1997)</i>		0.617	0.025		0.628	0.043	<i>-0.011</i>	<i>0.050</i>
Years of Schooling in 1997	423	3.040	0.101	147	3.565	0.173		
<i>Diff (2002 vs. 1997)</i>		4.813	0.037		4.912	0.043	<i>-0.098</i>	<i>0.060</i>
Years of Schooling in 1997	406	3.025	0.104	144	3.528	0.174		
<i>Diff (2005 vs. 1997)</i>		5.333	0.090		5.278	0.150	<i>0.055</i>	<i>0.181</i>
Years of Schooling in 1997	419	3.036	0.102	146	3.589	0.175		
<i>Diff (2009 vs. 1997)</i>		5.943	0.118		5.884	0.188	<i>0.059</i>	<i>0.222</i>

Source: Mexican Family Life Survey 2002, 2005, 2009.

Note: Affiliation to Oportunidades is defined based on administrative information, so that individuals in the treatment group are defined as those who live in a locality where Oportunidades was offered in 1997 or 1998 and individuals in the control group are defined as those who live in a locality where Oportunidades was offered in 2004 or after.

TABLE 3: Descriptive Statistics of fertility-related outcome variables for Mexican rural women aged 19 to 40 in 1997

Outcome	Oportunidades Beneficiaries			Oportunidades Non-Beneficiaries			Diff-in-Diff	
	Obs.	Mean	Std. Error.	Obs.	Mean	Std. Error.	Mean	Std. Error.
Number of Children Born in 1997	686	2.972	0.096	278	2.586	0.125		
<i>Diff (2002 vs. 1997)</i>		0.526	0.031		0.450	0.045	0.077	0.055
<i>Diff (2005 vs. 1997)</i>		0.649	0.036		0.525	0.049	0.124**	0.061
<i>Diff (2009 vs. 1997)</i>		0.752	0.040		0.608	0.053	0.144**	0.066
Number of Pregnancies by 1997	663	3.130	0.101	267	2.742	0.136		
<i>Diff (2002 vs. 1997)</i>		0.526	0.032		0.472	0.047	0.054	0.057
<i>Diff (2005 vs. 1997)</i>		0.649	0.037		0.551	0.050	0.098	0.063
<i>Diff (2009 vs. 1997)</i>		0.756	0.041		0.663	0.056	0.093	0.070
First Marriage/First Union by 1997	730	0.874	0.012	286	0.860	0.021		
<i>Diff (2002 vs. 1997)</i>		0.037	0.007		0.042	0.012	-0.005	0.014
<i>Diff (2005 vs. 1997)</i>		0.049	0.008		0.059	0.014	-0.010	0.016
<i>Diff (2009 vs. 1997)</i>		0.059	0.009		0.063	0.014	-0.004	0.017
Years of Schooling in 1997	736	1.808	0.083	293	2.143	0.145		
<i>Diff (2002 vs. 1997)</i>		4.145	0.055		4.307	0.081	-0.162	0.098
Years of Schooling in 1997	714	1.769	0.083	284	2.106	0.147		
<i>Diff (2005 vs. 1997)</i>		4.399	0.076		4.535	0.121	-0.136	0.143
Years of Schooling in 1997	729	1.808	0.084	291	2.148	0.146		
<i>Diff (2009 vs. 1997)</i>		4.484	0.072		4.732	0.119	-0.248	0.139

Source: Mexican Family Life Survey 2002, 2005, 2009.

Note: Affiliation to Oportunidades is defined based on administrative information, so that individuals in the treatment group are defined as those who live in a locality where Oportunidades was offered in 1997 or 1998 and individuals in the control group are defined as those who live in a locality where Oportunidades was offered in 2004 or after.

