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FINAL REPORT

AN EVALUATION OF THE IMPACT OF PROGRESA CASH PAYMENTS ON PRIVATE INTER-HOUSEHOLD TRANSFERS

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EXECUTIVE SUMMARY

One important goal of PROGRESA is to raise the real income of program beneficiaries. At first sight, it is reasonable to assume that any government social program that gives monetary transfers to poor families has a positive effect in raising their income. However, the subsidy can modify the behavior of individuals and thus may cause a change in informal pre-existing private transfers among families as a consequence of increased incomes.

Concern exists that the PROGRESA subsidy may cause a reduction in private transfers through crowding out inter-household transfers to members of beneficiary households from outside private donors. Contributors to households may be dissuaded from further transfers if they observe the receipt of government subsidies. On the other hand, contributors, who may or may not live nearby the recipient, may continue supplying transfers regardless of the receipt of government subsidies. From another perspective, beneficiary households may be passing on PROGRESA cash and in-kind subsidies to other households in the form of transfers.

Such a response behavior would be undesirable for a number of reasons. First, substitution of private inter-household transfers by PROGRESA subsidies is an indication of disruption of traditional and/or informal mechanisms of exchange. Such a disruption is dangerous in the sense that PROGRESA, a temporary support program, is altering, perhaps in a permanent fashion, more long-term mechanisms of support and exchange. Second, if such substitution is occurring, it will reduce the impact of PROGRESA over total household income, thus undermining the objectives of the program and allowing for overstatement regarding PROGRESA's success. Third, if households are passing on their benefits to other households, PROGRESA benefits would not be staying with the segment of the population for which it was originally intended. Further, this would be a reflection of mistargeting in the selection of beneficiaries.

In this report we use data from the PROGRESA evaluation datasets to assess the link between the PROGRESA subsidy and private transfers, both monetary and non-monetary. Two methods of empirical analysis are employed. First we use descriptive statistics to compare the frequency and level of inter-household transfers between control and treatment groups at two points in time for which data are available—October, 1998 and November, 1999. We also compare the characteristics of households that receive (or proportion) transfers, and those that do not. Second, we analyze econometrically whether selection into PROGRESA has a significant impact on the incidence and levels of private transfers among households.

The descriptive and econometric results paint a picture of those households involved in private transfers. They are smaller in size, with an older, less educated head of household. Female headed households are associated with a higher incidence, as well as levels of transfers, after taking into account sample selection bias. Indigenous households have a

lower incidence of transfers, as defined in our study. Private transfers are dominated by children who have left the household, the majority of whom have left the community of origin as well. Monetary transfers in large part appear to serve the function of an old age pension, with children supporting their parents, particularly when elderly and widowed.

We find that on average, no significant differences between treatment and control groups, by year and over time, exist in terms of the receipt of monetary transfers. After controlling for demographic characteristics, consumption, productive assets, and village level effects, in a variety of different specifications, we find that selection into the PROGRESA program has had no influence over the incidence or level of either monetary or non monetary private inter-household transfers. Taken together the results are spectacular only in their unanimity: we find no evidence that PROGRESA subsidies crowd out private inter-household transfers, as of November, 1999, after approximately 19 months of receiving benefits. This result allays fears that PROGRESA is displacing or altering traditional or informal private networks that pre-existed the program, and that hopefully will continue in the eventuality that the PROGRESA program is curtailed. This result holds among the new *densificado* beneficiaries who tend to have higher participation in private inter-household support networks.

Further, while we find no drop in the incidence or amount of monetary transfers attributable to selection into PROGRESA, we do observe a significant drop in the level of private transfers among both treatment and control households between 1998 and 1999. We suspect response bias on the part of informants. Control households may have lowered the amount and incidence of transfers reported in order to gain entry into PROGRESA. Treatment households may have done the same in order to avoid losing program benefits.

Also we do find evidence of a drop in the incidence of non monetary transfers among treatment households between 1998 and 1999. This would provide some evidence that PROGRESA is crowding out private transfers. In the econometric analysis, however, we are unable to attribute this drop to participation in the PROGRESA program.

A final caveat covers the possibility that transfers from different sources may be impacted differently by the PROGRESA program. It is conceivable that transfers from local sources, such as neighbors and friends, particularly in non monetary forms, may fall under an alternative set of motivations and interpersonal relations compared to transfers from far away sources, primarily children living in other towns, states, or countries. Further, the targeting of households within communities to receive benefits may disrupt traditional inter household relations and produce social conflict, again which might effect transfers from local sources differently than those from far away. We were not able to assess quantitatively this complex set of issues due to data limitations.

AN EVALUATION OF THE IMPACT OF PROGRESA CASH TRANSFERS ON PRIVATE INTER-HOUSEHOLD TRANSFERS

Graciela Teruel and Benjamin Davis

1. INTRODUCTION

One important goal of PROGRESA is to raise the real income of program beneficiaries. At first sight, it is reasonable to assume that any government social program that gives money transfers to poor families has a positive effect in raising their income. However, the subsidy can modify the behavior of individuals and thus may cause a change in informal pre-existing private transfers among families as a consequence of increased incomes.

Concern exists that the PROGRESA subsidy may cause a reduction in private transfers through crowding out inter-household transfers to members of beneficiary households from outside private donors. Contributors to households may be dissuaded from further transfers if they observe the receipt of government subsidies. On the other hand, contributors, who may or may not live nearby the recipient, may continue supplying transfers regardless of the receipt of government subsidies. From another perspective, beneficiary households may be passing on PROGRESA cash and in-kind subsidies to other households in the form of transfers.

Such a response behavior would be undesirable for a number of reasons. First, substitution of private inter-household transfers by PROGRESA subsidies is an indication of disruption of traditional and/or informal mechanisms of exchange. Such a disruption is dangerous in the sense that PROGRESA, a temporary support program, is altering, perhaps in a permanent fashion, more long-term mechanisms of support and exchange. Second, if such substitution is occurring, it will reduce the impact of PROGRESA over total household income, thus undermining the objectives of the program and allowing for overstatement regarding PROGRESA's success. Third, if households are passing on their benefits to other households, PROGRESA benefits would not be staying with the segment of the population for which it was originally intended. Further, this would be a reflection of mistargeting in the selection of beneficiaries.

The policy relevance of this issue goes beyond the borders of Mexico. The PROGRESA program is being taken as a model by increasing numbers of Latin American countries. Both Honduras and Nicaragua have recently begun PROGRESA-type programs among the rural poor. For countries where specific social programs have difficulty achieving long term institutionalization, such as Mexico and its two Central American neighbors, the specter of the crowding out of traditional private inter-household transfers should be a concern.

In this paper we use data from ENCASEH97 and the family of ENCEL datasets to assess the link between the PROGRESA subsidy and private transfers, both monetary and non-monetary. The October, 1998 and November, 1999 ENCEL surveys are used as our primary sources of information. We restrict our analysis to poor households as initially determined by PROGRESA. We do not include *densificado* beneficiaries, households selected by PROGRESA at a later stage, since these households did not begin receiving benefits at the same time as other poor households, and some ambiguity exists as to their exact date of entry into the program.

Two questions will be addressed in this paper. First, does participation in the PROGRESA program influence the probability of receiving or giving a transfer? Second, given that a household is receiving a transfer, how does participation in PROGRESA affect the amount being transferred? As a first step we will use descriptive statistics to compare the incidence and level of inter-household transfers between control and treatment groups at two points in time, using tests of significance of difference in means and difference in difference equations. We will also compare the characteristics of households that receive (or proportion) transfers, and those that do not. As a second step, we use difference in difference equations in the form of probit regressions to analyze the relationship between PROGRESA and the occurrence of a transfer, while we use Heckman's two step procedure to analyze the relationship between PROGRESA and the amount of private transfers.

2. CONCEPTUAL BACKGROUND

Theory of Private Transfers

How private transfers change when households receive public transfers depends on the motives for giving private transfers in the first place. When modeling the household as a single unit, three main explanations have been given in the economic literature that predict why private transfers occur. The first explanation, *altruism*, takes place when one individual cares about another individual. In this case, for example, the welfare of the parents enters into the migrating child's utility function. The second, *exchange*, results when individuals behave as though transfers were loans to be repaid some time in the future. The third is a mixture of self-interest and altruism since the former makes households enter an agreement to lend but the latter creates the trust to circumvent the moral hazard inherent in the agreement (Lucas and Stark 1985).

Distinguishing between the first two motives is important since they have different implications for public policy. That is, transfers based on altruism imply that government programs may partially (or totally, in Barro´s pessimist 1974 formulation) crowd out private transfers, while those based on exchange do not necessarily have these implications. Evidence showing that PROGRESA crowds out private transfers would have serious implications for the effectiveness of the program, and would tend to lower the expected impact of PROGRESA transfers.

