Preliminary version

Pensions, Poverty and Household Investments in Bolivia

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Abstract: *The BONOSOL pension to elderly Bolivians put a sizeable cash transfer in the hands of a large group of impoverished households. This study finds positive effects of the program on household consumption and children's human capital, consistent with previous research on cash transfer programs in developing countries. However, the increase in food consumption for impoverished households in rural areas is equivalent to over one and a half times the value of the pension. A significant fraction of this increase is derived from consumption of home produced agricultural products such as meats and vegetables. These results suggest that cash transfers to poor and liquidity constrained households may facilitate productive investments which boost consumption through multipliers on the transfer. This proposition is supported by evidence that beneficiary households in rural Bolivia increase animal ownership, expenditures on farm inputs, and crop output, although the specific choice of investment differs according to the gender of the beneficiary. These results are consistent with the presence of credit constraints that limit poor households' ability to invest, and suggest that cash transfers may be an effective way to reduce extreme poverty, as poor households with under-capitalized assets and opportunities put the transfer to work.*

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1. Introduction

Cash transfer programs have become increasingly important policy tools in the struggle against poverty in less developed countries. From targeted transfers to the elderly in South Africa to conditional cash transfers to poor mothers in Mexico, a mounting body of literature shows the positive effects of these programs on a multitude of indicators including consumption, education, nutrition, child labor and health. Only little attention has been paid, however, to the potential implications of cash transfers for alleviating the liquidity constraints that may keep some households trapped in poverty. Especially for poor households with untapped productive and income generating potential, cash transfers may boost output through household investments in activities such as farming and micro-enterprise. With positive returns on these investments, poor households can increase consumption by more than the value of the initial transfer amount through multiplier effects on the transfer. Increased consumption of basic goods and investments in human capital, in turn, can have direct consequences for breaking the poverty trap and raising welfare.

This study employs a unique natural experiment to estimate the impact of a cash transfer to senior citizens in Bolivia, called the BONOSOL, on household consumption and investments. The analysis is conducted for the period between 1999 and 2002. Between 1998 and 2000 the transfer program was suspended while a new administration debated the viability and use of the program's resources. The BONOSOL payment was reinstituted in 2001 and 2002. Given a break in the program, data is available for a pre-treatment period when no payments were made, as well as for the subsequent treatment period when senior citizens received the pension. The estimation strategy takes advantage of this data availability for pre-and post-treatment periods plus the known rule for eligibility into the program.

The BONOSOL pension program emerged as part of the ambitious social and economic reforms implemented by the Bolivian government during the mid-1990s. The pension was designed as an annuity of $248 US dollars to all Bolivians age 65 and older, and was to be financed through the country's 50% ownership in partially privatized state owned enterprises[2], valued at approximately $1.7 Billion US dollars (25% of GDP). For

[2] The partial privatization of state owned enterprises was known as "capitalization."

poor households in the hemisphere's second poorest country, the transfer was a substantial amount of money, equivalent to 27% of national per capita income, 50% of annual income for the poor and 85% of annual income for the extreme poor (von Gersdorff, 1997). The BONOSOL program was intended to distribute proceeds from the privatization process and to provide the first ever government assistance for the majority of elderly Bolivians not covered by a pension program and deemed a particularly poor and vulnerable population. Ex-president Sanchez de Lozada has said that for many Bolivians the BONOSOL is "the biggest capital sum they will ever see, the equivalent of a pair of oxen or a milch cow" (The Economist, 1997).

The BONOSOL was first paid in May of 1997 in the amount of $248 US dollars. Following a change in administration, the program was abruptly suspended for a combination of political and administrative reasons, and no payments were made in 1998. The program resumed in 2001 with the transfer payment reduced to $120 US dollars, still a sizeable transfer for poor households, at 13% of per capita annual income. Because of data availability for the period between 1999 and 2002, this study estimates the effect of the BONOSOL transfer on consumption during the 2001-2002 treatment periods[3], when the pension was set at the $120 US dollar amount. The difference in differences regression discontinuity design compares eligible to ineligible households in pre- and post-treatment periods, reducing some of the potential biases that can afflict analysis of non-experimental data. Multiple periods and a combination of estimation strategies have the added advantage of allowing for "false experiments" and other validity checks on the econometric approach.

