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Paper prepared for presentation at the Xth EAAE Congress
'Exploring Diversity in the European Agri-Food System',
Zaragoza (Spain), 28-31 August 2002

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The lure of tequila and the bestowing of motherly love: Does it matter whether public cash transfers are given to women or men? Evidence from the PROGRESA and PROCAMPO programs in rural Mexico

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Abstract – This paper aims at evaluating the impact of two different cash transfer programs in rural Mexico – Procampo and Progresa – on total consumption, food consumption and other outcomes like investment, schooling and health care. Progresa is targeted to women, while Procampo goes to farmers, mostly men and many of which are poor. We show that both programs boost consumption. However, they obtain this effect through different channels. Progresa is destined to consumption expenditure directly, while Procampo, which is paid to landholders, boosts investments and needs time to produce its benefits. Furthermore, we separate program from gender effects and show that cash transfer programs targeted to men are beneficial only when the recipients own means of production. This suggest that policy makers should take into account the relationship between gender and ownership of assets when designing poverty reduction programs.

Keywords – gender effect, program effect, rural poverty.

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28 January, 2002

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1. INTRODUCTION

The degree and depth of rural poverty around the world suggests a continued and expanding need to promote rural and agricultural development in developing countries. However, with limited and increasingly scarce resources it is not clear which actions are best suited to promote development. Many argue that the use of traditional agricultural policies – such as subsidies on staple foods, credit provision through state agricultural banks, trade protection and exchange rate manipulation, and state provision or subsidization of agricultural inputs – are inefficient and inappropriate mechanisms for promoting agricultural development and reducing rural poverty. Increasingly, policy makers are shifting from traditional broad-based agricultural policies towards more targeted programs that create less distortions in the economy.

One type of social protection intervention that has become increasingly popular in recent years are transfer programs that provide cash or quasi cash (such as transferable vouchers) to poor households.

In this paper, cash transfer interventions are examined with specific reference to two programs implemented by the Government of Mexico: the Program of Direct Payments to the Countryside (PROCAMPO) and the National Program for Education, Health and Nutrition (PROGRESA). The reason for the focus on these particular projects is that they represent two distinct forms of cash transfer programs and have been implemented in rural areas of a single country. PROCAMPO is a program designed to respond to the adjustment poverty that was expected as a result of the North American Free Trade Agreement (NAFTA). As a consequence of NAFTA, the prices of basic crops for producers were expected to drop sharply since these crop prices had been supported at levels above the border price. PROCAMPO was initiated at the same time as the NAFTA agreement (1994) to compensate producers of these crops for losses incurred from trade liberalization. Since PROCAMPO is geared towards farmers, the primary recipients of the cash transfers are male landowners. Although not explicitly a poverty alleviation program, the transfers are widely distributed across agricultural Mexico and many recipients are categorized as poor.

Unlike PROCAMPO, PROGRESA is a national anti-poverty program specifically designed to deal with chronic poverty. Benefits are targeted to households living in extreme and moderate poverty. Cash transfers are conditional, however, on school attendance by children, basic health care checkups by all family members, and attendance at public health lectures. PROGRESA benefits are also gender-targeted with transfers generally going to the mother, or responsible female adult, of the family. The motivation for this targeting is the belief, supported by the development literature, that females are more likely to spend income on food, health and education than are males.

Cash transfer programs like PROGRESA and PROCAMPO induce intended and unintended behavioral responses among recipients. Intended responses may include, as in the case of PROGRESA, increased school enrolment. Unintended responses may include changes in labor allocation or undesirable consumption spending (on alcohol or tobacco for example). One possible response among recipients, which may or may not be intended, is to invest transfer income in productive activities, thus potentially creating a multiplicative effect. This is likely to be the case particularly when households are credit constrained and unable to obtain cash for investment. Such indirect effects are likely to assist in the development of rural areas and the agricultural sector.

The income multipliers of cash transfer programs depend on a number of factors, including the design of the program. One key factor might be whether the primary male or female in the household receives the transfer. Evidence from the literature suggests that expenditure of income is dependent on the gender of the recipient. On average, women are found to spend more income on child education, health and nutrition than men. In fact, the motivation for providing cash transfers directly to women is the assumption that they will spend the income for these purposes. This is considered socially desirable since it enhances investment in human capital and supports long-term development. However, if men are more likely to spend income on investment activities because they control household productive

assets, then this may lead to higher income in the future and higher consumption in general for the household (including on education and nutrition).

The objectives of this paper are to examine cash transfers with specific reference to PROCAMPO and PROGRESA in order to evaluate the effects of different types of transfer programs on poverty alleviation and rural development and the role of gender in this process. Toward this end, the remainder of the paper is divided into five sections. Section 2 looks at the literature on gender and intrahousehold allocation to understand what the likely impact of providing transfers to men versus women might be and how important this is in program design. Section 3 discusses the data used for this study providing a brief description of the sampled households. Section 4 presents the empirical approach for evaluating the effects of PROCAMPO and PROGRESA. Section 5 presents the results of the empirical analysis as well as a discussion of the results. Finally, Section 6 provides conclusions and discusses the policy implications of the analysis.

2. GENDER-TARGETING AND CASH TRANSFERS

One of the key differences between PROGRESA and PROCAMPO is that the former gives preference to providing transfers directly to women while PROCAMPO, with rare exception, provides transfers to men. The basis for PROGRESA providing transfers to women instead of men is the increasing evidence that women spend income from own-earnings differently from men and, in particular, tend to spend more on children's health and nutrition (Haddad, 1999). Only in the absence of a responsible female adult is a male designated the PROGRESA recipient. In this section, the gender dimension of cash transfers is examined. As a first step the literature on intrahousehold resource allocation is briefly reviewed.