Empirical tests to distinguish between the two motivations rely on the relationship between the receipt of public transfers and the amount of net private transfers. Under altruism, this relationship is always predicted to be negative whereas under exchange there exist conditions under which the relationship is not necessarily negative. Beyond altruism and exchange and the formal theoretical economic models on which they are based, Cox and Jimenez (1992) mention other motives found in the anthropological and sociological literature. These include the motivation of private transfers by social norms, taking the forms of guilt, family pressure, or tradition, which can extend to relatives or even fellow community members. While precise models incorporating these motives have yet to be formulated, it is likely that these norms are important in explaining why self interested individuals would provide resources to other people, thus tempering the predictions of the altruism or exchange models.

A variety of studies in both developed and underdeveloped countries have sought to shed light on the issue of the motivation behind private transfers. The results are mixed, often differing markedly when using the same data set[1]. Cox and Jimenez (1992) study the impact of old age social security payments on private transfers in Peru. They find evidence that private transfers would have been 20 percent higher without the social security payments. While this provides support for partial crowding out and thus supports the altruism motivation, Cox and Jimenez claim that other evidence is consistent with exchange, such as that women are more likely to receive transfers then men. The authors also find that the impact of income is not as large as that of the social security transfers, thus suggesting the hypothesis that donors respond more strongly to changes in the recipients income if the charges are exogenous, as would be in a social security program.

Cox, Eser, and Jimenez (1997) using data from a household survey from Peru, exploit threat points to test between a bargaining model (where families can also be altruistic) and the pure altruistic framework. They find support for the bargaining model from the result that transfer amounts are positively related to recipient pre-transfer incomes.

Cox, Jimenez, and Okrasa (1996) using data from Poland found similar, though sometimes contradictory, results. They found that while the program of most interest, social security, had a negative impact on the level of transfers, other social programs had a positive effect. The authors attempt to rationalize these counterintuitive results by showing that eligibility criteria for those programs are likely associated with receiving more transfers, and that they were unable to control for all criteria.

Cox and Jakubson (1995) analyze the impact of eliminating public transfers on poverty rates, taking into account the post elimination adjustment of private inter-household transfers. In order to carry out the econometric analysis, the authors must instrumentalize public assistance amounts, because in the program rules public transfer amounts are

[1] See the discussion in Ezemenari 1997.

specifically linked to the amount of private transfers received. In this case altruism is rejected, as all of the public assistance variables had a positive impact on private transfers.

Jensen (1998) uses a model of selection with friction, estimated with maximum likelihood, and backed up by a 2 step non parametric approach as well as the more traditional Heckman generalized Tobit, to analyze the impact of old age pensions on children's remittances in South Africa. He finds that each rand of elderly pension is met with a .2 to .4 rand reduction in private transfers from migrant children, thus supporting the concept of limited crowding out. Similar to Cox and Jimenez, he finds that private donors respond differently to different sources of target family income. Further, he shows that crowding out diverts resources back to better-off urban areas; rural beneficiaries "share" their benefits with private donors who live primarily in urban areas.

The PROGRESA Program

The PROGRESA program began in 1997 and as of the end of 1999 covered 2.3 million households, with an additional 300,000 being added in 2000. The PROGRESA budget was approximately $900 million in 1999, and serves as the centerpiece of the government anti poverty efforts.

An integral component of the PROGRESA program is the provision of cash transfers to beneficiary households. Beyond a standard monthly amount for food consumption, the amount of total transfers varies depending on the gender and number of school age children in the household. Households must fulfill certain requirements to continue in the program, such as visiting the health clinic for the cash food assistance, and sending their children to school for the scholarships. On average the transfer represents a significant share of average household income. Quantities range from a minimum of 105 (September, 1998) pesos per month for households with no children, to 630 pesos for households with 5 or more children. On average, beneficiary households are scheduled to receive 275 pesos per month in food and scholarship cash transfers, which represents 29 percent of average per capita income (and 40 percent of the median) according to data from ENCASEH97.

3. DATA

Data for the evaluation of the PROGRESA program is structured as follows. A census (ENCASEH) is applied to households in all communities selected as part of the PROGRESA program. Beneficiary households are targeted based on information from this census.[2] A subset of 505 communities was selected to form part of the evaluation. These communities were randomly allocated into treatment and control groups (see Behrman and Todd, 1999, for a description of this allocation). A baseline household survey (ENCEL)

[2] See Skoufias, Davis, and Behrman 1999, for a description and evaluation of the targeting mechanism.

was carried out in March, 1998, prior to the commencement of the program in these communities. Follow up surveys have been carried out approximately every 6 months since then. Modules on private inter-household transfers were included in the October, 1998 and November, 1999 ENCEL surveys. An attempt was made to survey all households, poor and non poor, in both treatment and control communities in each ENCEL. Our unit of analysis is the household.

PROGRESA staff had initially selected which households in the evaluation sample were eligible to participate in the Program following the collection of the ENCASEH census in late 1997. The targeting procedure resulted in the following original distribution of the beneficiaries, seen in Table 1.

Table 1— Distribution of Households, by Program and Sample Selection, 1997

(Percentages in Parenthesis)

	Treatment	Control	Total
Non beneficiary	7019	4539	11558
	(61)	(39)	(100)
	(47)	(49)	(48)
Beneficiary	7837	4682	12519
	(63)	(37)	(100)
	(53)	(51)	(52)
Total	14856	9221	24077
	(62)	(38)	
	(100)	(100)	

Poor (or beneficiary) control households, though eligible for subsidies, were kept out of the program for the purpose of impact evaluation until following the November, 1999 ENCEL.

In most of the analysis we use only households selected as poor by PROGRESA for inclusion into the program, then randomly allocated into treatment and control groups. We include those poor households from both October, 1998 and November, 1999 surveys, which contained the transfer modules along with demographic and asset information. The distribution of these households can be seen in Table 2. In this paper we use information on whether a household was originally chosen as a beneficiary, given that eligibility can be thought of an exogenous variable, as opposed to considering the amount of PROGRESA actually received by families. As a few households turned down the program, and

household behavior affects payment amounts, including payment amounts as an explanatory variable would have led to selection problems.

Table 2 — Distribution of Poor Households, by Sample Selection and Year

(Percentages in Parenthesis)

	1998	1999	Total
Treatment	7410	6771	14181
	(52)	(48)	(100)
	(63)	(62)	(62)
Control	4381	4184	8565
	(51)	(49)	(100)
	(37)	(38)	(38)
Total	11791	10955	22746
	(52)	(48)	
	(100)	(100)	

Densificado households are treated separately in the analysis. These households were added as PROGRESA beneficiaries approximately 8 months following the commencement of the program in our sample, after program administrators felt that households with certain characteristics were being left out of the program due to the established targeting criteria. As we discuss later on, these households were primarily older with fewer children, and had a higher incidence of private transfers compared to the original treatment and control groups. We consider them separately since they began receiving benefits later than the rest of the treatment households.

Private Transfers

The October, 1998 and November, 1999 ENCEL surveys contain detailed data on different kinds of inter-household transfers in two separate sections of the survey. The first section, which we will refer to as "Anyone" asks if the household has received different kinds of help (cash, food, clothing, or work) in the last month, from anyone outside the immediate family. Only cash transfers are given a monetary value. The second section, which we call "Children," collects information on children of the head of the household who have left the fold, as well as anyone else who had lived with the family and left within the last five years. Data is collected on whether these permanent migrants[3] have sent help in the last six

[3] We call them permanent migrants since they are no longer considered part of the household.

months, and if cash remittances, the amount over the last six months. In both sections demographic and location information is collected on these individuals. Clearly some double counting of transfers is possible, and the transfer variable we construct below is the aggregate of these two sections, netting out double counting.[4]

We thus constructed a variety of variables: first, dummies on whether either monetary or non-monetary transfers had been exchanged, and second, the net level of transfers exchanged. To construct the net transfer variable we summed the information of in and out transfers at the household level given by or to outsiders in the last month with those provided at the individual level, referring to those given by either children or any other household member who moved out of the household during the last 5 years prior to the survey. These later figures were reported on a six month basis, so we used the general CPI to deflate transfers to October, 1998 prices. If information was duplicated we kept that reported in the second section. Net transfers were constructed by subtracting transfers given from transfers received.

Overall, 15 percent of all households surveyed in the October, 1998 ENCEL reported at least one child having permanently left home, or having someone else leave the house within the last 5 years. Approximately 14 percent reported children, while 2 percent reported others. Of poor households, over 13 percent had at least one permanent migrant.

We separate the incidence and amount of transfers for poor households by the two sections of the survey, as well as combined, for both years, in Tables 3 (incidence) and 4 (amounts). As can be seen in Table 3, 7.32 percent of all households in October, 1998, and 5.48 percent in November, 1999, either received or provided a transfer over the six months prior to the respective survey. This drop is significant at the one percent level.[5] The vast majority of these transfers were on the receiving end; less than 1 percent of households gave transfers in either year. This is not surprising given that most households in this sample live in extreme poverty. This also means that there is little flow of resources from better to worse off households within the same community; most transfers come from outside the community. Also, the large majority of these transfers were cash; less than 2 percent of households either received or gave non-monetary transfers, either in kind or time.[6]

Surprisingly, of the households in both surveys very few had transfers in both years—only 1.13 percent, as can be seen in Table 5. Over six percent participated in transfers in 1998,

[4] Netting of the double counting was possible given that the name of the donors along with the amount of their transfers was provided in each part. This resulted in netting out the double counting of 155 individuals.

