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Spending, Saving and Public Transfers Paid to Women

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ABSTRACT
The literature suggests men and women have different preferences. This paper exploits a random assignment social experiment in which women in treatment households were given a large public cash transfer (PROGRESA) and women in control households were given nothing. In an effort to disentangle the effect of additional income in the household from the effect of changing the distribution of income within the household, the impact of PROGRESA income is compared with all other income sources. In addition to spending on food, clothing and education, savings and investment decisions are examined. Additional money in the hands of women is spent on child goods (particularly clothing), improved nutrition (better quality diets) and investments in small livestock (which are traditionally managed and cared for by women). Among single headed households, PROGRESA income is not treated differently from other income. We conclude that not only do preferences of men and women differ but, among poor, rural Mexican households, resources under the control of women are more likely to be spent on investments for the future than resources that men control.

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1. Introduction

Research in the social sciences indicates that men and women do not share the same preferences. In carefully controlled experimental settings, women have been shown to be more altruistic and more risk averse than men. (Eckel and Grossman, 1998; Andreoni and Vesterlund, 2001; See, Eckel and Grossman 2004a, 2004b for reviews.) The populations in most of these studies are college students and the generality of the evidence has not been established. Non-experimental evidence, based on population surveys, suggests that in some contexts women allocate resources under their control towards goods they or their children consume (such as clothing, see Lundberg, Pollak and Wales, 1997) and also to investments that improve child health and well-being (Thomas, 1990; Duflo 2000). Legitimate concerns have been raised regarding the extent to which this evidence is contaminated by unobserved heterogeneity that is correlated with the distribution of resources within households.[1]

This is a critical concern. It is addressed directly in this paper which uses variation in the distribution of resources within households induced by a social experiment in which assignment to the treatment group is random and women in the treatment households are given income. PROGRESA, one of the most ambitious anti-poverty programs in the world, provides cash transfers to poor rural households in Mexico and these transfers are paid to women. The payment is large: on average, beneficiary households received payments that were around one-quarter pre-treatment household income.

The program was implemented in phases and designed so that it could be subjected to rigorous evaluation. Specifically, over 24,000 households that were eligible to receive PROGRESA were surveyed every six months from the beginning of the evaluation. Households living in two thirds of the

[1] Thomas (1990) compares non-labor income of males and females; women with relatively more non-labor income may be different from other women in other dimensions including, for example, time preferences which are related to saving and investment decisions. Lundberg, Pollak and Wales (1997) exploit a natural experiment in the United Kingdom in which Child Benefit was paid to women rather than men. Hotchkiss (2004) argues the evidence can be explained by a time effect and notes similar budget re-allocations among couples who did not receive the benefit, presumably because of changes in relative prices co-incident with the change in the way Benefit was paid. Duflo (2000) exploits a different natural experiment in which older adults were given pensions in South Africa. She finds children are healthier in households with older women. Edmonds, Mammen and Miller (2005) demonstrate that household composition responds to receipt of the pension and that young children are more likely to co-reside with older women who are eligible for the pension.

study communities were randomly assigned to receive the benefits immediately and the rest were assigned to a control group which would receive the benefits three years later. Comparisons are made between the behavior of households in the treatment communities with the behavior of households in control communities that did not receive the benefits. Since total income rose substantially in households that received the benefit, it is important to fully control total resources if we are to pin down the impact of giving money to women. The empirical strategy is described in detail below. We measure the impact of PROGRESA benefits on allocation decisions holding total resources fixed and focus on households headed by couples.

The evidence suggests that PROGRESA income is allocated towards investments in the future. Specifically, more money is spent on children and there is investment in small livestock which, in the study societies, are traditionally cared for by (and under the control of) women. The results are robust to focusing on variation in the timing of PROGRESA payments within treatment households and also to controlling expected future benefits. This suggests that it is income in the hands of women that affects resource allocation decisions. If the evidence reflects the impact of unobserved heterogeneity in the communities that received the treatment, or the effect of other dimensions of the program, PROGRESA income should have the same impact on single-headed households who received the benefits. It does not. Among those households, PROGRESA income has the same impact on spending and savings decisions as other sources of income. We conclude the results for couple households are unlikely to be driven by unobserved heterogeneity and that they provide further evidence against the unitary model of the household. Whether these results reflect heterogeneity in inter-temporal preferences between men and women, differences in altruism and/or differences in the investment opportunities that men and women face remains an important research question.

The next section describes the design of the PROGRESA program. The model motivating our research precedes a description of the data. Issues that are confronted in the empirical implementation are discussed and followed by the results.

2. The PROGRESA program

PROGRESA, the centerpiece of the Mexican government's anti-poverty strategy, is a conditional income transfer program that began in 1997 and currently serves over 3.2 million families. It is in the process of being expanded to urban areas where it is expected to cover over 1.5 million additional families. Arguably the most ambitious conditional income transfer program in the world, PROGRESA serves as a model for similar programs throughout Latin America and the Caribbean.

The average eligible household is given an income transfer of around 30 pesos per person per month.[2] This is a very large transfer which amounts to over 28 per cent of average monthly *per capita* expenditure of these households. The value of the transfer depends on whether household members age 22 and younger attend school[3] and whether all household members attend the local public health clinic.[4]

Key for this study is that all benefits are paid directly to women, typically the mothers of age-eligible children, who pick up the payment at the local post office. The design was motivated by a belief among the program architects that giving income to women would be more effective in increasing investment in the next generation and reducing poverty than giving income to men. This paper subjects that belief to empirical scrutiny by examining the impact of the income transfer on household resource allocations.

PROGRESA is means tested with a two stage targeting mechanism. First, communities that are deemed poor (based on socio-economic characteristics) are selected. Second, the ENCASEH, a census of all households in the community is conducted and households is eligible for PROGRESA if it falls below a multi-dimensional poverty cut-off (as measured by a combination of income, demographic characteristics, educational attainment of household members, the presence of disabled individuals in the household, housing characteristics, and the ownership of durable goods, animals and land).[5]

[2] One peso was worth US$0.11 in 1997.

[3] The grant is increased by 70 pesos for each child who attends the third grade of primary school. The amount is increased with grade completion. For example, it is increased by 225 pesos and 255 pesos for males and females in the third grade of secondary school, respectively. If a child misses more than 3 school days in a month (for unjustified reasons) the household does not receive the grant that month.

[4] Basic, preventive health care services are provided by the public sector for all household members. Benefits are only paid if household members attend health clinics on a schedule spelled out by the program. In addition, households are given 145 pesos per month for food in addition to nutrition supplements, which are principally targeted to children between the ages of four months and two years, and pregnant and lactating women. The school attendance of children and family health visits are verified through school and clinic records.

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

The list of eligible households is announced at a meeting in the community to build consensus that the selection mechanism is fair. In practice, this last step rarely results in substantial changes to the list of eligible families. Eligibility is fixed after the initial assignment.