The issue of intrahousehold allocation comes fundamentally down to how households make decisions regarding the use of resources. In the last decade, there has been a growing literature that has attempted to test the validity of different models of the household.[1] Much of the debate has centered on the validity of the "unitary" model of the household as compared to a number of "collective" models. While a discussion of the accuracy of different models of household behavior is beyond the scope of this paper, it should be noted that the results of these studies indicate that the costs of neglecting the process of intrahousehold resource allocation may be high (Alderman, Haddad and Hoddinott, 1997).

Evaluating gender differences in the allocation of income has been approached in two ways: 1) examining the allocation of resources by female-headed, as opposed to male-headed, households (Handa, 1994; Kennedy and Peters, 1992); and 2) exploring how the allocation of income is influenced by the relative income earned by the activities of men and women and how income allocation is influenced by the asset position (bargaining power) of male and female household members (Hoddinot and Haddad, 1995; Thomas, 1997; Hopkins, Levine and Haddad, 1994; Quisumbing and Maluccio, 2000).

The literature suggests that women are more likely than men to spend income on food (nutrition), health and education of their children than men. This empirical evidence forms one of the basis for providing transfers to women instead of men, especially for a program such as PROGRESA where a primary objective is improved health and education outcomes. In addition to noting that women spend more income on food, health and education, some studies indicate that expenditure on alcohol and tobacco are positively related to the share of income that goes to men (Hoddinott and Haddad, 1995).[2] Others note that single MHHs devote more to tobacco than partnered MHHs and single FHHs devote less to alcohol

[1] See Haddad, Hoddinott and Alderman (1997a) and Strauss and Thomas (1995) for reviews of this literature.

[2] Note, however, that the average share of expenditures on alcohol and tobacco in the study is only 3.2% of total expenditure compared to 54% for food. While more income may be spent on these commodities the absolute level is fairly low.

than partnered FHHs (Handa, 1996). The image created by these studies is that females spend income on food, health and education for their children and males spend income on alcohol and tobacco.

As noted in section 2, however, one of the benefits of cash transfers is the multiplier effect on the household and the local economy. This suggests that these households are receiving substantial benefits from the investment of PROCAMPO transfers. If the multiplier effect differs by the gender of the recipient and, in particular, is lower for female transfer recipients, this presents an interesting trade-off. Transfers to men would bring about larger multiplier effects than transfers to women and bring about greater medium-term gains in income and thus expenditures. Transfers to women while bringing smaller multiplier effects, bring greater immediate nutrition benefits to children and longer benefits in terms of human capital development because of expenditures on education and health. One of the purposes of this paper is to determine how the multiplier effects may differ by gender by examining the PROCAMPO and PROGRESA programs.

However, the evaluation of the gender effects is complicated by other factors. If PROCAMPO does lead to a higher multiplier effect, it could be because men invest more than women as a rule but it also could be because the owners of assets such as land, whether they be men or women, are more likely to invest transfers. If the latter is the case, this suggests that it is not simply gender that matters in transfer programs but other characteristics such as asset ownership. This brings up another issue of whether transfer programs should be linked directly to productive activities, such as is the case with PROCAMPO. Not linking transfers to productive activities is a common criticism of programs like PROGRESA.

The purpose in evaluating PROCAMPO and PROGRESA is first to examine whether the programs lead to different outcomes in terms of expenditures and investment. The initial hypothesis is that PROGRESA will lead to increased expenditures on food, education and health because it is directed preferentially to women. However, since PROCAMPO leads to greater investment it is likely, over time, to bring about increased income levels which will also lead to increased expenditures. This increase may offset any differences that are attributable to gender. Along with establishing the effects of each program on expenditures, in the case of PROCAMPO, we want to determine if it is gender or some other aspect of the program that influences the investment effect. In the case of PROGRESA, we want to establish if increased expenditures are only linked to women, or if men receiving PROGRESA respond similarly. Differentiating gender from other program effects is complicated by a number of selectivity issues discussed in section 4.

3. THE DATA

To evaluate the differential effects of PROGRESA and PROCAMPO, we use data that was collected to evaluate PROGRESA but includes information on the receipt of PROCAMPO transfers. Data collected for the evaluation of PROGRESA are structured as follows. A first source of data is the census (ENCASEH) conducted in 1997 in all communities selected for participation in PROGRESA and which formed the basis for the selection of beneficiary households. Since it covered all PROGRESA communities, including those households surveyed for the PROGRESA evaluation, the census serves as a baseline survey for this study.[3] Second, as part of an evaluation based on an experimental design, 505 PROGRESA communities were selected and randomly allocated into treatment and control groups. Only households in the treatment communities received PROGRESA. The random assignment of localities allows for a more rigorous evaluation of PROGRESA and ensures that there is only a limited probability that differences between treatment and control groups are due to unobserved factors (see Behrman and Todd, 1999). As part of this evaluation, a survey (ENCEL) was conducted in these

[3] A baseline household survey (ENCEL) was carried out in both the treatment and control communities in March, 1998, prior to the initiation of PROGRESA payments in May, 1998. However, the data is not as complete as ENCASEH and the census is sufficient to meet the requirements of this study.

selected communities in October 1998.[4] For this study, the 1997 ENCASEH survey and this 1998 ENCEL survey are used.

Because of the careful construction of the data set, participation in PROGRESA can be considered random, thus limiting problems of selection and program placement bias. Selection bias occurs when households choose to participate in a program and the impact from a program cannot be distinguished from differences in outcomes due to inherent differences between those that chose to and those that chose not to participate. Program placement bias occurs when program eligibility requirements differentiate participant and non-participant households and it is not possible to distinguish program effects from effects that are due to program eligibility requirements. PROGRESA is free from either of these biases. However, PROCAMPO had already been operating for a few years when the evaluation was initiated, and the sample was not chosen in order to minimize problems of selection and program placement bias. In the analysis below, we must rely on econometric techniques to control for and minimize these potential sources of bias.

The ENCEL surveys collected data on all households in the 505 communities, both treatment and control, numbering over 24,000 households in total. We focus our attention on families originally classified as poor[5].