Relative to the transfer amount, there are large increases in food consumption for beneficiary households. Overall, beneficiary households increase food consumption by 6.3%, with a total value equivalent to 97% of the cash transfer. A decomposition of the analysis by rural and urban areas, however, shows that a majority of the effect is driven by rural areas. Beneficiary households in the overwhelmingly poor rural areas experience an average increase in food consumption equivalent to almost 165% of the transfer value. The increase in food consumption is concentrated in meats, animal products, vegetables

[3] During the 2001-2002 periods, the pension program was relabeled as the "*Bolivida*". For consistency I will refer to the pension under its original name.

and fruits, not sugars, oils or other processed foods. A significant fraction of the increased food consumption is derived from increased home production, particularly of cereals, vegetables, meats and animal products (but not fruit which have longer maturation periods).

The large impact of the BONOSOL transfer on food consumption in rural areas is significant for a number of reasons. Compared to urban households, rural households are disproportionately poor and have lower food consumption, so that the marginal utility of increased calorie consumption could be greater. Rural households tend to be multi-generational, and individuals are economically active into advanced age, which is a likely mechanism by which transfers to the elderly result in increased productivity. Most importantly, rural households in Bolivia have under-exploited productive capital, particularly small land holdings used for the production of food through farming and raising animals[4]. It is this under-capitalized farm sector that has the potential for large returns to small investments.

Households with male beneficiaries appear to increase consumption of home produced meat and animal by-products such as milk and eggs, suggesting that male beneficiary households may use part of the transfer for investments in animal stock. The increase in consumption of home produced vegetable products is consistent across male and female beneficiary households, although female beneficiary households also increase home production of "other" goods. The increase in home produced consumption implies that beneficiary households are able to boost productivity. This could be the case if, for example, income from the pension allowed beneficiary households to purchase food and meet the caloric intake necessary for increased physical activity. Alternatively, households may use all or part of the transfer to invest in productive activities that were previously unattainable because of liquidity constraints. Evidence from expenditures on farming inputs and animal ownership suggest that beneficiaries are, in fact, increasing investments in agricultural activities. The results presented here are therefore consistent with the presence of liquidity constraints.

Estimated parameters from the analysis of food consumption yield a return to investments of approximately 1.6, assuming that all of home production is consumed.

[4] Because of land reform following the 1952 revolution, a majority of Bolivian peasants are landed

Since the BONOSOL payment was made during the first half of the year, and we observe households at the end of that same year (November and December), this return can reasonably be interpreted as an effect on agricultural investments with maturation periods over six to twelve months. Additional evidence points to the existence of further increases in food consumption for households with two consecutive payment periods, suggesting that there may be longer run returns on investments. Finally, rural beneficiary households achieve improvements in human capital investments, as evidenced by increased probability of school enrollment for children in multi-generational beneficiary households.

In contrast to rural areas, beneficiary households in urban areas do not have considerable changes in food consumption. However, there is evidence that these households increase consumption of non-food goods and services such as cleaning products, transportation, personal grooming, etc. There is also evidence of increased expenditures on medical services such as doctor visits and pharmaceuticals (both for urban and rural areas). The average increases on medical expenditures are less than $1USD per month in each category, and yet, represent close to 55% of mean doctor visit expenditures and 33% of mean pharmaceutical expenditures in the whole population. There is no significant evidence that urban beneficiaries are increasing transfers to other households, or increasing expenditures on typical adult goods, such as tobacco.

The results outlined in this study suggest that for poor and liquidity constrained households with under-capitalized assets (land in the case of rural Bolivians) or opportunities (for example handcraft manufacture that require investments in tools and raw materials), cash transfers may be an effective policy for poverty alleviation. Beyond the benefits of transfers for health and education, they can have the added advantage of reducing the constraints that may keep some households trapped in poverty.

The following section reviews the situation of the elderly in Bolivia, presents a brief history of the BONOSOL program, and discusses relevant research from old age pension and cash transfer programs in other countries. Section 3 describes the data and identification strategy used to estimate the impact of the BONOSOL program. Section 4 describes results for the impact of the transfer on household consumption, and section 5 explores the effect of the program on farm investments. Section 6 explores potential

extensions of the program on children's human capital investments and section 7 concludes.