3. Theoretical foundation

In order to motivate the empirical strategy, we lay out a simple model of household behavior which provides a set of testable hypotheses regarding the effect of PROGRESA income on household resource allocations. We then proceed to discuss our empirical strategy and the assumptions that are needed in order to interpret the results.

Begin with a simple model of household behavior in which the well-being of all household members in any period t, W_t,, depends on the utility of each member, m = 1, ..., M. In turn, each individual's utility, U_{mt}, depends on the commodity consumption of all household members, x_{gmt}, g=1, ..., G, where g indexes goods and let x_{0mt} denote consumption of leisure of each individual at time t. We allow tastes, and therefore utility, to be affected by individual and household specific characteristics. Let μ_t, denote those that are observable, such as household demographic structure and socio-economic status and let ε_t, represent all unobservable characteristics, such as tastes for work, consumption and investing in children. Each individual's sub-utility function is given by $U_{mt}(x_t, \mu_t, \varepsilon_t)$ which is assumed to be quasi-concave, non-decreasing and strictly increasing in at least one argument. The household welfare function aggregates these individual sub-utility functions:

$$W_t = W_t [U_{1t} (x_t, \mu_t, \varepsilon_t), \ldots U_{Mt} (x_t, \mu_t, \varepsilon_t)] \qquad [1]$$

which is maximized subject to the inter-temporal household budget constraint:

$$\sum_m A_{mt} + A_{0t} = \sum_m (1+ r_{mt})A_{mt-1} + (1+ r_{0t})A_{0t-1} + [\sum_m \tau_{mt} + p_{0mt} (T-x_{0mt}) - p_t x_t] \qquad [2]$$

In period t, household assets are given by the sum of the assets of member m, A_{mt}, and jointly owned assets, A_{0t}. They are equal to assets in the prior period, the return on those assets, r, plus savings which is given by income less expenditure. Income comprises transfer income plus earnings. Transfer income, τ, is net income from private transfers (with non co-resident family members, for example) plus public transfers (which, includes PROGRESA). Earnings of member m are the product of the wage, p_{0mt}, and the amount of time spent working which is the total amount of time, T, less the amount of time spent

not working, x_{0mt}. All prices, p_t, other than wages, are assumed to be taken as given by household members. The return on assets, r, is allowed to be individual idiosyncratic which would arise, for example, if market opportunities differ for men and women because of restrictions on behaviors.

Unitary model of the household

The simplest model of the household, which is widely used in the social science literature, assumes all household members behave as if they have exactly the same preferences, so the sub-utility functions, U in [1], are identical. An observationally equivalent alternative assumption treats the household as if one member, a *dictator*, make all allocation decisions. In that case the aggregator function W(.) in [1] assigns a zero weight to all but that member's utility function. Under either assumption, the household may be treated as if it were a single unit and there is no place for dissension within the household and, therefore, for any individual to assert his or her power in decision-making. While this model is clearly a simplification, it has proved to be extremely powerful as an organizing principle in the theoretical and empirical literature on household and family decision-making. Our goal is to assess the empirical consequences of assuming this model is correct for understanding how PROGRESA income has affected the lives of the poor in rural Mexico.

In this model, decisions about spending on goods and services, savings[6] and time allocation in any period depend on *total* household income, $\sum y_{mt}$, (which includes the return on assets, transfers and earnings), household characteristics, μ, such as permanent wealth and socio-demographic composition, prices, p, and factors such as tastes which are not measured in the data, ε :

$$x_{gt} = x_{gt}\left(\sum_0^M y_{mt}, \mu, p_t, \varepsilon_{gt}\right) \qquad [3]$$

In a life cycle model with no liquidity constraints and no uncertainty, current spending will not depend on current income. That model has been widely rejected in the literature and so the restriction is not imposed here. For our purposes, the key point in this model is that saving and spending patterns are not influenced by who within the household receives the income or owns the assets. If [3] is a good approximation of demand functions for poor households in rural Mexico, then it will matter not a wit whether PROGRESA income is paid to the mother, to the father or anyone else. That hypothesis will be tested below. Prior to

[6] To keep notation simple, treat savings as spending on investment goods or assets.

laying out our testing strategy, it is useful to spell out a class of models in which resources of individuals do affect household choices in order to demonstrate that this test has power against reasonable alternatives.

Individualistic models of the household

The most primitive model of behavior treats the individual as the primary element in decision-making with the household simply serving as a structure, like a club or group, in which decisions are aggregated. There is a wide class of individualistic models in the literature; since their implications are, for the purposes of this paper, essentially the same, we consider a simple general model which assumes that allocations decisions are the outcome of some repeated game that can be approximated as achieving a co-operative equilibrium*;* see Chiappori, 1988, 1992, 1993; Browning and Chiappori, 2000; Bourguignon, Browning and Chiappori, 2003; for a fuller discussion.) This is an intuitively appealing assumption when thinking about the behavior of household members who share much in common and are likely to be altruistic towards one another.

Presumably the reason that individuals form a household is because it produces goods and services for its members which they would not be able to consume if they were not organized in the household. These may be the benefits associated with altruism and caring, with returns to scale in the production of goods and services like meals or housing or externalities that households provide. In this model, what the household produces and who benefits from that production depends on the power a member wields in asserting their preferences over others. There are many ways in which power may be manifest and it may depend on such factors as the options one might have if one left the household. Denoting the power of each household member by the vector of weights, λ_t, then spending and savings decisions in any period are given by:

$$x_{gt} = x_{gt}(\lambda_t, \sum_0^M y_{mt}, \mu, p_t, \varepsilon_{gt}) \qquad [4]$$

Apart from the weighting factors, λ, the demand functions in this individualistic model, [4], are identical to those under the assumptions of the *unitary* model, [3]. The weights play a central role in the model and reflect the relative importance of each member's power in affecting household allocation decisions. The weights will likely respond to changes in the relative power of household members induced, for example, by programs that are targeted towards one group of people rather than another. PROGRESA is designed to

be such a program.

In general, estimation of [4] is complicated for at least two reasons. First, in studies based on observational data, it is not clear how to measure changes in power. We exploit the fact that communities are randomly assigned to a treatment or control group in the PROGRESA evaluation and only households in treatment communities receive PROGRESA income. Since this income is paid to women, resources in the hands of women in the treatment group will have increased whereas resources will not have changed in the control group. Since total household income will also be higher in treatment households, it is possible that we will assign a "power" effect to what is, in fact, an income effect. As explained in detail below, we address this issue by relying on a comparison of the marginal effect on spending patterns of PROGRESA income with the marginal effect of other household income.