[5] Test of significance of differences are performed using t-tests and chi-squared tests as appropriate.

[6] We suspect that there may be underreporting in non-monetary transfers due to survey design and implementation.

but not in 1999, and 4.36 percent in 1999, but not in 1998. Access to permanent migrants did not play a role in this differentiation.

Evidence on Crowding Out

In terms of evidence of crowding out, the descriptive results are mixed. For the incidence and amounts of monetary transfers, the differences between 1998 and 1999, for both treatment and control households, are significant. This is true for both the Anyone and Children sections. This result is surprising, as the region in which the evaluation is located did not suffer a shock that would lead the global incidence and level of private transfers to fall.

Instead we attribute this decrease to response bias among informants. Control households may have lowered the amount and incidence of reported transfers in order to better their possibilities for entry into PROGRESA. Similarly, treatment households may have done the same in order to assure continued receipt of benefits. On the other hand, if treatment households are less likely to provide false information, since they are already safely in the program, then response bias on the part of control households may be obfuscating evidence of crowding out of monetary transfers. Instead of the incidence of monetary transfers falling among both treatment and control households, without response bias it may fall only among treatment households.

No significant differences are found, however, between treatment and controlled households, for either year. Further, difference in difference equation results are not significantly different from zero. Both groups suffer a reduction of transfers across time and the difference of these groups across time is not important. Here we use the following equation:

$$DD = (X^{T}_{98} - X^{T}_{99}) - (X^{C}_{98} - X^{C}_{99})$$

where *X* is the variable of interest, *T* refers to treatment households, and *C* to control households. For none of the transfer variables in Tables 3 or 4 was *DD* significantly different from zero. These results provide no evidence to suspect that the hypothesis that PROGRESA transfers are crowding out private inter-household transfers is true.[7]

Significant differences do emerge, however, for the receipt of non monetary transfers, though the level of incidence is small. While 1.47 percent of treatment households received

[7] Note, however, that this is not the typical difference in difference equation, since technically the October, 1998 ENCEL was collected after the commencement of the program. However, few households received more than one or two payments prior to the October survey. More importantly, it may have taken some time for potential donors living outside the locality to learn about the program. Thus for our purposes the difference in difference variables would capture the effects of learning about the program, rather than the strictly post program impacts.

non monetary transfers in 1998, only 1.03 percent did so in 1999. This result provides evidence that crowding out may be occurring, at least for non monetary transfers, although the difference in difference equation is not significantly different from zero. This evidence raises the question as to whether response bias may have prevented a similar result for monetary transfers. Monetary transfers may be more susceptible to response bias, as informants perceive that monetary income will influence their inclusion in the program, while they may not have the same perception regarding non monetary transfers.

Characteristics of Households that Participate in Transfers

Treatment and control households that participate in private transfers—almost exclusively on the receiving end, as mentioned earlier—have similar characteristics. As can be observed in Tables 6 and 7, these households are on average significantly smaller then non participating households, have an older, and female, head of household, lower levels of education, and a lower incidence of being indigenous. They also have fewer numbers of small children and have fewer members engaged in agricultural wage labor. Most notable is that households participating in transfers have a much higher incidence of permanent migration from the family.

These characteristics provide two insights. First, a household's place in the life cycle is an important determinant of receipt of transfers. Older households with adult children are more likely to receive transfers. Second, migration networks are a key determinant of private transfers, and suggests analyzing the determinants of migration, and the impact of PROGRESA on migration, in more detail in future research.

These characteristics are also important to keep in mind when we consider the *densificado* households. As seen in Table 8, these households are primarily older and female headed, with fewer young children—precisely the characteristics for which they were originally excluded from PROGRESA—and thus not surprisingly have a much higher incidence of private transfers then the rest of the evaluation population, as shown in Table 9.

Characteristics of Permanent Migrants

Tables 10 through 13 focus on the transactions carried out by permanent migrants as well as the characteristics of those family members who have migrated. In Table 10, we find that these individuals, when they leave home, tend to be unmarried, migrate for work reasons, and live primarily in other states, the same town as the original household, or in another country, presumably the United States. While men migrate primarily for work reasons, women leave home equally for work or getting married. Similarly, men show a much higher incidence of living in the US, while more women tend to locate near the original household location. Few differences emerge between 1998 and 1999. Fewer women migrate for marriage and work reasons, with a large increase in other reasons.[8]

[8] The shockingly large increase in permanent migrants who have died—from 1 to 9 percent—is most likely due to a coding error on the questionnaire.

By contrast, in Table 11, few differences emerge between male and female migration in terms of years since, or age, at departure. Important time differences are evident, however. Male migrants in 1999 appear to be much younger, with 31 percent in the 15-19 year old category, as compared to 7 percent in 1998.

In Table 12 we present the characteristics of migrants by type of, or absence of, support, from the October, 1998 ENCEL. The most important differences emerge between those who provided financial support and other kinds of supports (the missing category corresponds primarily to children who have left with their parents). While those migrants who provide financial support left on average 3.9 years ago, those who provided other types of support left on average 7.3 years ago. These migrants also have lower levels of education then the financial support migrants, and as to be expected, have a lower incidence of living outside of Mexico. Further, a higher percentage of males provide cash transfers, and among migrants that provide cash, a higher percent of men reside in the US. In Table 13 we see that even when women remit cash, the amounts tend to be smaller then those provided by men. The large majority of migrants are reported to have not provided any support.

Similar conclusions can be drawn from the characteristics of individuals living outside the household who provide support, from the Anyone section, in Table 14. Cash continues to be the principal type of support in both 1998 and 1999, but again we suspect underreporting of non monetary transfers due to questionnaire design. A higher share of males gave cash compared to women, who provided primarily food and clothes.

4. ECONOMETRIC ANALYSIS

In order to determine whether participation in the PROGRESA program crowds out private transfers we will address two questions. The first looks at the relationship between the PROGRESA subsidy and the occurrence of a transfer. The second question addresses the issue of the relationship between the PROGRESA subsidy and the amount of private transfers, given that a private transfer has occurred. We only present results for the original treatment and control households. The results for the *densificado* households, which do not differ in terms of the main conclusions, are available upon request.[9]

[9] In the course of our research we also examined the idea that the impact of PROGRESA may differ by the location of potential or actual transferees. Our hypothesis is that the local sources of transfers would be more likely affected by PROGRESA then sources located far away. Local sources would have much quicker knowledge of PROGRESA, and perhaps a different motivation for giving help, as more neighbors and friends would be involved. Far away sources, almost exclusively children of the head of the household, would have less knowledge of the PROGRESA program, and again possibly a

Effect of PROGRESA on the Incidence of a Transfer

Let the latent variable that determines whether a private transfer for the household *h* takes place be t_h, which is positive if the household receives a transfer. The equation is the same for the incidence of both monetary and non monetary transfers. The equation for this t_h is given by:

(1a) $t_h = \beta_0 + \beta_1 PROGRESA + \beta_2 YEAR + \beta_3 YEAR*PROGRESA + \beta_4 A_h + \beta_5 X_h + \varepsilon_h$

(1b) $t_h = \alpha_0 + \alpha_1 PROGRESA + \alpha_2 A_h + \alpha_3 X_h + \mu_h$

where PROGRESA takes the value of 1 for those originally eligible to obtain benefits (treatment), and 0 otherwise (control). Equation (1a) corresponds to the pooled sample, and (1b) to each year estimated separately. A_h is a vector of household assets obtained from the ENCASEH97 survey prior to the distribution of the first PROGRESA benefits[10], X_h is a vector of household characteristics that may affect both the decision to transfer and the amount, such as average educational level of household members, the level of education and marital status of the head, resources obtained from other Government sources (except Procampo), number of small children, number of young adults, whether someone in the household was sick in the previous 4 weeks[11], number of household members in different labor market activities, and whether the family had someone in the household who migrated prior to the beginning of the program.[12] Finally, ε is the error term, which we assume is normally distributed.

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different motivation for supporting their family. In any case, the small number of potential or actual local transferees impeded this line of analysis.

[10] Variable *A* controls for household resources. Assets were preferred to consumption or household income, typically used in this kind of analysis, given that the latter may confound a serious endogeneity problem. We also ran these equations using income and consumption instead of assets with similar results.

[11] The *sick* variable will be used only in the equations that are run separately for each year, since the variables are not comparable between 1998 and 1999. Different questions were asked in each of the two surveys. The October 1998 survey asked whether someone in the household had been sick during the last four weeks prior to the survey. The November 1999 survey asked questions relating to physical capabilities. We thus constructed one variable for the 1998 sample that indicates the number of sick household members in the last four weeks, and we constructed four different binary variables that indicate capability to perform activities from the 1999 sample.