Table 1. Allocation of households to program categories

Number of obs=12,625	**PROGRESA**	**Non-PROGRESA**	Total
PROCAMPO	26%	16%	42%
Non-PROCAMPO	32%	26%	58%
Total	58%	42%	100%

Table 1 presents allocation of households across the four categories of households in the sample. The sample can be divided as follows: Group 1: PROGRESA and PROCAMPO recipients (26% of all households), Group 2: PROGRESA recipients only (32%), Group 3: PROCAMPO recipients only (16%), and GROUP 4: non-recipients (26%). Households in groups 3 and 4 are considered poor by PROGRESA but located in the control communities. Overall, 58% of the sample receive PROGRESA, 42% receive PROCAMPO and 74% receive at least one type of transfer.

Table 2 (p. 14) summarizes the data on expenditures, investment, cash transfers, household characteristics and regional differences that are used in this analysis. In column 1, data from the entire sample is presented while columns 2-5 report the results for the four household categories. It is expected that PROGRESA (categories 1 and 2) and non-PROGRESA (categories 3 and 4) households will have similar characteristics, as treatment and control communities were chosen randomly. PROCAMPO

[4]. Following the 1998 surveys two additional ENCEL surveys were conducted in March and October 1999. Results from the evaluation of PROGRESA show that the main impact of Progresa in terms of schooling, health, and consumption is found after the initial 6 months of the program (October 1998). After that, the impact does not get bigger, and in fact in some cases, is reduced. Thus we only use the first round, and not subsequent rounds--we expect no difference in terms of results. More importantly, PROCAMPO households in ENCEL October 1998 have been in the program for 4 years. It is safe to assume that the long term benefits (multiplier effect) of PROCAMPO are fully realized by this time.

[5] Initially, PROGRESA classified as eligible about 52% of households. Afterward, due to perceived bias against certain kinds of poor households (especially elderly with no children), criteria of eligibility were revised and the program was extended to cover 78% of households. This expansion is known as "densification". Because of the revision of the criteria of eligibility, households included in the second phase have different characteristics. As these households were declared eligible later, most of them started receiving cash transfers some time after the initial households, so that the impact of PROGRESA on their consumption could be different. Hence, we restrict our analysis to the "pre-densification" poor (12,627 households).

participation is not randomly assigned in the survey so some differences between PROCAMPO (categories 1 and 3) and non-PROCAMPO (categories 2 and 4) are expected to emerge.

On average, households spend approximately 170 pesos per capita each month. Food expenditures represent the single highest expenditure representing approximately 80% of total expenditures. Health expenditures are the second highest expenditure. As anticipated, investment is higher for PROCAMPO households than other households and in particular agricultural spending is much higher. PROGRESA transfers are between three and four times greater than PROCAMPO transfers. For PROGRESA recipients, the transfer represents about 25% of total monthly expenditure while for PROCAMPO recipients the transfer represents less than 10% of total expenditure. For households who receive both types of transfers, the combination provides on average 34% of total expenditure. Both of these programs represent significant contributions to household income.

The PROCAMPO households, split into categories 1 and 3, appear to have different characteristics as compared to categories 2 and 4. PROCAMPO households depend on agricultural and livestock production for their livelihood; they have much larger land and livestock holdings, and they participate less in non-agricultural wage labor. On average PROCAMPO households are larger than non PROCAMPO households – one reason for their lower per capita levels of expenditure – and are further along in the life cycle, with slightly older household heads. PROCAMPO households also have a higher share of speakers of an indigenous language. They are better off in terms of infrastructure such as electricity and pipe water, and their dwelling less often have dirt floors. These results suggest care must be taken in evaluating the effects of PROCAMPO. It must also be kept in mind that these PROCAMPO households are unlikely to be representative of PROCAMPO households nationwide, but instead poorer than average given the nature of the PROGRESA sample.

4. EVALUATING THE EFFECTS OF PROCAMPO AND PROGRESA: THE EMPIRICAL APPROACH

In order to analyze the effect of PROGRESA and PROCAMPO transfers, we begin by estimating total consumption expenditures per capita[6] to determine the overall impact of the programs on household consumption. Total consumption expenditure is a function of non-transfer income, PROGRESA and PROCAMPO transfer income and preferences. While data on non-transfer income is available in the data set, it is endogenous and contains substantial measurement error. A normal response to dealing with this problem would be to use an instrumental variables approach (Greene, 1997). However, since our interest lies in comparing the effects of PROGRESA and PROCAMPO on total expenditure, including non-transfer income in the regression is not necessary. We therefore choose to include directly in the regression the set of exogenous variables that would be used to explain non-transfer income.[7] These variables include measures of human capital and other household assets as well as regional dummies, which control for regional differences in the ability to generate income that are due to differences in infrastructure, public services, etc. A number of these variables, particularly age and gender of the head of household, whether the household is indigenous and education levels, may also reflect differences in preferences across households. However, distinguishing the effects of non-transfer income and preferences on total consumption expenditure is not the main concern of this study and the specification is therefore sufficient to meet our needs. Note that all these variables come from the baseline survey while the expenditure and transfer data come from subsequent surveys, in order to ensure the exogeneity of these variables. The estimated equation can be expressed as follows:

$$(1)\quad C_i = b_0 + b_1{*}PROGRESA_i + b_2{*}PROCAMPO_i + b_3{*}X_i + u_i$$

[6] To obtain per capita values a per adult equivalent was used.