A second complex issue in this literature revolves around the fact that the majority of studies proxy power with the distribution of earnings within the household. That distribution reflects current (and previous) decisions about work and savings and those decisions are likely to be related to unobserved characteristics of household members that also affect resource allocations. For example, if a woman wishes to invest more in her children, she may seek out earnings opportunities and spend disproportionately more of those resources on her children. She may also invest more of her time and energy in her children and those investments would, in general, be captured by ε_{gt} in [4]. In that case, the distribution of earnings and unobserved characteristics in the regression will be correlated and estimates of the effects of individual earnings will be biased. A key advantage of examining the behavior of households who receive PROGRESA benefits is that income is paid to households based on their socio-economic and demographic characteristics at the time of enrollment into the program. The benefit does not respond to changes in (non-PROGRESA) household income or labor supply of household members that might occur after program enrollment. Conditional on all observed and unobserved characteristics at the time of enrollment, the receipt of PROGRESA income can, therefore, be treated as an exogenous shift in the distribution of control over resources within the household[7].

[7] It is possible that households respond to the program by changing labor supply (or time allocation), transfers in or out of the household or shifting type of work, crop choice or technology choice. Under the null that the unitary model is correct, these choices are made at the household level and will not reflect the preferences of individuals within the household. To the extent that such behavioral responses do not change after the initiation of benefit payments, they are addressed in the empirical analyses below.

The next section describes the data. We then present our empirical strategy and explain how the experimental design of PROGRESA is exploited to test the predictions of the unitary model.

4. Data

An important dimension of the design of PROGRESA for the purposes of this study is the fact that the government was committed to conducting a comprehensive evaluation of the impact of the program. In 1997, 506 communities in 7 states[8] were selected for the rural evaluation sample and around 63 percent of the communities were assigned to receive PROGRESA benefits in May 1998 (treatment communities) while the rest were designated to be phased into PROGRESA three years later towards the end of 2000 (control communities). In 1998, program officials announced to all treatment households that the benefits would be paid for at least three years. Control households were not notified about the program. (In fact, as households in control communities became aware of the program, pressure to include them in the program mounted. The communities started receiving benefits in early 2000.)

Using data from a census of over 24,000 households conducted in late 1997 in all the PROGRESA evaluation sample communities, communities were matched in terms of propensity scores based on levels of infrastructure and economic status. Two communities in each triple were randomly assigned to the treatment group, the third was assigned to the control group (Behrman and Todd, 1999). Panel A of Table 1 reports the distribution of households in the baseline census. Slightly over 50% were eligible for PROGRESA ("poor")[9] and about two-thirds of the households were in treatment communities.

Panel B of Table 1 summarizes the demographic characteristics of all households headed by a couple.[10] The upper section compares those eligible for the PROGRESA benefit (column 1) with those who were not eligible (column 2). Households eligible for the PROGRESA benefit are, by design, poor. Relative to other households, they are earlier in the life course, have more members and the head has less education. The lower section of the table compares treatment with control households among those eligible for the benefit. Since communities were randomly assigned to the treatment, there should be no differences in socio-demographic characteristics of the two groups. None is significant.

[8] These seven states were among the first states to receive PROGRESA benefits.
[9] Along the paper, we define the concept of "poor" household interchangeably for "eligible" household.
[10] The majority of the analyses reported below are restricted to households headed by a couple in every wave of the surveys. Since 95% of the households are headed by a couple in every wave, this is not an important restriction. Moreover, dissolution rates are the same for treatment and control households. Results for single headed households provide useful checks on the assumptions and are also reported below.

After the baseline, follow-up surveys of all treatment and control households were conducted about every six months until 2000. Detailed expenditure, income and asset data were collected from each household in the follow-up surveys in March 1998, October 1998, May 1999 and November 1999 (*ENCEL*)[11] Table 2 summarizes data drawn from these three surveys for treatment households (column 1), control households (column 2) and the difference (column 3). (Unfortunately, no expenditure, income or asset data was collected in the baseline census.)[12]

Household expenditure *per capita* is reported in the first row. On average, treatment households spend about 15 pesos per person per month more than control households. In part, this reflects the fact that treatment households received the PROGRESA benefit. Detailed information on spending by each household in the follow-up surveys is used in Panel B of the table which reports the average share of the budget spent on a series of commodity groups. The PROGRESA benefit is higher if age eligible household members attend school and, if schooling incurs costs, then higher spending may simply reflect the additional costs of schooling. Treatment households allocate essentially the same fraction of the budget to schooling as controls. This translates into higher spending on schooling by treatment households. The difference, however, is small (about 0.25 pesos per month *per capita*) and it is only marginally significant. Clearly, the lion's share of added expenditure among treatment households is spent on goods other than education.

Treatment households allocate significantly more of their budget to children's and adult clothing and these differences amount to about 2.5 pesos per month. In contrast, alcohol and tobacco accounts for a significantly lower share among treatments (and alcohol and tobacco expenditure is also lower in treatment households). Food accounts for two-thirds of the budget and the majority of additional expenditure among treatment households is spent on food, particularly meat and vegetables and, to a less extent, fruit. Treatment households also allocate a smaller share of the budget to staples (tortillas and beans) although

[11] Note that in effect there are two baseline surveys which can be used as part of the evaluation, the ENCASEH and the ENCEL March 1998 survey. Neither survey collected information on household expenditures and household animal ownership. This study relies therefore, on post program household resource allocation data.

[12] Since no attempt was made to follow movers, attrition is potentially a concern for the interpretation of the results. While one-third of households left the sample during the study period, the key for our purposes is whether attrition differs depending on treatment/control status. For couple households, it is not and this is true even after controlling household characteristics and the PROGRESA eligibility criteria. See Teruel and Rubalcava (2003) for a general discussion of attrition in these data.

expenditure levels for these foods are not significantly different between treatments and controls.[13]

These differences in food spending are reflected in *per capita* nutrient intakes, reported in Panel C.[14] On average, relative to controls, individuals in treated households consumed almost 100 calories more per day and the calories they consumed are of higher quality (as measured by protein per calorie).

Recall that, in our sample, the average PROGRESA benefit is slightly over 30 pesos *per capita* per month and that treated households spend approximately 15 pesos *per capita* more each month than control households. Clearly, treatment households must be saving part of the benefit. This is reflected in the first row of Panel D of the Table which indicates that income exceeds expenditure in both control and treatment households with the latter report savings of over 13 pesos *per capita* per month more than controls. Few rural Mexican households have any financial savings but many own some livestock which provide a key mechanism through which households may save.[15] The surveys record the number of livestock owned by the household in each of several categories. The remainder of Table D demonstrates that treatment households own significantly more chickens and turkeys, more cows and more horses and donkeys. We estimate that these differences account for about 70 per cent of the difference in reported saving of treatment households relative to controls, cumulated over the eighteen months since the inception of the PROGRESA.[16]

Livestock are particularly interesting in the context of our research question given the ethnographic literature which has shown that in rural Mexico, as in many low income societies, "women are more involved in small-scale subsistence livestock-rearing [such as poultry and pigs] and men are more likely to be involved in large scale, cash-generating production" such as cattle, horses and donkeys (von Keyserlink, 1999).[17]

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[13] The budget shares are not exhaustive. Conditional on total household resources, PROGRESA income has no effect on the shares on other commodity sub-groups. These include health, personal care, household semi-durables and entertainment.