[12] Although there is information on whether there is a member in the household who migrated in the last two years we decided to include a control for only those who migrated previous to the PROGRESA Program to avoid possible problems of endogeneity.

If $t_h>0$ then transfers are positive; if $t_h\leq 0$, transfers do not take place. For the pooled sample the coefficients of interest are β_1, the effect of being a treatment household, and β_3, the difference in difference estimator. For the year equations, the coefficient of interest is α_1. If these coefficients were negative it would be suggestive of crowding out and thus would be supportive of the altruism motivation for transferring resources. If not significantly different from zero, however, we can conclude there is no evidence that PROGRESA crowds out private transfers.

Table 15 contains the results for the probit estimates.[13] The dependent variable is 1 if a household received any kind of transfer (either monetary or non monetary). The first column refers to the pooled sample. After controlling for household resources, neither the participation in PROGRESA variable that indicates whether a household is in the treatment or control group, nor the difference in difference estimator, are significantly different from zero. Thus the equation of the occurrence of a transfer does not provide evidence of crowding out due to the PROGRESA subsidy.

The sign on the year of the survey variable suggests that in 1999 households had a significantly lower probability of receiving a transfer. This would be consistent with our earlier description of possible response bias. Households whose head is older, have a member who migrated, and a larger household—controlling for demographic composition—are more likely to receive a transfer. However, households headed by men and with a higher level of education, those belonging to indigenous groups, those with more adults present and with more members in the household involved in family and own businesses or in agricultural wage labor have a lower probability of receiving a transfer.

Column 2 presents the probit estimates for the 1998 sample, while the third column the estimates for the 1999 sample. For 1998, an additional variable indicates the number of members in the household who were sick during the previous 4 weeks. The results for 1998 are very similar to those of the pooled sample. The PROGRESA variable has no effect on the probability of receiving a transfer. Households headed by men, households classified as indigenous, those with members in the house involved in agricultural wage labor, family labor activities and operating own businesses are less likely to receive a transfer. Households with sick members present and those with permanent migrants are more likely to receive a transfer. In this specification having a permanent migrant increases the probability of receiving a transfer by 18 percent.

The 1999 results are again similar. They provide no evidence of the crowding out of private transfers. The variable that represents physical capabilities suggests that if members in the household are sick the probability of a transfer increases. However in 1999 having a permanent migrant in the household only increases the probability of receiving a transfer by 7 percent.

[13] We present only the results for variables of most interest. Complete results are available on request.

Table 16 and 17 present the results of the same regression, but by type of transfers: monetary and non monetary. In general the results are similar to those in Table 15. Households are less likely to have received a monetary transfer in 1999. Controlling for household resources, there is no significant effect of PROGRESA on the transfer behavior of this sample. Households where the head is older or households with permanent migrants are more likely to have received a monetary transfer. Households with members in the non agricultural wage sector are more likely to receive a monetary transfer, while those with more members in family labor activities, operating own businesses or in agricultural wage labor are less likely. Households headed by men, those that belong to an indigenous group, and those with a larger number of adults present in the household are also less likely to have received a monetary transfer. Having a permanent migrant increases the probability of receiving a monetary transfer by 11 percent.

When estimating by year of survey, the results that pertain to the effect of the PROGRESA program still hold. However differences emerge in the effect of different labor activities on the occurrence of a transfer. While in 1998 having members in agricultural wage labor, own business and family labor activities is negatively associated with more monetary transfers, during 1999 none of these are significant. Rather, having more members in non agricultural wage activities is positively associated with more monetary transfers. In 1998 having a permanent migrant increases the probability of receiving a monetary transfer by 15 percent, while in 1999 by only 7 percent. In both years, having someone sick at home increases the probability of the occurrence of a transfer.

The results for non monetary transfers with respect to the PROGRESA variable are the qualitatively the same: no effect of crowding out or crowding in. Differences between both types of transfers exist only in a few variables. First, Table 17 shows no effect of the survey year, which can be interpreted as similar non monetary transferring behavior over time, even after the subsidy has been given for a longer period. Also, having a permanent migrant increases the probability of receiving a non-monetary transfer by only 1 percent.

Effect of PROGRESA on Transfer Amounts

To answer the question of how PROGRESA affects the amounts of transfers, given that transfers occur, we use the Heckman selection model (Heckman 1976). The regression equation for the transfer amounts is given by:

$$(2a) \quad T_h = \beta_0 + \beta_1 PROGRESA + \beta_2 YEAR + \beta_3 YEAR*PROGRESA + \beta_4 A_h + \beta_5 X_h + E[\varepsilon_h | T_h > 0]$$

$$(2b) \quad T_h = \alpha_0 + \alpha_1 PROGRESA + \alpha_2 A_h + \alpha_3 X_h + E[\mu_h | T_h > 0]$$

where ω_h is a stochastic component. The *A* vector contains the same variables as those described for equations (1a) and (1b). The *X* vector contains all the variables for those described in equations (1a) and (1b) in addition to three variables that are used to identify

the model. The identifying variables should affect the probability of a transfer occurring but not the transfer amounts. As our identifying variables we use:

Out migration rate of the municipio: In principle localities with a high out migration rate are more likely to send transfers, given that migrants, especially those in the US, often remit back to their families. This out migration rate should in principle affect the probability that a transfer occurs but not necessarily the amount of a transfer.

Variables that characterize the infrastructure of the environment where households live: In principle the infrastructure of the community where people live might measure the costs of receiving transfers. For example, well endowed, well located localities, or localities with better communication might have lower costs for sending or receiving transfers. These costs, in turn, might affect the probability of someone sending a transfer, but not necessarily the amounts.

The results from the Heckman procedure are shown in Table 18. For neither of the samples do we find evidence of PROGRESA crowding out private transfer amounts[14].

Differences between Migrants and Nonmigrants

Two additional issues will also be addressed in this paper. The first has to do with the fact that households that have permanent migrants may be different than those that do not have migrants, and thus their transferring behavior may also be different. For this reason we estimate a fully interacted model of migration and explore whether PROGRESA has a separate effect for these two types of households on the occurrence of a transfer.

The specification we use for the fully-interacted model of migration is the following:

$$(3) \qquad t_h = \beta_0 + \beta_1 PROGRESA + \beta_2 PROGRESA*MIG_h + \beta_3 A_h + \beta_4 X_h + \beta_5 A_h*MIG_h + \beta_4 X_h*MIG_h + \varepsilon_h$$

where MIG_h is a variable that takes a value of 1 if the household has a member who migrated in the last five years but prior to the beginning of the PROGRESA program. This migration variable is interacted with all the other explanatory variables. The coefficient of interest here is β_2, which if significantly different from zero would suggest the presence of differential impact of PROGRESA on households with permanent migration assets.

The results for equation 3, found in Table 19, suggest there is no differential impact of PROGRESA on households with migrants and households with no migrants on the incidence of a transfer. Again, we find no evidence of crowding out. Indigenous

[14] A tobit model was also estimated in order to explain monetary transfers. Although the effect of PROGRESA on the occurrence and amount of transfer cannot be separated with this specification, we find no evidence of crowding out.

households have a lower probability of receiving a transfer, though this effect disappears in indigenous households with permanent migrants.

Spillover Effects

The final issue we look at is whether PROGRESA has had a spillover effect in those communities where it operates. In other words, has the existence of the PROGRESA program in a community affected the transfer behavior of the non poor or have the non-poor benefited from reallocations in private transfers within the community. We run equations for the incidence of both any kind of transfer as well as monetary and non monetary transfers. The specification we use to test for possible spillover effects is the following:

$$(4a)\quad t_h = \beta_0 + \beta_1 PROGRESA + \beta_2 ELIGIBILITY + \beta_3 YEAR + \beta_4 PROGRESA*ELIGIBILITY + \beta_5 ELIGIBILITY*YEAR_h + \beta_6 PROGRESA*YEAR_h + \beta_7 ELIGIBILITY*YEAR*PROGRESA_h + \beta_8 X_h + \beta_9 A_h + \varepsilon_h$$

$$(4b)\quad t_h = \alpha_0 + \alpha_1 PROGRESA + \alpha_2 ELIGIBILITY + \alpha_3 ELIGIBILITY*YEAR_h + \alpha_4 X_h + \alpha_5 A_h + \mu_h$$

The dummy variable *ELIGIBILITY* is positive if the household is considered poor by PROGRESA and thus eligible for benefits. For equation (4a) we pool all households, poor and non poor, over both years.[15] In terms of spillover effects, the total impact of the program on non-eligible households is $\hat{a}_1 + \hat{a}_6$, while the difference between non eligible households in October, 1998 is given by $\hat{a}_1$. The difference in difference estimator, $\hat{a}_6$, indicates whether non eligible households are affected by living in a PROGRESA community over time. Given our argument in footnote 8, we consider this to be a relevant hypothesis to test. Households living in PROGRESA communities, whether eligible or not, may be assumed to be receiving subsidies by potential donors. Then again, for those communities with strong migration networks, and thus a flow of information between the source community and migrants, potential donors may want to compensate those households who are not receiving the subsidy. In this case, PROGRESA may lead to an increase in the likelihood of non eligible households receiving transfers. Coefficient $\hat{a}_7$, the difference in difference in difference estimator, indicates whether the probability of receiving transfers for poor households living in treatment communities is affected by the PROGRESA program over time.[16]

When running separate regressions by year of survey, in equation (4b), a negative sign on coefficient $\hat{a}_1$ would indicate that non poor households in PROGRESA communities have also seen their incidence of transfers drop.