[7] In effect, we are reducing the number of equations in our system by substituting the non-transfer income equation into the expenditure equation.

where C_i represents monthly per capita total consumption expenditure of the ith household; $PROCAMPO_i$ and $PROGRESA_i$ are monthly per capita payments from the two transfer programs, X_i is a vector of socio-economic characteristics of household *i*, and u_i is the error term. To determine if the impact of a PROGRESA peso is different from a PROCAMPO peso we test the following null and alternative hypotheses:

$$H_0: b_1 \neq b_2; \quad H_1: b_1 = b_2$$

An important issue to consider is the inclusion of data on the transfer payments in the regression. Both PROCAMPO and PROGRESA cash transfers are reported in the surveys. While participation in PROGRESA is randomized at the locality level, the data suggest that a number of households receive PROGRESA transfers that are less than their eligibility. It is not clear why this is the case. It could be administrative mistakes or it could be a household choice not to complete all program requirements. Whatever the reason, this may make the PROGRESA transfer amounts endogenous. To overcome this problem, we instrument the PROGRESA transfer. For the instrument, we use the intent to treat (ITT), which is the theoretical amount that should be paid to households that are entitled to participate in the program. As such, ITT is a good predictor of actual receipts and is exogenous to the system (Bloom, 1984). The data on the PROCAMPO transfer is fraught with additional estimation problems. PROCAMPO was initiated in 1994, long before the survey was conducted. Since PROCAMPO is not a randomized program, bias may be introduced into the estimation by the fact that households choose to participate (selection bias) or by the design of the program (program placement bias). Furthermore, transfers received from PROCAMPO may also be less than household eligibility. Like PROGRESA, to overcome these problems we instrument the PROCAMPO transfer using the intent to treat. Total consumption expenditure is then estimated as presented in equation 1 where PROGRESA and PROCAMPO are instruments substituted for the actual transfer values.

The estimation of equation 1 provides information on the overall impact of the transfer programs on expenditure. As noted earlier, however, the design of the two programs may lead to differences in the way income is allocated across expenditure categories. To examine this hypothesis, we examine the effect of the programs on household expenditure in seven expenditure categories: food, school expenses, health and hygiene, children clothes, adult clothes, energy and other goods. The specification of the model is the same as in equation 1 (including using instruments for PROGRESA and PROCAMPO) with the dependent variable changed to be the expenditure in the particular category as follows:

$$(2)\quad C(j)i = b0 + b1*PROGRESAi + b2*PROCAMPOi + b3*Xi + ui$$

where $C(j)_i$ is the expenditure on good *j* by household *i*.

The next stage of analysis is to examine the specific outcomes that are associated with each of the transfer programs. Both programs involve cash transfers, but PROCAMPO is directed towards households with a specific productive asset – agricultural land – and is expected to have a positive effect on investment, particularly investment in agriculture. On the other hand, PROGRESA is thought to have less of an impact on capital accumulation and investment (putting aside the very long term accumulation of human capital), since it is given to household members who do not typically own productive assets—in particular women. To explore this, data on investment expenditure in agriculture and business (nonagriculture) are used. Since a number of households do not invest, the data is censored at zero and a tobit model is appropriate. The equation is specified as follows:

$$(3)\quad INVi = b0 + b1*PROGRESAi + b2*PROCAMPOi + b3*Xi + ui$$

where INV_i is investment by household *i*. This model is estimated for total investment, agricultural investment and business investment.

A corollary to the hypothesis that PROCAMPO induces investment is that this investment should lead to higher income and thus higher expenditure. To evaluate this hypothesis, we want to look at the evolution of the coefficient of PROCAMPO in the total expenditure regression. If participants invest the money

they receive, we would expect the program to take some time to show its effects: as PROCAMPO started in 1994, the effect of cash transfers should be bigger in 1998 than in, for example, 1996. However, if PROCAMPO money is spent directly on consumption goods (a "one dollar is always one dollar" hypothesis), we should find that the effect of the transfer was the same in 1996 as in 1998. This hypothesis can be tested using data from the 1996 Enigh survey. The testing of this hypothesis is done by pooling the 1996 and 1998 data and estimating an equation similar in structure to equation 1, as follows:

(4) Ci = b0 + b0_96*DUM96 + b1*PROGRESAi + b2*PROCAMPOi + b2_96*PROCAMPO96i + b3*Xi + b3_96*X96i + ui

where DUM96 is a dummy variable representing a 1996 observation, $PROCAMPO96_i$ is the PROCAMPO transfer for 1996 for household *i* and $X96_i$ are the household characteristics for 1996. If PROCAMPO only has an immediate effect on consumption, we expect that the coefficients on PROCAMPO will be the same for 1996 and 1998 while if there is an investment effect we expect that the coefficient for 1998 to be larger. We therefore are testing the following null and alternative hypotheses:

H_0: $b_2_96 = b_2$; H_1: $b_2_96 < b_2$

Turning to the requirements of PROGRESA, we want to look at whether PROGRESA has had the expected impact on schooling and health. Equations 2 examine how PROGRESA and PROCAMPO transfers changed the level of expenditure on schooling and health. With the available data, it is also possible to directly analyze school enrolment and use of medical services by households. The determinants of the probability of school enrolment and use of medical services by a child are expected to be non-transfer income, transfer income, preferences and child characteristics. As with the previous equations, non-transfer income and preferences are included in the estimation using household characteristics. The following equations are then estimated at the individual level, using data only for those families with school age children:

(5) P(SEj,i) = b0 + b1*PROGRESAi + b2*PROCAMPOi + b3*Xi + b4*Zj,i + uj,i

(6) P(HCj,i) = b0 + b1*PROGRESAi + b2*PROCAMPOi + b3*Xi + b4*Zj,i + uj,i

where $SE_{j,i}$ is a dummy for school enrolment of child *j* in household *i*, $HC_{j,i}$ is a dummy for medical check-up of child *j* in household *i* and $Z_{j,i}$ is a vector of individual characteristics of child *j* in household *i*, such as age and gender. The probit models are estimated with clusters at the household level to account for the autocorrelation created by the fact some children belonging to the same family.