2. Background

With a gross national income of $990 US dollars per capita (1999), Bolivia is South America's poorest country. World Development Indicators show that 62.7% of the Bolivian population was below the official poverty line in 1999, compared to 49% in Peru (1997) and 35% in Ecuador (1995). In rural areas in Bolivia, over 80% of the population was under the national poverty line (1999), compared to 64.7% in Peru (1997) and 47% in Ecuador (1994). Bolivia ranks below other Latin American countries on many standard of living indicators as well. The infant mortality rate is 62 per 1,000 live births (2000) compared to the next lowest in the region of 40 deaths per 1000 live births in Peru (2000). The under age 5 mortality rate in Bolivia is 80 per thousand (2000), compared to the next highest of 42 deaths per thousand in Peru (2000). The literacy rate for females ages 15 and older is 78% (1999), compared to the next lowest of 84% in Peru (1999). And life expectancy at birth is 62.5 years (2000), compared to 68.07 years in Brazil (2000).

Elderly households in rural Bolivia are disproportionately poor and historically have had little or no access to social assistance and safety nets. Statistics from the 2001 census (INE, 2003) shed some light on the situation of senior citizens (defined by INE as people 60 and older) in Bolivia. Seniors make up 7% of Bolivia's population, with a total of 579,259 persons divided almost equally between urban (291,940) and rural (287,319) areas. Because of higher rural to urban migration rates of young adults, seniors make up 9.2% of the total rural population compared to 5.7% in urban areas. At a national level, 63% of senior citizens are under the poverty line, close to the national average. For rural areas, however, 90% of seniors are classified as poor, 10 points above rural average. The elderly are also worse off in terms of access to services. For example, only 57% of the elderly have access to running water (29% in rural areas and 85% in urban areas) compared to {62%} nationally. If language is a barrier to accessing services, the 32% of seniors who are monolingual Quechua, Aymara or Guarani (indigenous languages)

speaking may be at a disadvantage (42% are bilingual indigenous language-Spanish speaking).

Many Bolivians continue working into old age. 60.8% of men and 33.1% of women age 60 and older are economically active. This number is higher for rural areas where 75.3% of elderly men and 58.4% of elderly women are working. For individuals who report working, 80% are self employed and over 60% report agricultural work as their principal activity (86% in rural areas). In urban areas, the largest activity category for senior citizens is small commerce (30% of the active urban population). Of the 307,696 non-active senior citizens, only 22.7% report being retired on a pension. Thus, only 89,896 or 12% of Bolivians ages 60 and over are covered by a retirement or pension plan. Of those covered by a pension, 87.5% are in urban areas and 12.5% in rural areas. Finally, the large majority of elderly Bolivians live with nuclear or extended families (84%). Only 1% of elderly Bolivians live in assisted living situations such as convalescent homes or medical institutions, and the remaining 15% report living alone.

Most households in rural Bolivia own at least small plots of land as a consequence of the agrarian reform that followed the 1952 revolution. Statistics on the situation of land tenure in Bolivia show that a majority of Bolivia's *campesinos* or peasant farmers live and work on small land holdings. Over 90% of farms in the highlands and valleys remained less than 20 hectares during the 1980s, and nearly 80% of Bolivia's 700,000 farmers worked plots of 1 to 3 hectares (Library of Congress). Another estimate shows a third of the agricultural units in the country are plots of less than one hectare, 43.3 % are less than two hectares and 68% of all land units are less than 5 hectares. Although these small farms make up a clear majority of the total farm units in the country, together they occupy only 1.4% of the country's land mass. On the other extreme, 1.8% of farm units occupy 85% of the country's land, with 49% of these being greater the 5,000 hectares (O'omen, 1993)[5].

Despite the widespread land holdings amongst rural inhabitants, the agricultural sector remains largely undercapitalized and underproductive. "In general, Bolivia has a severe problem of low yields and productivity. The figures in question are significantly

[5] The land tenure system differs greatly between the more densely populated western high lands and valleys where small land holdings are commonplace, and the vast and sparsely populated eastern low lands where large land holdings are more common.

lower than in other countries in the region. Low yields are explained primarily by insufficient production infrastructure, low-quality seeds and inputs, limited investment and low productivity levels associated with an unskilled labor force" (Government of Bolivia, 2001). Given this situation, small amounts of capital to liquidity constrained agricultural households could potentially serve to boost output as farmers invest in animal stock and farming inputs such as seeds, fertilizers, pesticides or the rental of animal or mechanical traction for plowing a field.