[14] Nutrient intakes are computed by converting quantities consumed into calories and protein using standardized food tables for Mexico, (Perez and Marvan, 2001).

[15] See, for example, Arriaga-Jordán, and Pearson (1996) who note that "livestock is a major source of savings" as well as a source of future income through output (eggs, meat and milk), by-products (manure, foraging) and services (draught power).

[16] In the November 1998 wave of the evaluation survey, households reported the quantity and value of livestock categories. For this calculation, livestock have been evaluated using the unit values for each category averaged over the entire sample. The number of livestock is used in the analyses below because no information on values is recorded in the other rounds of the survey.

[17] Arizpe and Botey (1986) comment that **"**Some duties are considered exclusively feminine…taking care of poultry and, sometimes, pigs" whereas men are responsible feeding and grazing cattle and horses.

The estimates in the third column of Table 2 are the average treatment effects of PROGRESA on each of the budget allocation outcomes. Since the benefit was paid to women, it is tempting to interpret these effects as indicative of the impact of empowering women. That interpretation would be premature. As is clear in [4] above, the PROGRESA benefit has an income effect (because total resources available to the household are increased) and may also affect the distribution of power, λ, within the household. Both of these are reflected in the estimated average treatment effect. We turn next to a regression framework in an effort to separate these effects.

5. Regression results

The demand functions [4] suggest that, controlling total household resources, differences in allocations by treatment and control households may be interpreted as a rejection of the unitary model since the differences indicate that PROGRESA income affects demand by shifting the distribution of power, λ, within the household over and above the income effect. There are at least two concerns with this approach.

First, it may be that women who are more assertive -- or more powerful in unobserved ways -- are more likely to participate in the program which would confound estimates of the effect of a shift in bargaining power due to the introduction of the program. This suggests examining the effect of intent to treat rather than the treatment itself in order to isolate the effect of the program on bargaining. In practice, participation in the program is essentially universal among eligibles in rural communities (97% of whom participate). This is not surprising given the magnitude of the income transfer involved.

Second, PROGRESA provides beneficiaries with a package of support that includes not only income but also incentives for children to attend school, incentives for all household members to attend health clinics and a modest food supplement. These additional components of the PROGRESA intervention likely influence the production of human capital and may, therefore, directly affect allocation decisions within treated households. For example, nutrition counseling is provided at health clinics which may result in households shifting resources to improved nutrition. By only using information on participation in the program, it is not possible to separate the impact on spending of the income transfer from the effects due to these additional components of the PROGRESA intervention.

We therefore follow a different approach and examine the *marginal* effect of PROGRESA income on allocations, controlling total household resources (including PROGRESA income). If the marginal effect is zero, then PROGRESA income has the same impact as any other income and the unitary model is not rejected. If the marginal effect is not zero, we interpret it as the impact of an exogenous increase in the share of resources under the control of women, relative to men, which operates through λ in [4]. Relative to a comparison of the average spending of treatment and control households, this is a substantially more subtle test of the effect of changing the distribution of resources within the household than the average treatment effects in Table 2. The interpretation is more complicated if the receipt of PROGRESA income affects other sources of income. We have explored the issue and find no evidence of differences in labor earnings or net private transfers between treatment and control households in our sample during the study period.[18]

Results from estimates of model [4] are reported in Table 3. The impact of income from PROGRESA, after controlling total household resources, is reported in the table. It is key that this does not simply reflect non-linearities in the effect of income on allocations: thus, the regressions control *per capita* household expenditure with a flexible spline (with two knots at 25 and 75 percentiles of household expenditure). The models also include detailed socio-demographic controls, μ, for two reasons. First, the size of the PROGRESA cash transfer depends on the age and gender composition of the household and, second, individual needs -- and therefore spending patterns -- vary with age and gender. To allow for taste variation across households, the age and education of the head and spouse are controlled. Spending will also vary with community-specific characteristics such as prices (including wages), levels and quality of infrastructure, ecology of the area and the climate. Moreover, communities may differ in the effectiveness of implementing the program as well as labor demand (which affects the opportunity costs of young adults attending school). To the extent that these effects are fixed during the study period, they are swept out of the model by a community fixed effect. Variation across seasons and over time is captured by survey round fixed effects. All standard errors are based on the infinitesimal jackknife and allow correlations among unobservables at the household level. They are robust to arbitrary forms of heteroskedasticity.

Table 3A reports the effect of PROGRESA income on budget shares starting with education in the first row.[19] Information on receipt of PROGRESA income is drawn from administrative records which details the amount of income paid to each household every month. All households headed by a couple are included in the models in the first column. Holding resources constant, as PROGRESA income increases so does the share of the budget spent on education. In case this reflects a non-linear impact of income across its distribution, attention is restricted to poor households in the second column. The marginal effect of PROGRESA income is larger and remains significant. The third column includes only those poor households who received PROGRESA income during the study period. In this case, it is variation in the timing of the payment that identifies the impact of income paid to women and since that variation primarily reflects problems in the administration of payments, it is largely random. (Variation due to demographic characteristics of the household is absorbed by the detailed demographic controls in the regression.) The estimated effect of PROGRESA income is slightly larger than in the first two columns and is significant.[20]

Although PROGRESA benefits are very generous, take-up of the program is not universal. About 10 *per cent* of eligible households in treatment communities do not receive any PROGRESA income during the study period.[21] The key characteristic that distinguishes eligibles who participate from those who do not is the presence (and number) of young children (age 0 to 5). Young children are required to attend health clinics far more frequently than older children – every month among those age under 24 months. Moreover, education benefits are paid only for children who have passed the first three grades of primary school. This suggests that households with young children are more likely to view the program as providing insufficient benefits to be worth the costs of participation. However, it is possible that participation is correlated with pre-program "power" (or control over resources within the household) which would contaminate our interpretation of the results. Excluding households with one or more children

[19] The specification of the Engel curves in terms of budget shares has several advantages. First, it is key for our tests that non-linearities in the demand function are captured: the share specification performs well in this respect and amounts to demand curves in which all covariates are interacted with total household resources. Second, expenditure distributions are asymmetric (which suggests using logs) and include zeros (which makes logs unattractive); the distributions of shares are close to symmetric and the inclusion of zeroes poses no problems in estimation. Third, the specification highlights how PROGRESA income is shared among goods.

[20] The models have been estimated with very flexible functional forms for household resources and the substance of the results is unaffected when the simple is restricted to treatment households. This is important because our tests rely on the assumption that the estimated effects of PROGRESA income are not capturing non-linearities in the impact of resources on budget shares..