Separating gender and program effects

For each of the above estimations, PROGRESA and PROCAMPO are included as independent variables in the analysis in order to distinguish the effects of each program. However, as noted in an earlier section of the paper, we are particularly interested in evaluating how the gender of the recipient affects consumption. While PROGRESA is targeted to women and PROCAMPO directed to landowners, who are principally men, there are a number of cases in which recipients belong to the other gender (for each program, about 10%). Given that this is the case, this information can be used to isolate the gender effect of these cash transfers from the program effect. To do this, PROGRESA and PROCAMPO transfers are divided by the gender of the recipient and included in the estimation independently. For example, equation 1 is rewritten as follows:

(1') Ci = b0 + b1_f*PROGRESAfi + b1_m*PROGRESAmi + b2_f*PROCAMPOfi + b2_m*PROCAMPOmi + b3*Xi + ui

where adding *f* to the variable name indicates that the payment goes to a woman and *m* indicates a payment to a man. $PROCAMPOf_i$ is equal to $PROCAMPO_i$ if the recipient is female, to zero otherwise; the same for PROGRESA. This allows an evaluation of whether the different effects of PROCAMPO

and PROGRESA are due to the gender of the recipient or to some other reason, such as program conditionality requirements. Four sets of null and alternative hypotheses can be tested: gender effect in PROGRESA (H_0: $b_1_f = b_1_m$; H_1: $b_1_f \neq b_1_m$); gender effect in PROCAMPO (H_0: $b_2_f = b_2_m$; H_1: $b_2_f \neq b_2_m$); program effect for women (H_0: $b_1_f = b_2_f$; H_1: $b_1_f \neq b_2_f$); program effect for men (H_0: $b_1_m = b_2_m$; H_1: $b_1_m \neq b_2_m$).

Along with the problems noted earlier with using the actual transfer data, there is an additional problem associated with dividing the transfer data by gender. Male PROGRESA beneficiaries may not be representative of the overall population of males and female PROCAMPO beneficiaries representative of the overall population of females. Male PROGRESA beneficiaries may be more "motherly" than typical males, since they tend to be single parents. Similarly, female PROCAMPO beneficiaries, who are likely to be farmers, may have different characteristics than average women. This has the potential to create bias in the estimated coefficients. In order to estimate the above equation correctly, we generate an instrument for the gender of the recipient.

In summary, each of the models (equations 1-6) are estimated using the specification noted above with instruments for PROGRESA and PROCAMPO (model 1). Along with this estimation, a second specification is run (model 2) for each equation (equations 1'-6') to differentiate the gender and program effects with appropriate instruments used for the gender-specific transfers.

5. RESULTS: WHAT WE EXPECTED AND WHAT WE GOT

Table 3 presents the results of the regression on total consumption expenditure for the two alternative model specifications (equations 1 and 1"). Only the results for the transfer variables are presented here (full results in appendix 1, p. 15)[8]. On the right hand side, tests of equality of the coefficients are presented.

Summary, total expenditure			**Total expenditure, tests of equality**		
Model 1	**coef**	**t-stat**	**Model 1**	**diff**	**signif**
PROGRESA (ITT)	.274	3.14	PROGRESA vs. PROCAMPO	<	no
PROCAMPO (ITT)	.360	5.82			
Model 2			**Model 2**		
PROGRESA received by female	.283	3.20	**F** PROGRESA vs. **M** PROGRESA	>	yes
PROGRESA received by male	.050	.44	**F** PROCAMPO vs. **M** PROCAMPO	>	no
PROCAMPO received by female	.545	3.21	**F** PROGRESA vs. **F** PROCAMPO	<	no
PROCAMPO received by male	.342	5.38	**M** PROGRESA vs. **M** PROCAMPO	<	yes

Table 3. **On the left**: results of the regression for total consumption. **On the right**, test of equality of the coefficients. The first column indicates which coefficient is larger, and the second the results of the F-test on the equality of the two coefficients. A "no" indicates that the null hypothesis cannot be ejected—the coefficients are not statistically different from each other.

The results from Model 1 indicate that an increase of one peso in PROGRESA cash transfer leads to an increase in consumption of 0.27 pesos and a one peso increase in PROCAMPO leads to an increase in total consumption by 0.36 pesos. Both results are significantly different from zero. Tests of difference between the PROGRESA and PROCAMPO coefficients suggest the null hypothesis that they are not equal can be rejected. The first conclusion that can be drawn is that not all the money provided by PROCAMPO are spent on alcohol. The program has a positive effect on total consumption, either through direct purchase or through investment returns. Overall, each program has a similar effect on consumption (even if after different amounts of time). The results from Model 2 suggest that male recipient of PROGRESA transfers behave differently than female PROGRESA recipients and male PROCAMPO recipients. It is not simply the gender of the recipient that matters but the combination of

[8] Lack of space prevents us from presenting the full results for all the models in this version of the paper. The table of full results is presented only for model 1 and 1', in Appendix 1, p. 15.

the gender and program design. This constitutes the first strike against conventional wisdom. Not all men are drunkards, or if they are, they at least spend some of their money in a responsible fashion if the program is designed appropriately.

The results for household characteristics and regional dummies are robust across the two model specifications. Not surprisingly, household size leads to a reduction of per capita expenditures. The age of the household head is negatively associated with expenditures as older household heads spend less. Female headed and indigenous households have significantly lower expenditures. Somewhat surprising results are that the number of economically active males in the family and the average male education level are associated with lower expenditures. It is not clear why this might be the case, especially among poorer households that are represented in the PROGRESA data sets. The presence of a dirt floor, a clear sign of asset poverty, results in lower expenditures. Ownership of higher value assets, such as irrigated land and livestock, is positively associated with higher consumption reflecting the higher income potential of these households. Regions 5 (Sierra Gorda), 6 (Montaña (Guerrero)) and 28 (Altiplano (San Luis Potosi)) appear to have lower expenditures than the base region (region 3: Sierra Norte-Otomí Tepehua), while Region 27 (Tierra Caliente (Michoacan)) appears to have significantly higher expenditures.

The next step is to estimate the seven categories of expenditure (food, schooling, kids clothes, health, energy, adult clothes and other expenditure) for the two alternative models (equations 2 and 2'). A summary of results and tests of differences are presented in Table 4 (p. 14). Because of the importance of food for the nutrition of households and the fact that it makes up around 80% of total expenditures, we begin by examining food expenditures. Both programs have positive and significant effects on food consumption. Similar results are found when differentiating by gender. Transfers to both genders in both programs lead to increased food expenditures, and all coefficients are significant, except for male PROGRESA beneficiaries. As can be seen in Table 4, the null hypotheses of equality of coefficients cannot be rejected for any of the pairings in the two models.