TABLE 4: Descriptive statistics of Mexican rural women aged 10 to 18 and 19 to 40 years old in 1997 by affiliation to Oportunidades

	10 to 18 years old			19 to 40 years old		
	Oportunidades Beneficiaries	Oportunidades Non-Beneficiaries	<i>Diff</i>	Oportunidades Beneficiaries	Oportunidades Non-Beneficiaries	<i>Diff</i>
	Mean	Mean		Mean	Mean	
Age in 2002	18.51 (0.12)	18.48 (0.22)	0.025 (0.243)	33.55 (0.23)	34.33 (0.34)	-0.776 (0.420)
Number of children born in 1997	0.20 (0.03)	0.23 (0.05)	-0.033 (0.056)	2.91 (0.09)	2.55 (0.12)	0.357** (0.160)
First Marriage/First Union in 1997	0.17 (0.02)	0.23 (0.03)	-0.056 (0.037)	0.88 (0.01)	0.86 (0.02)	0.011 (0.023)
Years of education in 1997	3.04 (0.10)	3.75 (0.19)	-0.705*** (0.203)	1.81 (0.08)	2.15 (0.14)	-0.336** (0.161)
Raven Score in 2002	0.50 (0.01)	0.54 (0.02)	-0.039 (0.022)	0.41 (0.01)	0.45 (0.01)	-0.036** (0.016)
Height in 2002	154.80 (0.34)	154.86 (0.55)	-0.063 (0.653)	153.33 (0.24)	154.78 (0.36)	-1.454*** (0.440)
Mother's education in yrs in 2002	3.52 (0.15)	4.24 (0.25)	-0.726** (0.294)	1.94 (0.08)	2.65 (0.15)	-0.707*** (0.160)
Father's education in yrs in 2002	3.71 (0.16)	4.52 (0.31)	-0.807** (0.327)	2.22 (0.09)	2.79 (0.15)	-0.568*** (0.169)
Obs.	423	153	576	737	294	1031

Source: Mexican Family Life Survey 2002, 2005, 2009.

Note: Affiliation to Oportunidades is defined based on administrative information, so that individuals in the treatment group are defined as those who live in a locality where Oportunidades was offered in 1997 or 1998 and individuals in the control group are defined as those who live in a locality where Oportunidades was offered in 2004 or after.

TABLE 5: Expansion of Oportunidades over time in the MxFLS women sample, rural areas

Year of implementation	Number of localities
1997	5
1998	34
1999	8
2000	0
2001	4
2002	6
2003	1
2004	10
2005	0
2006	0
2007	0
2008	0
2009	0
2010	5
Never	2
Total	75

Source: Mexican Family Life Survey 2002, 2005, 2009.

TABLE 6:
Log odds from logit equation that estimates propensity scores of participation in Oportunidades of Mexican rural women aged 10 to 18 and 19 to 40 years old in 1997

	10 to 18 years old			19 to 40 years old		
	Coef. (1)	S.E. (2)	p-value (3)	Coef. (4)	S.E. (5)	p-value (6)
Age in 2002	0.664	0.658	0.313	-0.449	0.153	0.003
Age Squared in 2002	-0.017	0.018	0.323	0.006	0.002	0.011
Number of Children Born in 1997	0.002	0.373	0.995	0.093	0.043	0.031
Married/Union in 1997	-0.275	0.420	0.512	0.093	0.249	0.708
Yrs of Education in 1997	-0.124	0.051	0.015	0.000	0.034	0.991
Raven Score in 2002	-0.421	0.465	0.365	-0.351	0.335	0.295
Height in 2002	0.004	0.015	0.776	-0.034	0.012	0.004
Mother's Education in yrs in 2002	-0.026	0.037	0.489	-0.108	0.034	0.002
Father's Education in yrs in 2002	-0.051	0.033	0.123	-0.064	0.033	0.052
Constant	-0.550	0.777	0.464	14.965	3.171	0.000
Obs.	576			1031		
Pseudo R Squared	0.066			0.069		
Log Pseudo Likelihood	-311.43			-573.80		

Source: Mexican Family Life Survey 2002, 2005, 2009.