An important body of theoretical and empirical literature has established the barriers to productive investments caused by liquidity constraints resulting from credit market imperfections. A number of authors argue that for poor households, startup costs may exceed available household resources, causing a poverty trap (Banerjee and Newman, 1993; Aghion and Bolton, 1997; Lindh and Ohlsson, 1998; Lloyd-Ellis and Bernhardt, 2000; Banerjee, 2001). In this case, households are left unable to partake in productive micro-entrepreneurial activities, and may be forced to remain as wage laborers. In the case of the households studied here, at under $1 US dollar per day in per capita consumption, even "low" levels of capital investment in micro-enterprise on the order of $100 USD (McKinzie and Woodruff, 2001) are likely to be prohibitive.

Much of the experience in both developed and developing countries has associated social assistance programs to the poor with work disincentives or other "negative" effects. For example, Sahn and Alderman (1996) find that rice subsidies lead to reduced labor supply in Sri Lanka, with increased household utility from more leisure, but not from larger consumption bundles. In the case of PROGRESA, Albarran and Attanasio (2001) find evidence that public transfer payments crowd out private transfers, and a number of other studies reach the same conclusion for other welfare programs in less developed countries (Cox and Jimenez, 1992; Cox, Eser and Jimenez,1998). In the South African context it has been shown that prime-aged adults in beneficiary households reduce labor supply substantially (Bertrand et al., 2001).

Cash transfers to poor and vulnerable populations have been shown to have positive impacts on a number of important indicators. One of the most widely studied transfer programs is the Progresa/Oportunidades human development conditional cash transfer program to poor households in Mexico. Research has suggested important

impacts of the program on consumption, health and education, among others. There is a growing body of research that suggests that transfers in the hands of poor and liquidity constrained households can actually lead to increased productivity, and that cash transfers to the extreme poor may have a negligible impact on work decisions of adults. Parker and Skoufias find a large negative impact of the Progresa conditional cash transfer program in Mexico on child labor supply, and a positive impact on participation in school related activities. There is some evidence that beneficiary women spent increased time on program-related activities (such as attending required meetings) and that there may have been a slight decline in domestic work time. However, the authors find no evidence that the program increased leisure time amongst men and women in beneficiary households.

Sadoulet, de Janvry and Davis (2001) study the income multiplier effects of the PROCAMPO payments to Mexican farmers in the *ejido* sector. They do not observe the specific decision to engage in productive activities, but are able to capture increased productivity through changes in income. They find that income multipliers from this transfer are in the range of 1.5 to 2.6, with larger effects for larger farms, households with fewer adults, non-indigenous and households in the Central and Gulf regions. The authors argue that a reduction in liquidity constraints is the principal mechanism through which cash transfers increase income generating opportunities, and offer a number of tests to support this argument.

One of the most widely studied pension programs in the development context is the South African pension program. This program expanded in the early 1990's to include a large majority of the Black South Africans previously not covered by pensions under the apartheid system. Research on the South African experiment has shown that pensions had positive impacts on reducing poverty and on increasing human capital investments in children. Case and Deaton (1998) find that the expansion of this program was successful in reaching the poorest eligible households and that the benefits extended disproportionately to poor children, who were more likely to live with a pensioner. Furthermore, Duflo (2000) finds that pensions received by female beneficiaries have a large positive impact on the health of young girls. The program also had a significant impact on changes in household demographic composition and labor supply of young adults in beneficiary households (Bertrand et al, 2001; Edmonds et al, 2001). Similar

results are found in a few other studies outside of South Africa. For example, Carvalho (2001) finds that there is a positive impact of increased income from social security payments to the elderly in Brazil on children's school enrollment, with evidence that transfers to women have a large effect on girl's enrollment, while there is suggestive evidence that transfers to men may reduce labor participation of boys.

The BONOSOL Program

The *Bono Solidario* (BONOSOL) is a cash transfer to all Bolivians age 65 years and older. Established in 1996 as an annuity of $248 US dollars, the BONOSOL was conceived with three primary objectives. First, it was a mechanism for returning the equity held in Bolivia's recently "capitalized" state enterprises to the Bolivian people. Second, it would serve to cover the large majority of elderly people with no access to the old pension system. Third, it was argued that the transfer would help reduce poverty by targeting a particularly poor and vulnerable segment of the population.