[15] Again, excluding *densificados*.

[16] The derivation of these coefficients can be found in Skoufias 2000.

The results for equations (4a) and (4b) are presented in Tables 20, 21, and 22. They indicate no presence of spillover effects due to the presence of PROGRESA as measured by their effect on the incidence of overall, monetary, or non monetary transfers.

5. CONCLUSION

In this report we use data from the PROGRESA evaluation datasets to assess the link between the PROGRESA subsidy and private transfers, both monetary and non-monetary. Two methods of empirical analysis are employed. First we use descriptive statistics to compare the frequency and level of inter-household transfers between control and treatment groups at two points in time for which data are available—October, 1998 and November, 1999. We also compare the characteristics of households that receive (or proportion) transfers, and those that do not. Second, we analyze econometrically whether selection into PROGRESA has a significant impact on the incidence and levels of private transfers among households.

The descriptive and econometric results paint a picture of those households involved in private transfers. They are smaller in size, with an older, less educated head of household. Female headed households are associated with a higher incidence, as well as levels of transfers, after taking into account sample selection bias. Indigenous households have a lower incidence of transfers, as defined in our study. Private transfers are dominated by children who have left the household, the majority of whom have left the community of origin as well. Monetary transfers in large part appear to serve the function of an old age pension, with children supporting their parents, particularly when elderly and widowed.

We find that on average, no significant differences between treatment and control groups, by year and over time, exist in terms of the receipt of monetary transfers. After controlling for demographic characteristics, consumption, productive assets, and village level effects, in a variety of different specifications, we find that selection into the PROGRESA program has had no influence over the incidence or level of either monetary or non monetary private inter-household transfers. Taken together the results are spectacular only in their unanimity: we find no evidence that PROGRESA subsidies crowd out private inter-household transfers, as of November, 1999, after approximately 19 months of receiving benefits. This result allays fears that PROGRESA is displacing or altering traditional or informal private networks that pre-existed the program, and that hopefully will continue in the eventuality that the PROGRESA program is curtailed. This result holds among the new *densificado* beneficiaries who tend to have higher participation in private inter-household support networks.

Further, while we find no drop in the incidence or amount of monetary transfers attributable to selection into PROGRESA, we do observe a significant drop in the level of private transfers among both treatment and control households between 1998 and 1999. We

suspect response bias on the part of informants. Control households may have lowered the amount and incidence of transfers reported in order to gain entry into PROGRESA. Treatment households may have done the same in order to avoid losing program benefits.

Also we do find evidence of a drop in the incidence of non monetary transfers among treatment households between 1998 and 1999. This would provide some evidence that PROGRESA is crowding out private transfers. In the econometric analysis, however, we are unable to attribute this drop to participation in the PROGRESA program.

A final caveat covers the possibility that transfers from different sources may be impacted differently by the PROGRESA program. It is conceivable that transfers from local sources, such as neighbors and friends, particularly in non monetary forms, may fall under an alternative set of motivations and interpersonal relations compared to transfers from far away sources, primarily children living in other towns, states, or countries. Further, the targeting of households within communities to receive benefits may disrupt traditional inter household relations and produce social conflict, again which might effect transfers from local sources differently than those from far away. We were not able to assess quantitatively this complex set of issues due to data limitations.

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Table 3 — Frequency of Private Transfers, by Year and Beneficiary Status, Poor Households

Incidence of Transfers	**October, 1998**				**November, 1999**				**Significance Tests** 1998 vs. 1999			**Difference in Difference**
	Total	*T*	*C*	*test T vs C*	*Total*	*T*	*C*	*test T vs C*	*Total*	*T*	*C*	
# of observations	11791	7410	4381		10955	6771	4184					
Both anyone and children												
% of households that												
had any type of transfer	7.32	7.21	7.51		5.48	5.39	5.62		***	***	***	
monetary (received)	5.55	5.53	5.57		3.77	3.88	3.59		***	***	***	
non monetary (received)	1.90	1.84	2.01		1.81	1.60	2.15	**				
had permanent migrants	13.4	13.6	13.0		15.4	15.2	15.8		***	***	***	
Anyone												
had any type of transfer	4.52	4.40	4.72		3.32	3.23	3.47		***	***	***	
monetary	2.72	2.71	2.74		1.57	1.68	1.39		***	***	***	
received	2.59	2.56	2.62		1.52	1.64	1.31		***	***	***	
gave	0.15	0.16	0.14		0.05	0.04	0.07		**	**		
non monetary	1.90	1.84	2.01		1.81	1.60	2.15	**				
received	1.52	1.47	1.60		1.25	1.03	1.60	***	*	**		
gave	0.41	0.36	0.48		0.13	0.12	0.14		***	***	***	
Children												
had any type of transfer	3.92	3.81	4.11		3.07	3.04	3.11		***	***	***	
monetary (received)	3.51	3.43	3.65		2.50	2.48	2.53		***	***	***	
non monetary (received)	0.41	0.38	0.37		0.57	0.25	0.25		*			

Table 4 — Amount of Private Transfers, by Year and Beneficiary Status

Amount of Positive Private Transfers, in Pesos	October, 1998				November, 1999				significance tests 1998 vs. 1999			Difference in difference
	Total	*T*	*C*	*test T vs C*	*Total*	*T*	*C*	*test T vs C*	*Total*	*T*	*C*	
# of observations	11791	7410	4381		10955	6771	4184					
Both anyone and children												
over all households	29	27	34		24	25	22					
conditional on transfer	530	483	610		629	641	608					
Anyone												
over all households	15	14	16		7	8	6		***	**	***	
conditional on transfer	574	551	614		468	492	419					
Children												
over all households	15	13	18		17	17	16					
conditional on transfer	414	367	490		665	679	643					

Table 5 — Frequency of Private Transfers, Panel Households Only

Both Anyone and Children	*Transfer only 1998*	*Transfer only 1999*	*Transfer both*	*No transfer*
# of observations=10647				
% of households that				
had any type of transfer	6.09	4.36	1.13	88.42
monetary (received)	4.85	3.01	0.75	91.39
non monetary (received)	1.62	1.71	0.11	96.56
had permanent migrants	66.98	68.53	69.17	18.69

Table 6 — Household Characteristics, by Receipt of Transfers, Year and Beneficiary Status

		October, 1998					November, 1999				
			Received/gave		Not received/gave			Received/gave		Not received/gave	
	Units	*Total*	*T*	*C*	*T*	*C*	*Total*	*T*	*C*	*T*	*C*
# of observations		11791	534	329	6876	4052	10955	365	235	6406	3949
Consumption, per capita	P	139	158	151	142	132	133	147	135	137	126
Demographic											
household size	#	6.46	5.88	6.07	6.49	6.53	6.54	6.20	6.56	6.54	6.57
age, head of household	years	42.64	52.49	51.77	41.76	42.11	42.70	51.58	51.79	42.03	42.42
male headed household	%	91.78	82.21	75.38	92.61	92.96	91.99	82.97	84.26	92.57	92.35
education, head of household	years	2.72	1.98	1.93	2.81	2.72	2.74	2.16	2.09	2.84	2.69
education, average household adults	years	3.32	2.93	2.87	3.38	3.30	3.35	3.24	3.00	3.41	3.28
ethnicity	%	43.16	31.33	33.43	43.71	44.57	42.74	35.16	29.36	42.33	44.90
# of children, ages 0-4	#	1.00	0.66	0.70	1.03	1.03	1.00	0.65	0.75	1.02	1.02
# of children, ages 5-10		1.29	1.09	1.11	1.30	1.31	1.30	1.14	1.22	1.31	1.31
# of adults		2.92	2.98	2.93	2.92	2.93	2.95	3.15	3.14	2.94	2.93
Consumer durables/infrastructure											
dirt floor	%	74.17	73.92	73.23	73.40	75.58	74.11	69.23	74.79	73.21	76.00
electricity		58.77	56.85	61.70	57.51	60.91	59.87	59.73	63.25	58.80	61.42
blender		16.75	19.10	24.32	15.02	18.76	17.06	21.10	26.38	15.34	18.92
refrigerator		3.99	6.18	6.08	3.94	3.60	4.06	6.30	4.26	4.19	3.65
radio		53.10	53.37	55.32	52.66	53.63	53.76	52.33	54.89	53.45	54.34
television		30.25	27.72	33.13	28.61	33.14	31.18	30.14	35.74	29.58	33.60
Labor activities											
# of members in											
agricultural wage labor	#	0.85	0.68	0.73	0.85	0.90	0.86	0.75	0.71	0.85	0.89
non agricultural wage labor		0.18	0.17	0.25	0.16	0.19	0.17	0.28	0.29	0.16	0.19
self employment		0.18	0.16	0.13	0.20	0.17	0.19	0.16	0.22	0.20	0.16
Livestock assets											
# heads of cattle	#	0.61	0.83	0.78	0.59	0.61	0.63	0.79	0.76	0.63	0.62
# pigs		1.02	0.95	1.10	0.97	1.11	1.03	0.95	0.88	0.98	1.14
Had permanent migrants	%	13.40	59.55	60.79	10.04	9.15	15.41	61.64	63.40	12.53	12.94