[21] This cannot be attributed to recall error since PROGRESA income data is drawn from administrative records of actual payments.

age 5 or under, participation in the program increases to 97 per cent of eligibles and socio-demographic characteristics are not significant predictors of participation.[22] By excluding treatment households with young children from the sample, we can side-step potential contamination because of the participation decision. When the sample is thus restricted, the effect of PROGRESA income is slightly higher (3.9 with a standard error of 0.62).[23]

Eligible households that did not participate in PROGRESA were also more likely to refuse to participate in the second and third round of interviews. Restricting attention to the balanced panel of households who were interviewed in all three follow-up surveys, program participation rates are 98 per cent and take-up is not correlated with any of the socio-demographic characteristics in the models. This provides an alternative sample for assessing the robustness of our results to potential contamination due to non-participation. The results, reported in column 4, are very similar to those for the entire sample.

PROGRESA has been shown to have resulted in higher secondary school enrollment rates which could explain the higher budget shares on education. (Schultz, 2000; Parker and Skoufias, 2001). To assess whether it explains the marginal effect of PROGRESA income controlling total resources, attention is restricted to those households in which all age-eligible children were enrolled in school at baseline (before the program started) and in all waves of the survey. Results are in column 5 with the balanced panel estimates in column 4 providing the appropriate comparison. About one-quarter of the marginal effect of PROGRESA income over other income can apparently be explained by additional enrollment.[24] However, PROGRESA income remains significant. The evidence suggests that putting resources in the hands of women is associated with elevated investments in human capital of children.

Budget shares spent on boys' and girls' clothing are reported in the next two rows. The marginal effect of PROGRESA income is positive, significant and does not differ by gender. Moreover the

[22] The regressions include age and gender specific numbers of household members, education and age of the head and spouse. For the sample used in column 3, the F statistic for joint significance is 11.89 (p-value=0.00),and the t statistic on the number of young children is 5.76 Excluding households with young children, the F statistic is no longer significant (F=1.1, p value=0.37) and no covariate is individually significant.

[23] The estimated marginal effects of PROGRESA income are not significantly different from those in column 3 for all outcomes in the table.

[24] Since treatment households who responded to the program rules by enrolling children in school are excluded from this sub-sample, the effect of PROGRESA income should decline. Nonetheless, even within the restricted sub-sample, education spending is significantly higher as PROGRESA income rises. This may be because these households are forward looking and wish to maximize the income they will receive from PROGRESA by increasing the chances their children will be enrolled in school throughout elementary school and the first three years of secondary school.

estimated effects are very similar across samples indicating the regressions do a good job of capturing non-linearities in the effects of income (columns 2 and 3) and that elevated spending on child clothing is not because the children are attending school (columns 4 and 5).

The next two rows indicate that, controlling total resources, PROGRESA income is associated with lower shares of the budget allocated to the clothing of adults, especially males. The results for female clothing highlight the importance of taking non-linearities in the Engel curve seriously since the effect of PROGRESA income falls by 75% and is not significant when the sample is restricted to poor households in column 2. In contrast, the lower share on male clothing persists across all specifications, except the final column which restricts the sample to household with all eligible children in school in all survey waves. The children in those households tend to be teenagers. In regressions that include only households with teenage children, PROGRESA income has a positive impact on male and female adult clothing – presumably because the teenage children wear adult clothes.

In rural Mexico, spending on transport is primarily the cost of trips to town which are made mostly by adult males. (The transport shares exclude transport to school.) Transport shares are significantly lower as PROGRESA income rises. Alcohol and tobacco are also consumed mostly by male adults. Their share of the budget is also lower but significance is, at most, marginal.

The lower half of the table focuses on food.[25] PROGRESA income has a significant negative effect on the share of the budget spent on food which is masked (by non-linearites) when the analysis includes all households but emerges clearly when attention is restricted to poor households. The effect is reflected primarily in lower shares of the budget spent on staples and vegetables. The share spent on meat is substantially higher as PROGRESA income increases.[26] This shift in the composition of the diet towards meat is reflected in an increase in diet quality as protein per calorie rises with PROGRESA income while calories *per capita* fall. It would be natural to examine the effect of PROGRESA income on child anthropometry. Although such data were collected for a sub-sample of children, the data are not publicly available. They have been used by Behrman and Hoddinot (2000) who examine the impact of participation

[25] The budget shares are not exhaustive; the marginal effect of PROGRESA income on shares of other commodity sub-groups such as health, personal care, household semi-durables, entertainment are not significantly different from zero..

[26] Since total expenditure is higher among treatment households, a higher meat share implies higher spending; in contrast, whereas shares are lower, *per capita* expenditure on food, staples and vegetables is not related to PROGRESA income.

in PROGRESA on nutritional status. They report that in treatment communities, child growth is higher and the incidence of stunting among children age 12 to 36 is lower.) [27]

In sum, controlling total resources, additional PROGESA income results in higher shares of the budget spent on education, children's clothing and meat; these are offset by lower shares of adult male clothing, transport and on food, particularly staples. Recall that some of the PROGESA income is saved and that livestock are a key means for poor, rural households to save in Mexico. Table 3B investigates whether, controlling total resources, PROGRESA income is related to the demand for livestock. The first panel reports the impact on the probability the household owns any animals in each category (the extensive margin) and the second panel reports the impact on the number owned (intensive margin).[28]

On both the extensive and intensive margin, there is clear evidence that PROGRESA income is associated with a higher probability of owning small livestock, particularly pigs, and also with owning a larger number of pigs and poultry. In stark contrast, after controlling total resources, PROGRESA income has no effect on other groups of livestock. Thus, part of the PROGRESA income is apparently invested and, since small livestock are typically the domain of women in rural Mexico, the investment instruments appear to be those that are under the control of women. This is suggestive that the impact of PROGRESA benefits on household resources and on women's power within the household may be long-lived. Moreover, pigs and poultry are often consumed by household members and so these investments are likely to also contribute to improving the nutritional status of household members in the future.

Assessment of robustness of results

The regression evidence indicates that among households that receive PROGRESA income, resources are shifted away from adult male goods (male clothing and transport) in favor of child goods (child clothing and possibly education), improved nutrition (more protein per calorie of intake) and investment in small livestock. This is true in the entire sample and in samples that are restricted to only poor households, to households that received the PROGRESA benefit and to households whose age-eligible

[27] The PROGRESA intervention involves nutrition education which may be the proximate determinant of the shift towards a higher quality diet. Since the result persists in the analyses that are restricted to only PROGRESA households, all of whom receive both the nutrition education and income, and since the effect operates through the differential effect of PROGRESA income, relative to all other income, it seems unlikely that the effect can be attributed to the nutrition education component of the intervention alone.

[28] Linear probability estimates are reported for the extensive margin and fixed effects negative binomial estimates for the intensive margin. (Restricting the latter models to assuming the process is distributed as a poisson is rejected.)

children were always in school during the study period.

The data are not consistent with the unitary model of household decision-making. In order to interpret the evidence as indicative of how resources under the control of women might be spent, it is important to assess whether alternative interpretations are consistent with the data. These issues are explored in Table 4. The sample is restricted to treatment households and the estimates for that sample (Table 3, column 3) are repeated in Panel A of Table 4.