Note: Affiliation to Oportunidades is defined based on administrative information, so that individuals in the treatment group are defined as those who live in a locality where Oportunidades was offered in 1997 or 1998 and individuals in the control group are defined as those who live in a locality where Oportunidades was offered in 2004 or after.

(1) Missing values on regression covariates are substituted with their mean values. Regressions include dummies that indicate if the covariate was missing and imputed.

TABLE 7: Impact of Oportunidades on number of children born, number of pregnancies, probability of first marriage/union and years of schooling

Outcome	Obs.	Diff-in-diff propensity score matching						Diff-in-diff OLS	
		NN=1		NN=2		NN=3		Coef.	S.E.
		Coef. (1)	S.E. (2)	Coef. (3)	S.E. (4)	Coef. (5)	S.E. (6)		
Panel A: Matching for rural women aged 10 to 18 years old in 1997									
Number of Children Born	528								
2002 vs.1997		0.161	0.128	0.102	0.124	0.090	0.116	0.123**	0.054
2005 vs.1997		0.000	0.175	0.068	0.158	0.060	0.148	0.073	0.082
2009 vs.1997		0.064	0.197	0.102	0.185	0.064	0.176	0.051	0.101
Number of Pregnancies	511								
2002 vs.1997		0.157	0.126	0.100	0.121	0.088	0.112	0.106	0.056
2005 vs.1997		-0.008	0.175	0.051	0.158	0.025	0.146	0.034	0.084
2009 vs.1997		0.109	0.197	0.133	0.188	0.079	0.180	0.031	0.105
First Marriage/First Union	515								
2002 vs.1997		0.142*	0.079	0.122	0.070	0.069	0.068	-0.016	0.044
2005 vs.1997		0.034	0.091	0.079	0.083	0.050	0.079	-0.045	0.050
2009 vs.1997		-0.005	0.090	0.061	0.083	0.046	0.078	-0.047	0.046
Years of Schooling									
2002 vs.1997	567	-0.010	0.135	0.042	0.124	0.029	0.117	-0.026	0.057
2005 vs.1997		0.313	0.289	0.407	0.262	0.378	0.249	0.248	0.167
2009 vs.1997		0.469	0.352	0.457	0.311	0.413	0.299	0.422**	0.194
Panel B: Matching for rural women aged 19 to 40 years old in 1997									
Number of Children Born	958								
2002 vs.1997		0.144	0.093	0.115	0.084	0.154**	0.077	-0.006	0.052
2005 vs.1997		0.200**	0.101	0.171*	0.090	0.216***	0.083	0.018	0.056
2009 vs.1997		0.247**	0.108	0.194**	0.098	0.245***	0.090	0.023	0.059
Number of Pregnancies	924								
2002 vs.1997		0.132	0.094	0.093	0.085	0.113	0.079	-0.020	0.053
2005 vs.1997		0.187*	0.101	0.148*	0.091	0.173**	0.085	0.003	0.058
2009 vs.1997		0.216**	0.108	0.156	0.099	0.160*	0.094	-0.014	0.062
First Marriage/First Union	1010								
2002 vs.1997		0.003	0.022	0.010	0.019	0.017	0.017	0.001	0.013
2005 vs.1997		-0.011	0.026	-0.013	0.024	-0.004	0.022	-0.004	0.014
2009 vs.1997		-0.001	0.027	-0.004	0.025	0.004	0.023	0.006	0.013

Source: Mexican Family Life Survey 2002, 2005, 2009.

Note: Affiliation to Oportunidades is defined based on administrative information, so that individuals in the treatment group are defined as those who live in a locality where Oportunidades was offered in 1997 or 1998 and individuals in the control group are defined as those who live in a locality where Oportunidades was offered in 2004 or after.

(1) We include controls for age, number of children born by 1997, a dummy indicating if the women has ever been married by 1997, raven score measured in 2002, height measured in 2002, mother's and father's education.