The next step in the analysis is to consider household expenditure on non-food items. The results for the non-food expenditures are where differences finally begin to merge between the two programs. While PROGRESA has a positive and significant effect on schooling expenditure, the effect of PROCAMPO is not significantly different from zero. The F-test rejects the null hypothesis of equality of the two coefficients. Looking at Model 2, only PROGRESA transfers received by females significantly increase school expenditures. However, the hypothesis that female and male PROGRESA recipients are the same cannot be rejected. Furthermore, there is a significant difference between female PROGRESA and PROCAMPO recipients. Based on these results and given that PROGRESA requires school attendance, the increase in school expenditures by PROGRESA recipients is the result of project design. On the contrary, PROCAMPO has no impact on schooling expenditure; agricultural intensification does not seem to imply an increase in child work on the farm and reduction in school expenditure. This is explored further in with the school enrolment equation presented below (equation 5).

Both PROCAMPO and PROGRESA appear to have a positive and significant effect on expenditures on kids clothing; however, as expected, the effect is significantly larger for PROGRESA. The gender differentiation suggests that this result is due to an increase in female PROGRESA expenditures on kid's clothes and that male recipients spend signficantly less. PROCAMPO leads to a significant increase in expenditure for health care and personal and home hygiene while, surprisingly, PROGRESA does not. This may due to the fact that health care visits required by PROGRESA are subsidised. The decrease in health expenditure by PROGRESA recipients holds true regardless of the gender of the recipient, however, male PROGRESA reciepients reduce health expenditure by more than female recipients. Male PROGRESA recipients are then substantially reducing their health exepnditures as a response to the subsidized health care provided by PROGRESA. In terms of energy expenditure, only female PROCAMPO recipients appear to spend substantially more on energy. Expenditure on adult clothing is positively related to PROCAMPO which seems to be driven by the fact male PROCAMPO recipients spend substantially more on adult clothing. Finally, there is no significant impact on other expenditures.

From the results we have seen so far, we see that not all the money provided by PROCAMPO is lost on alcohol. The program has a positive effect on total and food consumption that is similar to that of PROGRESA. From the policy point of view, it is interesting to determine whether PROCAMPO cash transfers are directly spent on consumption goods or if this increase is due to past investments which are now giving a positive return (multiplier effect), or both. Furthermore, we are interested in analyzing if and how this transmission mechanism, from transfers to consumption, differs between male and female recipients. We now move to estimating the investment equations (equations 3 and 3').

Investment, summary

	Total		Agriculture		Business	
Model 1	**coef**	**t-stat**	**coef**	**t-stat**	**coef**	**t-stat**
PROGRESA (ITT)	.071	2.86	.028	2.22	.290	1.92
PROCAMPO (ITT)	.514	17.45	.334	22.08	.075	.40
Model 2						
PROGRESA received by female	.078	3.10	.032	2.47	.288	1.89
PROGRESA received by male	-.110	-1.20	-.068	-1.43	.426	.79
PROCAMPO received by female	.554	7.52	.346	9.11	.328	.88
PROCAMPO received by male	.509	16.51	.333	21.02	.014	.07

Investment, tests of equality

	Total		Agriculture		Business	
Model 1	**diff**	**signif**	**diff**	**signif**	**diff**	**signif**
PROGRESA vs. PROCAMPO	<	yes	<	yes	>	no
Model 2						
F PROGRESA vs. **M** PROGRESA	>	yes	>	yes	<	no
F PROCAMPO vs. **M** PROCAMP(	>	no	>	no	>	no
F PROGRESA vs. **F** PROCAMPO	<	yes	<	yes	<	no
M PROGRESA vs. **M** PROCAMP(	<	yes	<	yes	>	no

Table 5. **On the left**: results of the regression for investment. **On the right**, test of equality of the coefficients.

Table 5 summarizes the results for the estimation of total investment as well as agricultural and business (non-agricultural) investment. PROCAMPO and PROGRESA transfers are positively and significantly associated with total investment although the coefficient on PROCAMPO is substantially higher. This is true regardless of the gender of the recipient. The investment effect comes almost entirely through a large increase in agricultural investment found among all PROCAMPO recipients. PROGRESA transfers also have a significant impact on agricultural investment although the effect is small and appears to be the result of investment by female recipients. PROGRESA leads to greater business investment both in general and in particular by female recipients. Both the characteristics of the program and the gender of the recipient matter, as far as investment is concerned. As could be easily expected, cash transfer program effects on entrepreneurial activities is bigger when money goes to beneficiaries who own the means of production, in this case land as shown by the size of PROCAMPO and PROGRESA coefficients: the first is bigger and the difference is statistically significant for both men and women.

With the large investment effect coming from PROCAMPO, the expectation is that the benefit of PROCAMPO on consumption would increase over time. To examine this proposition we turn to estimating equation 4, which compares the returns to PROCAMPO in 1996 and 1998. A summary of the results for this analysis is presented in Table 6. The results indicate that PROCAMPO had a significantly larger impact on total expenditure in 1998 than 1996. This suggests that the investment effect of PROCAMPO is leading to higher expenditures overtime.

Time effect, total consumption, summary			**Test if equality**		
Model 1	**coef**	**t-stat**		diff.	signif.
PROGRESA (ITT)	0.395	5.11			
PROCAMPO 98 (ITT)	0.337	4.67			
PROCAMPO 96 (ITT)	.119	1.33	PROCAMPO 96 Vs PROCAMPO 98	<	Yes (10%)

Table 6. Time effect of Procampo.