A key assumption underlying the testing strategy is that the source of income has no impact on how it is spent and PROGRESA income is distinguished from other sources income because PROGRESA benefits are placed in the hands of women. An alternative approach would contrast the effect of women's earnings and men's earnings on spending. Very few women in the sample report any income other than PROGRESA. Only 7% of females in couple households report any income, and the vast majority of those women report only labor earnings. How a husband and wife allocate their time is properly treated as an integral part of the decision process underlying resource allocation within the household and so comparisons of the effects of male and female earnings on spending patterns are difficult to interpret. Moreover, women who work are likely to purchase more clothing (for work) and more time-saving services (like prepared food) precisely because they work and not because they have different preferences than other household members. In an effort to address this concern, studies have used income from non-labor sources. Putting aside the strong assumptions that need to be made in order to interpret those models, fewer than 1% of women in this sample report any non-labor income and so this is not a practical approach with these data. Thus, treating PROGRESA income as female income is not an unreasonable approximation in our context. Clearly a key advantage of PROGRESA income in this study is that it can legitimately be treated as an exogenous increase in income which is placed in the hands of women in the (randomly assigned) treatment communities.

Nevertheless, PROGRESA income may differ from other income sources because it is a government transfer and not subject to, say, the vagaries of the weather as would be the case for income from agriculture, for example. More generally, how income is spent may differ depending on the predictability of the income. To address this question, Panel B of Table 4 reports the effect of PROGRESA income on budget shares after controlling the household-specific standard deviation of PROGRESA

income and the standard deviation of total household income (based on the three follow-up surveys).

Education shares rise as the variance of the PROGRESA benefits rise: this likely reflects reverse causality since a higher variance in benefits implies a response to the incentives in the program (by changing attendance at schools or health clinics). Conditional on that variance, the level of PROGRESA continues to be positively associated with education shares suggesting the effect is not entirely due to reverse causality.

The inclusion of income variances in the model has little impact on the estimated effects of PROGRESA income on child clothing and on foods (although higher variances in benefits do depress meat shares and increase shares on vegetables).[29] The positive effects of PROGRESA income on the probability of owning pigs as well as the number of pigs and poultry owned are robust to the inclusion of variances and the variance of the benefit also has a positive effect on these investments (suggesting that savings may come out of transitory income).

Novel results emerge for male and female adult clothing. For both goods, the budget shares decline as the variance of the PROGRESA benefit increases. Conditional on that variance, male adult clothing is not affected by PROGRESA income but female adult clothing rises with PROGRESA income. These results, in conjunction with those for child clothing, are consistent with evidence reported from a quasi-experiment in the United Kingdom in which Child Benefit was paid to women rather than men (Lundberg, Pollak and Wales, 1997.) We conclude that the rejection of the unitary model is not driven by differences in the variances of income PROGRESA relative to other income.

The analyses thus far have relied on actual payments of benefits to households (from administrative records). These amounts differ from expected payments based on the program rules because of errors in administration and delays in payments. It is possible that households use expected payments when making allocation decisions in which case actual payments will be an error-ridden proxy of the relevant construct; if the reverse is true, expected payments will be noisy proxies.

Estimates of the effects of the expected benefit, reported in Panel C of Table 4, are smaller (in absolute value) than the effects of the actual benefit (in column C1 of the table). This may be because decisions are based on income received rather than expected and the difference between them is

[29] Note also that more uncertainty in income is associated with higher food shares and, especially, higher shares spent on staples, Panel B, column (B3).

uncorrelated with covariates or unobservables: that is, expected benefits are an error-ridden proxy for the benefits used in decision-making. To probe this further, we estimated the model, $Actual_i=\alpha_0+\beta_0 Expected_i+\varepsilon_i$ and its reverse, $Expected_i=\alpha_1+\beta_1 Actual_i+u_i$. If the two measures are identical, then β will be 1 and α will be 0 whereas deviations indicate that the independent variable is measured with (classical) error. Since β_0=.45 and α_0=0.1 while β_1=1.1 and α_1=0.07, it appears that the interpretation of expected payments as being error ridden is appropriate.

Models that include both expected and actual benefits are reported in Panel D of Table 4. The effects of actual benefits are little changed (and none of the differences is significant). Expected benefits have a significant impact only on education, child clothing food shares and the number of poultry owned. In all cases, these effects are smaller than the impact of actual benefits. All the evidence points to household decisions being based on the benefits at the time they are paid to the women and not on the potential income from the program. If households are able to borrow against future PROGRESA income, and there is no uncertainty about whether PROGRESA benefits will be paid, expected benefits should impact decision-making. The evidence is suggestive that PROGRESA beneficiaries either face binding liquidity constraints or are uncertain about payments or both.

Probing more deeply, it is possible to exploit the longitudinal dimension of the data and include a household fixed effect which will sweep out all characteristics of households that do not change during the eighteen month study period. This includes household permanent income (and the expected PROGRESA benefit as long as that expectation is fixed) along with any behavioral response to the initiation of the program (such as a change in time allocation of household members, inter-household transfers or a change in choice of crop or technology). The fixed effect will also absorb household-specific differences in measurement error of household resources and PROGRESA benefits. Results are reported in Panel E of Table 4. The estimates measure the effect of changes in PROGRESA benefit on household resource allocations. In the absence of liquidity constraints, the effects should be zero. While the effects are smaller than those in column A1, they are not zero. PROGRESA income continues to result in higher budget shares on girls' and boys' clothing as well as meat and an increase in the number of small livestock (poultry and pigs) that are owned. PROGRESA income also results in reduced shares on adult male

clothing. The evidence indicates that additional income in the hands of women results in shifting resources towards investments in children, nutrition and small livestock.

However, the possibility remains that the results presented thus far have nothing to do with giving money to women, but are, instead, related to some other dimension of the program. For example, one of the messages of PROGRESA is that parents should invest in their children. Participation in the program may affect the returns to saving and investing in children or participation may directly affect behaviors related to those choices. These effects should be apparent not just for couples but for single-headed households. Panel F of the table presents results for households headed by single females (in F1) and single males (in F2). The evidence is unambiguous: PROGRESA income has no impact on any of the budget allocations or on investments in livestock among single-headed households. Controlling total household resources, the marginal effects of PROGRESA are both substantively very small and not significantly different from zero. We conclude that the results regarding the impact of giving PROGRESA income to women in couple households cannot be attributed to program effects.

6. Conclusions

PROGRESA benefits, which were paid to women, increased total household income by around one-quarter among those rural Mexicans who received the benefit. The impact of additional income in the hands of women is examined by exploiting the fact that otherwise identical communities were randomly assigned to be treatments, in which eligible households received the benefit at the beginning of the study period, or to control communities, in which eligible households would receive after the study period.