Table 7— Household Characteristics, by Receipt of Transfers and Year

		October, 1998			November, 1999		
Poor Households Only		**Received transfers**			**Received transfers**		
	Units	*yes*	*no*	*test*	*yes*	*no*	*test*
# of observations		863	10928		600	10355	
Consumption, per capita	P	155	138	***	142	133	
Demographic							
household size	#	5.95	6.51	***	6.34	6.55	*
age, head of household	years	52.22	41.89	***	51.67	42.18	***
male headed household	%	79.61	92.74	***	83.47	92.49	***
education, head of household	years	1.96	2.78	***	2.13	2.78	***
education, average household adults	years	2.91	3.35	***	3.15	3.36	**
ethnicity	%	32.13	44.03	***	32.89	43.31	***
# of children, ages 0-4	#	0.67	1.03	***	0.69	1.02	***
# of children, ages 5-10		1.10	1.30	***	1.17	1.31	***
# of adults		2.96	2.92		3.15	2.94	***
Consumer durables/infrastructure							
dirt floor	%	73.66	74.21		71.40	74.27	
electricity		58.70	58.78		61.10	59.80	
blender		21.09	16.41	***	23.17	16.71	***
refrigerator		6.14	3.82	***	5.50	3.98	
radio		54.11	53.02		53.33	53.79	
television		29.78	30.29		32.33	31.11	
Labor activities							
# of members in							
agricultural wage labor	#	0.70	0.87	***	0.73	0.86	***
non agricultural wage labor		0.20	0.17		0.28	0.17	***
self employment		0.15	0.19	***	0.19	0.19	
Livestock assets							
# heads of cattle	#	0.81	0.60	***	0.78	0.63	***
# pigs		1.01	1.02		0.92	1.04	
Had permanent migrants	%	60.02	9.72	***	62.33	12.69	***

Table 8 — Household Characteristics, by Year and Beneficiary Status

		October, 1998			November, 1999		
	Units	**Poor**	**Densificados**	**Non poor**	**Poor**	**Densificados**	**Non poor**
# of observations		11791	5840	4922	10955	5223	4730
Consumption, per capita	P	139	209	214	133	205	193
Demographic							
household size	#	6.46	4.72	5.26	6.54	4.79	5.34
age, head of household	years	42.64	52.50	51.07	42.70	52.64	51.38
male headed household	%	91.78	84.14	88.86	91.99	84.80	88.68
education, head of household	years	2.72	2.56	3.08	2.74	2.54	2.99
education, average household adults	years	3.32	3.48	4.33	3.35	3.48	4.25
ethnicity	%	43.16	29.91	19.83	42.74	29.80	19.25
# of children, ages 0-4	#	1.00	0.39	0.37	1.00	0.40	0.37
# of children, ages 5-10		1.29	0.54	0.50	1.30	0.56	0.49
# of adults		2.92	2.98	3.50	2.95	3.02	3.48
Consumer durables/infrastructure							
dirt floor	%	74.17	49.97	33.42	74.11	50.12	34.40
electricity		58.77	89.14	89.64	59.87	89.71	89.72
blender		16.75	45.59	61.29	17.06	46.52	60.42
refrigerator		3.99	21.89	34.91	4.06	22.48	34.07
radio		53.10	71.50	80.24	53.76	72.10	79.54
television		30.25	57.11	73.85	31.18	58.15	72.83
Labor activities							
# of members in							
agricultural wage labor	#	0.85	0.79	0.74	0.86	0.80	0.75
non agricultural wage labor		0.18	0.29	0.40	0.17	0.29	0.39
self employment		0.18	0.26	0.39	0.19	0.26	0.38
Livestock assets							
# heads of cattle	#	0.61	1.18	2.14	0.63	1.20	2.05
# pigs		1.02	1.26	1.35	1.03	1.28	1.32
Had permanent migrants	%	13.40	18.82	20.76	15.41	17.83	20.72

Table 9 — Participation in Transfers, by Year and Beneficiary Status

	October, 1998			November, 1999		
	Poor	**Densificados**	**Non poor**	**Poor**	**Densificados**	**Non poor**
# of observations	11791	5840	4922	10955	5223	4730
Both anyone and children						
% of households that						
had any type of transfer	7.32	16.03	11.26	5.48	12.23	8.90
monetary (received)	5.55	12.81	9.16	3.77	9.42	6.66
non monetary (received)	1.90	3.87	2.36	1.81	3.24	2.45
had permanent migrants	13.4	18.8	20.8	15.4	17.8	20.7
Anyone						
had any type of transfer	4.52	11.54	6.79	3.32	9.19	6.09
monetary	2.72	8.22	4.63	1.57	6.18	3.72
received	2.59	8.05	4.19	1.52	6.13	3.64
gave	0.15	0.19	0.45	0.05	0.06	0.08
non monetary	1.90	3.87	2.36	1.81	3.24	2.45
received	1.52	3.17	1.73	1.25	2.51	1.35
gave	0.41	0.60	0.91	0.13	0.06	0.21
Children						
had any type of transfer	3.92	6.87	6.75	3.07	4.77	4.57
monetary (received)	3.51	6.11	6.01	2.50	4.04	3.47
non monetary (received)	0.41	0.75	0.73	0.57	0.73	1.10

Table 10 — Civil Status at Departure, Reason for Leaving, and Current Residence of Permanent Migrants, by Gender and Year

		October, 1998			November, 1999		
	units	*Total*	*Female*	*Male*	*Total*	*Female*	*Male*
# of observations		6916	3281	3635	7352	3669	3683
Civil status at departure	%						
union libre		6	5	6	9	9	9
married		15	13	17	16	15	17
separated		2	2	1	2	3	1
divorced		0	0	0	0	0	0
widowed		1	2	1	2	2	1
unmarried		70	71	69	59	59	59
no response		6	7	6	12	12	12
Why left home	%						
got married		28	39	19	25	33	17
study		5	6	5	5	5	5
work		51	38	62	41	31	51
problems		3	3	3	3	3	3
other		11	13	10	24	26	22
no response		2	2	2	2	2	2
Current residence	%						
dead		1	1	1	9	10	8
same town		21	23	19	19	20	18
town nearby		7	11	4	8	10	6
same municipality		5	6	3	5	7	4
same state		13	16	12	13	15	11
another state		35	34	37	31	29	32
another country		15	8	22	13	6	19
does not know		1	0	1	0	0	0
no response		1	2	1	1	2	1

Table 11— Age and Education at Departure, and Years since Departure of Permanent Migrants, by Gender and Year

		October, 1998			November, 1999		
	units	*Total*	*Female*	*Male*	*Total*	*Female*	*Male*
# of observations		6916	3281	3635	7352	3669	3683
Years since departure	%						
<1		26	26	26	32	33	31
1		16	16	17	36	37	35
2		11	11	11	14	13	14
3		9	9	9	6	6	6
4		9	9	8	4	4	5
5		9	9	10	3	2	3
6 to 10		9	8	9	3	3	3
11 to 20		6	7	5	2	2	1
> 20		2	2	3	1	1	1
no response		3	3	3	1	1	1
Years, average	years	3.89	3.99	3.79	1.73	1.65	1.81
Age at departure	%						
0 to 9		5	5	4	11	12	11
10 to 14		9	10	5	7	9	6
15 to 19		39	44	7	35	39	31
20 to 24		25	23	35	24	22	25
25 to 29		9	7	28	10	8	11
> 29		9	7	11	11	9	13
no response		5	5	10	2	2	2
Age, average	years	20.30	19.50	21.03	20.35	19.65	21.06
Education, average	years	5.21	5.07	5.34	5.24	5.17	5.32

Table 12 — Characteristics of Migrants, by Support (October, 1998)

		Total	No support			Financial support			Other support			Missing/did not respond		
	units		*Total*	*Female*	*Male*	*Total*	*Female*	*Male*	*Total*	*Female*	*Male*	*Total*	*Female*	*Male*
# of observations		6916	4474	2331	2143	1795	621	1174	261	139	122	386	190	196
Years since departure	years	3.89	3.85	3.91	3.79	3.90	4.19	3.75	7.33	7.54	7.10	1.74	4.56	1.91
Age at departure		20.31	21.14	20.47	21.88	21.08	19.83	21.74	20.87	20.47	21.34	5.81	4.94	6.64
Education at departure		5.21	5.30	5.25	5.37	6.05	5.88	6.14	4.75	4.69	4.81	.57	.46	.68
Migrants living outside Mexico	%	.16	.11	.06	.15	.31	.16	.39	.07	.06	.08	.06	.03	.09

Table 13 — Household Support by Permanent Migrants

		October, 1998			November, 1999		
	units	*Total*	*Female*	*Male*	*Total*	*Female*	*Male*
# of observations		6916	3281	3635	7352	3669	3683
Support	%						
did not provide support		65	71	59	69	73	65
cash		26	19	32	16	12	21
in kind		3	3	3	1	2	1
in help		1	1	1	0	1	0
other		0	0	0	1	2	1
no response/missing		6	6	5	12	12	11
Cash transfer (over givers)*	Pesos	984	673	1148	1996	1569	2212
Cash transfer (over all migrants)*	Pesos	249	124	362	278	147	409

*over the last six months, October, 1998 Pesos.