The BONOSOL was created as part of the social and economic reforms implemented by the first Sanchez de Lozada administration between 1993 and 1997. A centerpiece of the administration's economic reforms was the capitalization of major state owned enterprises[6], whereby a 50% stake in these companies was sold to private investors (for further details on the capitalization process see Barja and Urquiola, 03). The remaining 50% of equity in the capitalized firms, valued at around 1.7 billion USD (25% of GDP), was designated to *Collective Capitalization Funds* (CCF), a trust managed by private pension fund managers (AFPs) for the payment of the BONOSOL annuity.

Pension reform law # 1732 (passed by congress on November 29, 1996), which created the BONOSOL, granted all Bolivians age 21 and older in 1995 (approximately 3.5 million people) the right to a lifetime annual benefit starting at age 65. Under its original conception, the BONOSOL was to be funded by a combination of dividends paid on the CCF's stake in the capitalized firms plus the "monetizing" (sale) of equity to the private sector. A $248 US dollar transfer payment (the pension was originally indexed to

[6] Sectors include Oil and Gas (YPFB), electricity, railroads, telecommunications (ENTEL), airline (LAB) and foundry.

the US dollar) was guaranteed for 5 years, with the payment amount to be revised every three years thereafter according to changes in life expectancy and fluctuations in the portfolio (von Gersdorff, 1997).

The actual implementation of the BONOSOL program encountered a number of technical and political roadblocks which limited the implementation of the program under its original design. The first BONOSOL payment of $248 was made in May of 1997 during the final months of the Sanchez de Lozada administration and prior to presidential elections[7]. Because the legal procedures for monetizing part of the CCF's equity had not been completed, only 50% of the 90 million US dollars required for the BONOSOL payment could only be covered by dividends accumulated between 1995 and 1996. To cover this deficit, the AFPs made loans totaling approximately 45 million dollars from the private banking sector, using stock from three of the capitalized electricity firms as guarantee (La Prensa (1), 04).

Following the 1997 presidential elections, the incoming Banzer administration[8] suspended the BONOSOL program arguing that the assignment of resources generated by the capitalization to Bolivia's senior citizenry was arbitrary, and instead favored other "social investment" projects. The Banzer administration prohibited the accumulation of additional debt or any other market transactions (such as the sale of equity or the use of funds from private pension accounts) needed by the AFPs to make the 1998 BONOSOL payment. The new administration proposed a restructuring of the CCF's[9] and the eventual reinstitution of the BONOSOL under more "solid" foundations (La Prensa (1), 04). The payment of an old age relief bond by the Banzer administration materialized in late December of 2000 when the BONOSOL was reinstituted as the *Bolivida*, paid to all Bolivians 65 and older. Although the *Bolivida* had been set as an annual payment of $60 US dollars, beneficiaries in 2001 received retroactive payments from 1998 and 1999, for

[7] Although the constitution barred Sanchez de Lozada from serving two consecutive terms, many critics viewed the timing of the first payment as political maneuvering to favor his party.
[8] Banzer, a military dictator during the 1970's, and his ADN political party, entered government through an alliance with the MIR party, which it in turn had supported in the 1989 presidential elections.
[9] The new system under the ADN (which was ultimately suspended) would use 70% of the CCFs to issue "Popular Actions" which could be used as collateral and could entitle holders to a small pension upon reaching age 65 to Bolivians age 21 to 50 in 1995. The remaining 30% of CCFs would pay a Bolivida to Bolivians older than 50 in 1995 upon reaching age 65 (Bolivian Authorities, 2001 (IADB);).

a total annuity of $120 US dollars. In the final year of the Banzer administration[10], a second payment of $120 US dollars was made, again retroactively for 2000 and 2001. In both cases, the *Bolivida* was paid using dividends accrued on the CCF's portfolio in the period since 1998.

Sanchez de Lozada and the MNR returned for a second presidential term in 2002 on a platform of returning to the original design of the capitalization process and committed to reorganize the CCFs and reestablish the BONOSOL at its original level (although this time the amount would be set at $1,800 Bolivianos, approximately $250 USD in 2002, and not indexed to the US dollar). To finance the cost of the 2003 BONOSOL payment, the government established that shares of the CCFs would be sold to the individual (private) pension funds[11]. One twelfth of the total value of the CCFs was sold to the individual pension funds for $128 million USD, which added to accumulated dividends would suffice to cover the 2003 and 2004 payments totaling approximately $90 million USD each.