In households that are headed by couples, relative to other household income, PROGRESA income is spent on child clothing, higher quality nutrient intake and investments in small livestock. In households headed by single females or single males, PROGRESA income is treated no differently from any other income. Qualitative evidence from interviews conducted with PROGRESA households indicates that PROGRESA income was perceive as being under the control of women. "Now we don't demand, every moment, '*give me for shoes, give me for that'*. Now we take the money from PROGRESA and we buy from that money. Now we don't bother them [their husbands] so much" (Adato, et. al. 2000).

Taken together, the evidence suggests that PROGRESA benefits increased the power of women to allocate resources in ways they deemed fit. Substantively, not only are preferences of women different

from those of men but it appears that women are more inclined to invest in the future. Understanding why remains an important and unresolved issue.

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TABLE 1: Distribution of households and sample characteristics

PANEL A Distribution of households in 1997 baseline

(Row percentages in parentheses)

# of households	Treatments	Controls	Total
Not eligible (Not Poor)	7,003 (61%)	4,531 (39%)	11,534 (48%)
Eligible (Poor)	7,830 (63%)	4,678 (37%)	12,508 (52%)
Total	14,833 (62%)	9,209 (38%)	24,042

PANEL B: Characteristics of households headed by a couple

All households headed by a couple

	Eligible	Not eligible
Head´s Years of Schooling	2.87 (0.06)	3.06 (0.06)
Age of Head	41.83 (0.20)	50.80 (0.29)
Household Size	6.00 (0.04)	4.77 (0.05)
# of HHs	10,694	8,806

Eligible households headed by a couple

	Treatments	Controls	Difference
Head´s Years of Schooling	2.91 (0.08)	2.81 (0.10)	0.10 (0.13)
Age of Head	41.73 (0.24)	42.00 (0.35)	-0.27 (0.42)
Household Size	5.99 (0.05)	6.05 (0.06)	-0.06 (0.07)
# of HHs	6,683	4,011	10,694

Notes: Source: 1997 baseline survey (ENCASEH). Robust standard errors in parentheses.

TABLE 2: Expenditures, budget shares and ownership of assets

	Treatments	Controls	Difference
A. Expenditure			
HH expenditure *per capita* (monthly)	133.39	118.23	15.16
	(0.77)	(0.93)	(1.21)
B. Budget shares			
Education	1.58	1.55	0.02
	(0.04)	(0.05)	(0.06)
Boys' clothing	2.15	1.62	0.54
	(0.03)	(0.03)	(0.04)
Girls' clothing	1.97	1.46	0.50
	(0.03)	(0.03)	(0.04)
Adult male clothing	1.31	1.15	0.16
	(0.02)	(0.03)	(0.03)
Adult female clothing	1.15	1.06	0.08
	(0.02)	(0.03)	(0.03)
Transport	3.61	3.59	0.02
	(0.06)	(0.09)	(0.11)
Alcohol & tobacco	0.40	0.56	-0.16
	(0.02)	(0.04)	(0.04)
Food	66.69	66.68	0.01
	(0.19)	(0.24)	(0.31)
Vegetables	9.57	8.97	0.59
	(0.06)	(0.07)	(0.09)
Fruits	0.56	0.41	0.16
	(0.01)	(0.02)	(0.02)
Tortillas & beans	15.31	17.79	-2.48
	(0.11)	(0.17)	(0.20)
Meat	12.19	10.56	1.64
	(0.09)	(0.11)	(0.14)
C. Nutrient intake			
Calories *per capita*	1807	1714	94
	(11.54)	(14.10)	(18.22)
Protein per calorie (g/Kcal)	2.39	2.32	0.06
	(0.05)	(0.10)	(0.10)
D.Saving and assets			
Income-expenditure *per capita* (monthly)	157.88	144.49	13.38
	(14.89)	(19.31)	(24.38)
# of chickens & turkeys	4.45	4.10	0.36
	(0.05)	(0.06)	(0.08)
# of pigs	0.79	0.80	-0.02
	(0.01)	(0.02)	(0.02)
# of cows	0.44	0.34	0.10
	(0.02)	(0.02)	(0.03)
# of horses & donkeys	0.46	0.39	0.07
	(0.01)	(0.01)	(0.01)
# of Obs.	14,413	8,469	

Source: ENCEL Oct 98, May 99 and Nov 99.
Robust standard errors in parentheses.

TABLE 3A: PROGRESA cash transfers, budget shares and nutrient intakes

Marginal effect of PROGRESA income (in $000 pesos) after controlling total household resources

	Sample				
	All HHs (incls non poor)	Treatment & Control HHs	Treatment HHs only	Treatment HHs In all waves	Treatment HHs Always in school
Dependent variable	(1)	(2)	(3)	(4)	(5)
Budget shares					
1. Education	1.59	2.84	3.43	3.64	2.75
	(0.32)	(0.35)	(0.37)	(0.42)	(0.62)
2. Boys' Clothing	2.98	2.99	3.15	3.05	2.78
	(0.16)	(0.20)	(0.22)	(0.23)	(0.33)
3. Girls' Clothing	2.90	3.13	3.36	3.50	3.22
	(0.19)	(0.23)	(0.25)	(0.28)	(0.34)
4. Adult Male Clothing	-0.65	-0.38	-0.43	-0.59	-0.12
	(0.13)	(0.15)	(0.16)	(0.18)	(0.22)
5. Adult Female Clothing	-0.38	-0.10	-0.13	-0.03	0.21
	(0.13)	(0.15)	(0.16)	(0.18)	(0.23)
6. Transport	-1.47	-1.50	-1.57	-1.18	-0.81
	(0.36)	(0.43)	(0.46)	(0.50)	(0.68)
7. Alcohol & Tobacco	-0.22	-0.24	-0.25	-0.17	-0.27
	(0.13)	(0.16)	(0.17)	(0.19)	(0.26)
8. Food	-1.07	-6.53	-8.01	-8.63	-8.21
	(0.75)	(0.89)	(0.95)	(1.04)	(1.38)
9. Vegetables	-0.60	-1.77	-1.95	-1.74	-2.09
	(0.27)	(0.35)	(0.39)	(0.43)	(0.55)
10. Fruits	0.08	-0.13	-0.20	-0.24	-0.24
	(0.08)	(0.09)	(0.10)	(0.10)	(0.13)
11. Tortilla & Beans	-1.74	-2.78	-3.32	-3.37	-3.97
	(0.58)	(0.72)	(0.77)	(0.84)	(1.14)
12. Meat	2.50	2.14	1.71	1.53	1.76
	(0.48)	(0.59)	(0.64)	(0.72)	(0.92)
Nutrient intake					
13. ln(*per cap* calories)	-0.06	-0.14	-0.14	-0.15	-0.10
	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)
14. Protein per calorie	0.15	0.16	0.16	0.18	0.14
	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)
# of Obs.	31,732	22,882	14,413	11,426	6,677

Notes: Column (1) includes all couples in the evaluation sample including those eligible and those not eligible. Column (2) restricts attention to eligible households and includes both treatment and control households. Column (3) includes only treatment households. Column (4) includes treatment households who were interviewed in all three waves of the evaluation survey. Column (5) restricts attention to those treatment households in all waves of the survey and all of whose children were always in school in all waves. Following controls are included in each regression but not reported: logarithm of *per capita* household expenditure (specified as spline with two knots at 25 percentile and at 75 percentile), household composition (logarithm of household size and number of males and females between 0-5, 6-11, 12-25, 26-45 and 45 + years of age with older females excluded); education and age of head and spouse; indicators for whether household has indoor water, electricity, concrete walls, concrete roof; community fixed effects; and survey wave fixed effects (to capture time and season effects). Robust standard errors which allow clustering at the household level reported below regression coefficients.