Shifting to the direct outcomes anticipated from PROGRESA, we now look at school enrolment and the use of medical services (equations 5 and 6). Because of program design, we expect PROGRESA to have a large positive impact on school enrolment; larger than PROCAMPO's. In fact, PROCAMPO's effect is uncertain. If money is spent in agricultural investment and this implies intensification of productive activities, it is possible that more child labor is employed, with a reduction in school enrolment rates. However, it is also possible that investment returns, or even only the increase in income

due to PROCAMPO cash transfers, allows the family to reduce the use of child labor, hence increasing school enrolment.

Similarly for the use of medical services, because of program design we expect PROGRESA to have a positive impact on the probability of children using medical services. We expect this effect to be bigger than that of PROCAMPO, although PROCAMPO may also have a positive impact, as it increases the amount of resources available to the household, at least if part of the money is spent in consumption or in productive investment.

Table 7 presents a summary of results for the probit models. The results of model 1 indicate that both PROGRESA and PROCAMPO did lead to an increase in school enrolment, although the effect of the former is significantly larger. The effects are, however, differentiated by gender. PROGRESA boosts school enrolment when paid to women; but when given to men, its effect is negative, although not significantly different from zero. The effect of PROCAMPO is always positive and significant.

	School enrolment				Use of medical services	
	Model 1		Model 2		Model 1	
	coef	t-stat	coef	t-stat	coef	t-stat
PROGRESA (ITT)	0.001	6.10			0.001	4.82
PROCAMPO (ITT)	0.000	2.19			0.001	3.14
PROGRESA received by female			0.001	6.43		
PROGRESA received by male			0.000	0.01		
PROCAMPO received by female			0.001	1.79		
PROCAMPO received by male			0.001	2.09		
PROGRESA vs. PROCAMPO	>	Yes			>	No
F PROGRESA vs. **M** PROGRESA			>	Yes		
F PROCAMPO vs. **M** PROCAMPO			>	No		
F PROGRESA vs. **F** PROCAMPO			>	No		
M PROGRESA vs. **M** PROCAMPO			<	No		

Table 7. Effect on school enrolment and use of medical services (Probit).

The results of model 1 for the use of medical services indicate that both PROGRESA and PROCAMPO lead to an increase in the use of medical services, and quite surprisingly the effect of the two programs are not significantly different. We note that the ratio of children who benefit from health check-ups is very high, around 90%. Lack of medical control is at least in part explained by the distance of the facilities.

6. CONCLUSIONS AND POLICY IMPLICATIONS

The evaluation of the impact of Progresa and Procampo leads to identify a mix of program and gender effects. First of all, both programs seem to boost total and food consumption. When we differentiate by gender, however, we find out that male recipient of PROGRESA behave differently than female PROGRESA recipients and male PROCAMPO recipients. It is not simply the gender of the recipient that matters but the combination of the gender and program design. This constitutes the first strike against conventional wisdom. Men do not spend on alcohol all the money they receive, at least when the transfer is linked to the ownership of means of production.

Even if the two programs generate a similar effect on total consumption, differences can be found in expenditure composition. Procampo seems to be associated to an increase in adult commodities, while Progresa increases the expenditure for education and child clothes. This seems to be driven primarily by program effects with gender playing a less important role.

Both Progresa and Procampo induce an increase in school enrolment, although the effect of the former is significantly larger. The effects are, however, differentiated by gender. PROGRESA boosts school enrolment when paid to women; but when given to men, its effect is negative, although not significantly

different from zero. The effect of PROCAMPO is always positive and significant. There is no program effect on health care: both programs have a positive impact, with no statistically significant difference.

Eventually, despite the negative reputation of men, cash transfer programs like PROCAMPO can generate similar impacts on consumption as programs like PROGRESA. The increase in consumption may happen through different channels. Progresa is directly destined to consumption, while Procampo increases investment, in particular for agricultural activities. The analysis of time dimension of Procampo effects shows that benefits need time to kick in. Hence, the relationship between gender of the recipient, ownership of means of production and investment should be taken into account when policy makers design cash transfer programs to reduce poverty.

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Table 2: Comparison of Household Groups

	Total	Group 1 PG & PC	Group 2 PG	Group 3 PC	Group 4 None
Number of observations	12625	3274	4038	2021	3292
Fraction of total	1.00	0.26	0.32	0.16	0.26
Expenditure per month 1998 (1997 pesos, per adult equivalent)					
Total consumption expenditures	*170.04*	*169.63*	*181.62*	*155.55*	*164.77*
Food expenditures	136.11	135.88	146.17	123.59	131.27
Schooling expenditure	2.86	2.79	3.11	2.94	2.55
Childrens clothes expenditure	3.33	3.82	3.75	2.68	2.68
Health expenditure	13.16	13.04	13.54	12.60	13.15
Energy expenditure	5.46	5.13	5.78	4.93	5.75
Adult clothes expenditure	2.49	2.57	2.54	2.42	2.37
Other expenditure	6.92	6.47	7.49	6.86	6.71
Investment 1998 (1997 pesos, per adult equivalent)					
Total investment	*7.35*	*11.95*	*5.03*	*8.87*	*4.71*
Agricultural spending	5.52	8.49	3.91	8.17	2.99
Business investment	1.65	3.00	1.14	0.77	1.48
Transfers per month 1998 (1997 pesos, per adult equivalent)					
PROGRESA received	26.21	45.28	45.24	0.00	0.00
PROCAMPO received	5.68	12.68	0.00	14.96	0.00
Household charactersitics (1997)					
Household size	5.92	6.46	5.53	6.47	5.52
Age of household head	42.47	44.78	40.39	45.62	40.78
Head is male	0.91	0.93	0.91	0.93	0.90
Head speaks indigenous language	0.43	0.46	0.38	0.50	0.43
Dependency ratio	1.41	1.41	1.41	1.45	1.40
Economically active females	1.33	1.47	1.23	1.48	1.24
Economically active males	1.28	1.43	1.19	1.38	1.19
Female education (average)	2.42	2.48	2.48	2.40	2.31
Male education (average)	2.64	2.76	2.67	2.58	2.53
Denisty of agricultural wage earners in community	0.32	0.31	0.33	0.33	0.32
Denisty of non-agricultural wage earners in community	0.08	0.07	0.09	0.07	0.09
House has dirt floor	0.74	0.70	0.75	0.74	0.78
House has internal pipes	0.04	0.05	0.04	0.04	0.03
House has electric lights	0.58	0.59	0.57	0.62	0.56
Hectares of the irrigated land	0.04	0.05	0.03	0.10	0.02
Hectares of the non-irrigated land	1.66	2.61	0.82	3.01	0.91
Cows owned	0.61	0.91	0.36	1.03	0.36
Pigs owned	1.01	1.18	0.77	1.54	0.79
Percentage of households in group / living in					
Region 3 - Sierra Negra-Zongolica-Mazateca	13%	12%	12%	15%	13%
Region 4 - Sierra Norte-Otomí Tepehua	19%	14%	22%	16%	22%
Region 5 - Sierra Gorda	42%	46%	42%	40%	40%
Region 6 - Montaña (Guerrero)	11%	11%	9%	14%	12%
Region 12 - Huasteca (San Luis Potosi)	1%	1%	1%	2%	1%
Region 27 - Tierra Caliente (Michoacan)	12%	11%	13%	10%	11%
Region 28 - Altiplano (San Luis Potosi)	2%	5%	1%	3%	1%