Table 14 — Type of Support and Characteristics of Individuals Living Outside the Household

		October, 1998			November, 1999		
	units	*Total*	*Female*	*Male*	*Total*	*Female*	*Male*
# of observations		1953	804	1149	1266	539	727
Type of support	%						
cash		68	55	78	65	49	76
food		22	28	17	17	21	14
clothes		9	15	4	18	29	10
time		1	2	1	1	1	1
no response/missing		0	0	0	0	0	0
Location	%						
same town		32	33	31	28	30	27
town nearby		7	10	5	8	9	7
town far away		8	10	6	13	19	9
another state		30	31	29	30	28	31
another country		22	14	28	20	14	24
no response/missing		2	2	1	1	1	1
Relation to household	%						
relative		90	87	92	87	83	90
friend		3	4	2	4	7	1
neighbor		3	5	1	2	4	1
other		3	2	4	6	4	7
no response/missing		1	1	1	1	2	1

Table 15 — Effect of PROGRESA on the Occurrence of a Transfer (Poor Households)

Variable	All Poor 98 and 99 dF/dx (Std. Err.)	October 98 only dF/dx (Std. Err.)	November 99 only dF/dx (Std. Err.)
PROGRESA	-.000	-.002	.001
	(0.004)	(0.005)	(0.004)
Year of survey	-.014		
	(0.005)		
Year of survey*PROGRESA	-.009		
	(0.006)		
Household size	.004	.003	.003
	(0.001)	(0.002)	(0.002)
Age of head	.002	.002	.001
	(0.000)	(0.000)	(0.000)
Gender of head	-.039	-.058	-.019
	(0.008)	(0.012)	(0.009)
Education of head	-.002	-.003	-.002
	(0.001)	(0.001)	(0.001)
# members in agricultural wage labor	-.008	-.012	-.002
	(0.002)	(0.003)	(0.003)
# members in own business	-.01	-.017	-.001
	(0.003)	(0.005)	(0.004)
# members in family business	-.005	-.01	-.001
	(0.002)	(0.003)	(0.003)
# members in non agricultural wage labor	.005	-.004	.014
	(0.003)	(0.004)	(0.004)
Indigenous	-.02	-.023	-.014
	(0.003)	(0.004)	(0.004)
Number of adults	-.012	-.012	-.012
	(0.002)	(0.003)	(0.003)
Household has a migrant	.13	.181	.074
	(0.011)	(0.017)	(0.013)
Household has a sick member		.01	.026
		(0.002)	(0.008)
Kid ratio	-0.07	-.075	-.052
	(0.013)	(0.020)	(0.019)
Number of Observations	22187	11690	10529
R^2	0.1101	0.1323	0.0993

Table 16 — Effect of PROGRESA on Monetary Transfers (Poor Households)

Variable	All Poor 98 and 99 dF/dx (Std. Err.)	October 98 only dF/dx (Std. Err.)	November 99 only dF/dx (Std. Err.)
PROGRESA	.001	.001	.003
	(0.003)	(0.004)	(0.003)
Year of survey	-.016		
	(0.004)		
Year of survey*PROGRESA	.002		
	(0.005)		
Household size	.002	.001	.002
	(0.001)	(0.002)	(0.001)
Age of head	.001	.001	.001
	(0.000)	(0.000)	(0.000)
Gender of head	-.03	-.041	-.018
	(0.007)	(0.01)	(0.008)
Education of head	-.001	-.001	
	(0.001)	(0.001)	
# members in agricultural wage labor	-.006	-.011	.000
	(0.002)	(0.003)	(0.002)
# members in own business	-.008	-.015	-.002
	(0.003)	(0.004)	(0.003)
# members in family business	-.003	-.004	-.001
	(0.002)	(0.002)	(0.002)
# members in non agricultural wage labor	.005	-.001	.011
	(0.002)	(0.004)	(0.003)
Indigenous	-.008	-.01	-.005
	(0.003)	(0.004)	(0.003)
Number of adults	-.005	-.002	-.009
	(0.002)	(0.003)	(0.002)
Household has a migrant	.111	.151	.068
	(0.01)	(0.016)	(0.011)
Household has a sick member		.007	.015
		(0.002)	(0.003)
Kid ratio	-0.023	-.014	-.032
	(0.011)	(0.017)	(0.014)
Number of Observations	22187	11658	10529
R^2	0.1224	0.1305	0.1267

Table 17— Effect of PROGRESA on Non monetary Transfers (Poor Households)

Variable	All Poor 98 and 99 dF/dx (Std. Err.)	October 98 only dF/dx (Std. Err.)	November 99 only dF/dx (Std. Err.)
PROGRESA	-.000	-.001	-.003
	(0.002)	(0.002)	(0.003)
Year of survey	.002		
	(0.002)		
Year of survey*PROGRESA	-.003		
	(0.003)		
Household size	.002	.002	.001
	(0.001)	(0.001)	(0.001)
Age of head	.000	.000	.000
	(0.000)	(0.000)	(0.000)
Gender of head	-.008	-.014	.001
	(0.004)	(0.006)	(0.004)
Education of head	-.001	-.001	-.001
	(0.001)	(0.0005)	(0.001)
# members in agricultural wage labor	-.002	-.001	-.002
	(0.001)	(0.001)	(0.002)
# members in own business	-.001	-.002	.000
	(0.002)	(0.002)	(0.002)
# members in family business	-.003	-.006	-.001
	(0.001)	(0.002)	(0.002)
# members in non agricultural wage labor	-.000	-.001	.001
	(0.002)	(0.002)	(0.002)
Indigenous	-.011	-.011	-.01
	(0.002)	(0.002)	(0.002)
Number of adults	-.006	-.008	-.003
	(0.001)	(0.002)	(0.002)
Household has a migrant	.011	.02	-.000
	(0.004)	(0.006)	(0.004)
Household has a sick member		.002	.006
		(0.001)	(0.003)
Kid ratio	-0.042	-.049	-.02
	(0.007)	(0.008)	(0.011)
Number of Observations	22187	11658	10529
R^2	0.0740	0.1267	0.0619

Table 18 — Effect of PROGRESA on Transfer Amounts (Poor Households)

Variable	All Poor Transfer Equation (Std. Err.)	All Poor Selection Equation (Std. Err.)	98 Transfer Equation (Std. Err.)	98 Selection Equation (Std. Err.)	99 Transfer Equation (Std. Err.)	99 Selection Equation (Std. Err.)
PROGRESA	-87.68	-.012	-134.64	-.007	90.12	.032
	(165.85)	(0.044)	(167.24)	(0.046)	(213.27)	(0.056)
Year of survey	12.35	-.22				
	(196.57)	(0.052)				
Year of survey*PROGRESA	145.49	.031				
	(247.16)	(0.066)				
Household size	16.44	.034	-69.74	.02	165.37	.048
	(57.53)	(0.014)	(54.33)	(0.018)	(116.24)	(0.022)
Age of head	-1.94	.016	2.037	.015	-6.3	.016
	(6.61)	(0.001)	(7.912)	(0.002)	(10.521)	(0.002)
Gender of head	127.88	-.338	146.62	-.39	168.68	-.28
	(224.12)	(0.058)	(279.36)	(0.075)	(382.)	(0.093)
Education of head	40.53	-.014	-6.66	-.014	114.42	.023
	(45.83)	(0.012)	(61.57)	(0.015)	(63.25)	(0.018)
# members in agricultural wage labor	-50.85	-.099	-132.63	-.13	60.07	-.036
	(54.07)	(0.024)	(49.04)	(0.034)	(132.51)	(0.035)
# members in own business	23.82	-.115	20.31	-.168	-61.86	-.035
	(108.19)	(0.04)	(172.54)	(0.052)	(140.05)	(0.057)
# members in family business	-127.31	-.04	-106.38	-.051	-176.63	-.015
	(42.57)	(0.022)	(55.32)	(0.029)	(104.81)	(0.033)
# members in non agricultural wage labor	-165.89	.074	-55.45	-.014	-253.96	.201
	(60.74)	(0.032)	(69.82)	(0.045)	(118.12)	(0.043)
Indigenous	-19.13	-.188	-31.766	-.153	93.58	-.224
	(139.97)	(0.036)	(170.7)	(0.046)	(244.85)	(0.056)
Household has a sick member			-27.99	.089	-97.11	.335
			(35.82)	(0.019)	(163.3)	(0.072)
Household has a migrant	-191.03	.811	-80.41	.926	-203.44	.66
	(166.92)	(0.046)	(211.57)	(0.062)	(209.41)	(0.072)
Out migration ratio		.002		.001		.002
		(0.)		(0.)		(0.)
Infraestructure of environment		.026		-.008		.036
		(0.023)		(0.042)		(0.025)
Kid ratio	-442.08	-.215	206.89	-.11	-1658.93	-.366
	(472.14)	(0.15)	(565.69)	(0.195)	(909.96)	(0.237)
Number of Observations	22255		11696		10559	
rho	-.072		-.078		-.008	
	(0.065)		(0.065)		(0.144)	
sigma	1873.46		1793.27		1943.94	
	(210.98)		(279.93)		(294.37)	
lambda	-133.912		-140.07		-16.01	
	(127.66)		(125.77)		(280.39)	