TABLE 3B: PROGRESA cash transfer and ownership of livestock
Marginal effect of PROGRESA income (in $000s pesos) on probability of ownership and number owned

	Sample				
	All HHs (incls non poor)	Treatment & Control HHs	Treatment HHs only	Treatment HHs In all waves	Always in school
Dependent variable	(1)	(2)	(3)	(4)	(5)
PANEL A					
Linear Probability Model					
(Probability of having)					
1. Chickens & Turkeys	10.33	6.97	7.16	9.43	6.97
	(2.65)	(3.03)	(3.11)	(3.42)	(4.64)
2. Pigs	11.78	14.68	15.70	17.30	10.92
	(2.55)	(3.04)	(3.30)	(3.61)	(4.76)
3.Cows	-1.58	1.57	1.15	0.29	-0.21
	(1.90)	(2.06)	(2.13)	(2.42)	(2.98)
4. Horses & Donkeys	2.04	2.44	2.24	2.21	0.90
	(2.30)	(2.58)	(2.63)	(2.91)	(3.73)
PANEL B					
Negative Binomial Model					
(Number of)					
1. Chickens & Turkeys	0.45	0.43	0.34	0.38	0.31
	(0.05)	(0.05)	(0.06)	(0.07)	(0.09)
2. Pigs	0.38	0.41	0.43	0.49	0.37
	(0.07)	(0.08)	(0.09)	(0.09)	(0.12)
3.Cows	0.07	0.19	0.16	0.05	-0.03
	(0.10)	(0.13)	(0.14)	(0.16)	(0.22)
4. Horses & Donkeys	0.09	0.07	0.11	0.12	0.15
	(0.07)	(0.09)	(0.10)	(0.11)	(0.15)
# of Obs.	31,732	22,882	14,413	11,426	6,677

See notes to Table 3A. Coefficients in the Linear Probability Model are multiplied by 100.

TABLE 4: Marginal effect of PROGRESA cash transfers (in $000s pesos) on selected budget shares and ownership of livestock
Specification tests and evaluation of alternative interpretations

	PANEL A	PANEL B			PANEL C	PANEL D		PANEL E	PANEL F	
	Treatment HHs	Level and variance of benefit			Expected	Expected and actual benefit		HH F.E.	HH head is	HH head is
	Prog Benefit	Prog bnft	Var(Prog)	Var(HH inc)	E(Prog bnft)	Prog bnft	E(Prog bnft)	Prog bnft	Single female	Single male
	(A1)	(B1)	(B2)	(B3)	(C1)	(D1)	(D2)	(E1)	(F1)	(F2)
1. Education	3.43	2.14	0.38	0.00	2.46	2.80	1.84	0.22	-0.001	-0.01
	(0.37)	(0.45)	(0.08)	(0.01)	(0.29)	(0.38)	(0.30)	(0.80)	(0.002)	(0.02)
2. Boy Clothing	3.15	2.9	0.07	-0.04	1.48	2.86	0.85	1.11	0.001	0.01
	(0.22)	(0.26)	(0.04)	(0.01)	(0.17)	(0.23)	(0.18)	(0.43)	(0.002)	(0.01)
3. Girl Clothing	3.36	3.19	0.05	-0.01	1.42	3.11	0.73	2.11	0.001	0.01
	(0.25)	(0.29)	(0.04)	(0.01)	(0.17)	(0.26)	(0.18)	(0.48)	(0.002)	(0.01)
4. Adult Male Clothing	-0.43	-0.19	-0.07	-0.00	-0.13	-0.42	-0.04	-0.64	-0.002	0.0002
	(0.16)	(0.21)	(0.03)	(0.02)	(0.13)	(0.17)	(0.13)	(0.37)	(0.001)	(0.01)
5. Adult Female Clothing	0.13	0.53	-0.12	-0.01	-0.04	0.16	-0.08	0.06	0.002	0.01
	(0.16)	(0.17)	(0.02)	(0.01)	(0.11)	(0.16)	(0.12)	(0.28)	(0.002)	(0.01)
6. Transport	-1.57	-1.44	-0.02	0.04	-0.77	-1.41	-0.45	-0.55	-0.006	-0.0001
	(0.46)	(0.57)	(0.09)	(0.03)	(0.36)	(0.48)	(0.37)	(1.03)	(0.005)	(0.007)
7. Alcohol & Tobacco	-0.25	-0.13	-0.04	0.00	-0.16	-0.21	-0.12	0.43	-0.001	-0.006
	(0.17)	(0.19)	(0.03)	(0.0001)	(0.13)	(0.18)	(0.13)	(0.32)	(0.002)	(0.02)
8. Food	-8.01	-7.56	-0.16	0.14	-4.55	-6.99	-3.00	-0.65	0.002	-0.02
	(0.95)	(1.13)	(0.18)	(0.04)	(0.77)	(0.99)	(0.80)	(1.99)	(0.008)	(0.03)
9. Vegetables	-1.95	-3.25	0.33	-0.01	-1.02	-1.75	-0.63	-0.55	-0.004	-0.01
	(0.39)	(0.50)	(0.08)	(0.02)	(0.32)	(0.40)	(0.33)	(0.88)	(0.003)	(0.01)
10. Fruits	-0.20	-0.17	-0.01	0.00	-0.11	-0.17	-0.07	-0.24	0.0004	-0.004
	(0.10)	(0.13)	(0.02)	(0.0002)	(0.07)	(0.11)	(0.08)	(0.21)	(0.001)	(0.004)
11.Tortilla & Beans	-3.32	-3.69	0.10	0.22	-1.29	-3.13	-0.60	-2.44	0.0001	0.01
	(0.77)	(0.96)	(0.15)	(0.06)	(0.63)	(0.80)	(0.65)	(1.74)	(0.008)	(0.02)
12. Meat	1.71	3.24	-0.44	-0.04	-0.15	1.91	-0.58	2.28	0.006	-0.01
	(0.64)	(0.74)	(0.11)	(0.03)	(0.51)	(0.65)	(0.52)	(1.31)	(0.01)	(0.02)