Table 4 – Expenditure categories, summary and tests of equality

	Food		School		Kid's clothes		Health		Energy		Adult clothes		Other	
Model 1	**coef**	**t-stat**	**coef**	**t-stat**	**coef**	**t-stat**	**coef**	**t-stat**	**coef**	**t-stat**	**coef**	**t-stat**	**coef**	**t-stat**
PROGRESA (ITT)	.240	3.30	.024	5.48	.023	9.48	-.006	-.81	.001	.21	.003	1.02	.002	.28
PROCAMPO (ITT)	.295	5.73	.003	.63	.008	2.75	.028	2.71	.008	1.77	.013	4.38	-.001	-.20
Model 2														
PROGRESA received by female	.245	3.32	.024	5.50	.024	9.72	-.004	-.56	.002	.29	.003	1.03	.003	.41
PROGRESA received by male	.120	1.19	.020	1.14	.005	.89	-.057	-3.15	-.011	-1.07	.001	.11	-.022	-1.41
PROCAMPO received by female	.448	3.16	.005	.63	.011	.80	.066	1.67	.026	1.94	-.002	-.34	-.018	-1.28
PROCAMPO received by male	.279	5.29	.003	.54	.007	2.90	.024	2.25	.006	1.39	.014	4.65	.001	.08

	Food		School		Kid's clothes		Health		Energy		Adult clothes		Other	
Model 1	**diff**	**signif**	**diff**	**signif**	**diff**	**signif**	**diff**	**signif**	**diff**	**signif**	**diff**	**signif**	**diff**	**signif**
PROGRESA vs. PROCAMPO	<	no	>	yes	>	yes	<	yes	<	no	<	yes	>	no
Model 2														
F PROGRESA vs. **M** PROGRESA	>	no	>	no	>	yes	>	yes	>	no	>	no	>	no
F PROCAMPO vs. **M** PROCAMPO	>	no	>	no	>	no	>	no	>	no	<	yes	<	no
F PROGRESA vs. **F** PROCAMPO	<	no	>	yes	>	no	<	yes	<	yes	>	no	>	no
M PROGRESA vs. **M** PROCAMPO	<	no	>	no	<	no	<	yes	<	no	<	no	<	no

Apendix 1.

Table A1: Total consumption expenditure					
November, 1997 pesos, per adult equivalent		**Model 1**		**Model 2**	
		coef	**t-stat**	**coef**	**t-stat**
Transfers per month per capita	PROGRESA (ITT)	.274	3.14		
	PROCAMPO (ITT)	.360	5.82		
	PROGRESA received by female			.283	3.20
	PROGRESA received by male			.050	.44
	PROCAMPO received by female			.545	3.21
	PROCAMPO received by male			.342	5.38
Household charactersitics (1997)	Household size (in logs)	-95.058	-15.80	-96.055	-15.86
	Age of household head	-.285	-3.30	-.276	-3.20
	Head is male	7.497	1.81	9.654	2.38
	Head speaks indigenous language	-17.304	-8.67	-17.222	-8.63
	Dependency ratio	.942	.41	1.280	.55
	Economically active females	3.397	1.62	3.598	1.71
	Economically active males	-4.459	-2.13	-4.176	-1.99
	Female education (average)	-.325	-.54	-.303	-.51
	Male education (average)	-1.441	-2.47	-1.469	-2.52
	Denisty of agricultural wage earners in community	-1.524	-.19	-1.494	-.19
	Denisty of non-ag wage earners in community	-9.611	-.64	-9.872	-.66
	House has dirt floor	-24.025	-10.85	-24.002	-10.86
	House has internal pipes	2.214	.52	2.259	.53
	House has electric lights	.472	.25	.382	.21
	Hectares of the irrigated land	3.705	1.76	3.428	1.59
	Hectares of the non-irrigated land	-.483	-1.81	-.465	-1.74
	Cows owned	1.545	2.45	1.536	2.45
	Pigs owned	-.638	-2.30	-.650	-2.35
Regional dummies	Region 4 - Sierra Norte-Otomí Tepehua	-.779	-.23	-.746	-.22
	Region 5 - Sierra Gorda	-11.853	-4.14	-11.800	-4.12
	Region 6 - Montaña (Guerrero)	-30.146	-7.69	-30.135	-7.68
	Region 12 - Huasteca (San Luis Potosi)	-6.719	-.83	-7.068	-.88
	Region 27 - Tierra Caliente (Michoacan)	17.929	4.58	17.767	4.55
	Region 28 - Altiplano (San Luis Potosi)	-17.175	-2.84	-16.804	-2.78
	Constant	362.520	37.01	360.843	37.29
	R-squared	.20		.20	