Table 19 — Fully-interacted Model of Migration (Poor Households)

Variable	All Poor 98 and 99 dF/dx (Std. Err.)	October 98 only dF/dx (Std. Err.)	November 99 only dF/dx (Std. Err.)
PROGRESA	-.000	.002	-.002
	(0.003)	(0.005)	(0.005)
PROGRESA*mig	-.003	-.003	-.014
	(0.01)	(0.014)	(0.011)
Year of survey	-.012		
	(0.003)		
Year of survey*mig	-.026		
	(0.006)		
Household size	0.002	0.002	.001
	(0.001)	(0.001)	(0.001)
Household size*mig	-.006	-.008	-.003
	(0.003)	(0.004)	(0.004)
Age of head*mig	.002	.003	.002
	(0.000)	(0.000)	(0.000)
Gender of head*mig	-.001	-.011	-.001
	(0.013)	(0.017)	(0.019)
Education of head*mig	.000	.005	-.006
	(0.002)	(0.003)	(0.004)
# members in agricultural wage labor	-.016	-.022	-.011
	(0.002)	(0.003)	(0.003)
# members in family business	-.007	-.011	-.004
	(0.002)	(0.003)	(0.003)
# members in non agricultural wage labor	0.002	-.006	.01
	(0.003)	(0.005)	(0.004)
Indigenous	-.024	-.028	-.018
	(0.003)	(0.004)	(0.004)
Indigenous*mig	-.001	-.005	.001
	(0.01)	(0.013)	(0.014)
Kid ratio	-.097	-.112	-.08
	(0.008)	(0.012)	(0.012)
Number of Observations	22266	11699	10567
R^2	0.0754	0.0946	0.0585

Table 20 — Spillover Effects in PROGRESA Communities (All Transfers)

Variable	All households 98 and 99 dF/dx (Std. Err.)	October 98 only dF/dx (Std. Err.)	November 99 only dF/dx (Std. Err.)
PROGRESA	.005	.006	.01
	(0.006)	(0.007)	(0.006)
Eligibility	.011	.012	.015
	(0.006)	(0.007)	(0.007)
Eligibility*PROGRESA	-.005	-.007	-.011
	(0.007)	(0.008)	(0.008)
Year of survey	-.021		
	(0.007)		
Year of survey*PROGRESA	.006		
	(0.009)		
Eligibility*year of survey	.006		
	(0.009)		
Eligibility*year of survey*PROGRESA	-.008		
	(0.011)		
Household size	.004	.004	.003
	(0.001)	(0.002)	(0.002)
Age of head	.002	.002	.002
	(0.000)	(0.000)	(0.000)
Gender of head	-.041	-.058	-.023
	(0.007)	(0.01)	(0.008)
Education of head	-.003	-.004	-.003
	(0.001)	(0.001)	(0.001)
# members in agricultural wage labor	-.008	-.011	-.005
	(0.002)	(0.003)	(0.003)
# members in own business	-.011	-.02	-.002
	(0.003)	(0.004)	(0.003)
# members in family business	-.008	-.011	-.005
	(0.002)	(0.003)	(0.002)
# members in non agricultural wage labor	.003	-.003	.008
	(0.002)	(0.004)	(0.003)
Indigenous	-.02	-.027	-.012
	(0.003)	(0.004)	(0.004)
Number of adults	-.012	-.013	-.010
	(0.002)	(0.003)	(0.003)
Household has a migrant	.136	.187	.082
	(0.009)	(0.013)	(0.011)
Kid ratio	-.064	-.077	-.049
	(0.012)	(0.017)	(0.017)
Number of Observations	31311	16506	14805
R^2	0.1078	0.1307	0.0843

Table 21— Spillover Effects in PROGRESA Communities (Monetary Transfers)

Variable	All households 98 and 99 dF/dx (Std. Err.)	October 98 only dF/dx (Std. Err.)	November 99 only dF/dx (Std. Err.)
PROGRESA	.002	.003	.01
	(0.005)	(0.006)	(0.005)
Eligibility	.0057	.004	.011
	(0.005)	(0.006)	(0.005)
Eligibility*PROGRESA	-.001	-.001	-.006
	(0.006)	(0.007)	(0.006)
Year of survey	-.022		
	(0.006)		
Year of survey*PROGRESA	.011		
	(0.008)		
Eligibility*year of survey	.004		
	(0.008)		
Eligibility*year of survey*PROGRESA	-.008		
	(0.009)		
Household size	.002	.003	.001
	(0.001)	(0.002)	(0.001)
Age of head	.001	.001	.001
	(0.000)	(0.000)	(0.000)
Gender of head	-.034	-.042	-.024
	(0.006)	(0.009)	(0.008)
Education of head	-.002	-.003	-.002
	(0.001)	(0.001)	(0.001)
# members in agricultural wage labor	-.006	-.01	-.002
	(0.002)	(0.002)	(0.002)
# members in own business	-.009	-.017	-.003
	(0.002)	(0.003)	(0.003)
# members in family business	-.005	-.007	-.004
	(0.002)	(0.002)	(0.002)
# members in non agricultural wage labor	.003	-.001	.006
	(0.002)	(0.003)	(0.002)
Indigenous	-.009	-.013	-.003
	(0.003)	(0.004)	(0.003)
Number of adults	-.007	-.005	-.008
	(0.002)	(0.003)	(0.002)
Household has a migrant	.119	.163	.073
	(0.008)	(0.012)	(0.009)
Kid ratio	-.027	-.027	-.025
	(0.01)	(0.015)	(0.013)
Number of Observations	31311	16506	14805
R^2	0.1231	0.1349	0.1067

Table 22 — Spillover Effects in PROGRESA Communities (Non monetary Transfers)

Variable	All households 98 and 99 dF/dx (Std. Err.)	October 98 only dF/dx (Std. Err.)	November 99 only dF/dx (Std. Err.)
PROGRESA	.003	.003	-.002
	(0.003)	(0.003)	(0.004)
Eligibility	.005	.006	.002
	(0.003)	(0.003)	(0.004)
Eligibility*PROGRESA	-.004	-.004	-.002
	(0.004)	(0.004)	(0.004)
Year of survey	.004		
	(0.004)		
Year of survey*PROGRESA	-.005		
	(0.004)		
Eligibility*year of survey	-.001		
	(0.005)		
Eligibility*year of survey*PROGRESA	.002		
	(0.006)		
Household size	.002	.001	.002
	(0.001)	(0.001)	(0.001)
Age of head	.000	.000	.000
	(0.000)	(0.000)	(0.000)
Gender of head	-.006	-.013	.002
	(0.003)	(0.005)	(0.003)
Education of head	-.001	-.001	-.000
	(0.)	(0.001)	(0.001)
# members in agricultural wage labor	-.002	-.001	-.003
	(0.001)	(0.001)	(0.002)
# members in own business	-.001	-.003	.001
	(0.001)	(0.002)	(0.002)
# members in family business	-.003	-.004	-.002
	(0.001)	(0.002)	(0.001)
# members in non agricultural wage labor	-.001	-.003	.001
	(0.001)	(0.002)	(0.002)
Indigenous	-.011	-.011	-.009
	(0.001)	(0.002)	(0.002)
Number of adults	-.004	-.007	-.002
	(0.001)	(0.001)	(0.002)
Household has a migrant	.014	.019	.006
	(0.004)	(0.005)	(0.004)
Kid ratio	-.036	-.041	-.023
	(0.006)	(0.008)	(0.009)
Number of Observations	31311	16506	14805
R^2	0.0575	0.0920	0.0455