3. Data and Estimation Strategy

Empirical analysis is conducted with two nationally representative household surveys collected by the Bolivian National Statistical Institute (INE). The primary data set used for analysis of consumption and investment outcomes is the MECOVI *Encuesta de Medición de Condiciones de Vida*, a living standards measurement survey with detailed information on household composition, consumption, production and so on. The MECOVI data are repeated cross sections over a four year period between 1999 through 2002, with a total of 83,945 individuals in 19,986 households. The second survey is the *Encuesta Nacional de Demografía y Salud* – ENDSA, a health and demographic survey with household composition, health (anthropometrics) and educational characteristics, but lacking a detailed socioeconomic module. The ENDSA data were collected in 1994 and 1998 and are also cross sections with a total of 96,237 individuals in 21,221 households for both rounds of data.

[10] Jorge Quiroga, Banzer's vice-president, assumed the presidency in 2001 for a final year of government when Banzer stepped down due to ill health.

[11] This was a controversial measure since it effectively expropriated private savings, tying them to the fate of the capitalized companies.

Table 1 of the appendix presents a description of the data and a summary of the BONOSOL program in corresponding years. MECOVI data for 1999 through 2002 were collected between November and early December of each year. BONOSOL payments for 2001 and 2002 were awarded starting around Christmas of the previous year up until April in 2001 and June in 2002, generally in accordance with a payment schedule given by the beneficiary's day of birth[12]. As outlined in section 2, the 2001 BONOSOL transfer was a retroactive payment from 1998 and 1999, whereby only individuals 65 and older during these years would be eligible. Thus, 65 year olds in 1999 would be 67 in 2001 when surveyed, with the exception of beneficiaries who were surveyed in November or December prior to their birthday. There is a similar situation in 2002, when the BONOSOL payment was made retroactively to individuals 65 and older in 2000 and 2001. Thus, only individuals 66 and older collected the benefit in 2002.

The identification strategy relies on a regression discontinuity framework applied to the pre and post treatment periods. The regression discontinuity design takes advantage of a quasi-experiment introduced by some known eligibility criteria, in this case the discontinuity introduced by the 65 year age requirement for eligibility to the BONOSOL program. Households just around the 65 year threshold are assumed "interchangeable", as though treatment status had been randomly assigned. Households where the oldest member is 64 years old are assumed to be almost identical to households with a 65 year old oldest member in everything except the receipt of a BONOSOL pension by the 65 year olds' household. One of the primary concerns with the use of a RD design is the existence of differential trends at the threshold which might bias results obtained from this identification strategy. The data used here, with two non-treatment and two treatment years, allows us to control for differential trends by structuring the RD design on a difference in difference approach and comparing outcomes in the pre and post treatment periods. An added advantage of having data for pre and post treatment periods is that the possibility to conduct "false experiment" tests in pre-intervention years to confirm that the strategy yields no significant results in non-treatment periods.

[12] For some years, select groups of households such as war veterans were paid the BONOSOL during the first payment cycle.

The effect of the BONOSOL program on the outcome is estimated with a simple ordinary least squares regression fully parameterized for the age of the oldest household member and including indicator variables for each survey year to pick up any time or survey specific trends. The discontinuity is captured by a binary variable equal to 1 for households with a member age 65 or older, and equal to 0 if the oldest household member is 64 or younger. The timing of data collection, with a pre-intervention 1994 ENDSA and 1999-2000 MECOVI surveys allows for a difference in difference strategy that incorporates an indicator variable for the treatment period, and an interaction between indicators for treatment period and beneficiary to identify the differential effect for eligible households during treatment years.

The basic equation to be estimated is:

$$(1)\quad C_{it} = \alpha + \beta_1 Eligible_{it} + \beta_2 Eligible_{it} * Treatment + \sum_{l=3}^{L} \beta_l X + \sum_{t=1}^{4} \varphi_t Time_t + \sum_{n=1}^{N} \delta_n Age_n + \varepsilon_{it}$$

where C_{it} is consumption (or outcome of interest) of household i in time t, α is an intercept term, *Eligible* is an indicator variable equal to one for households with an eligible age individual (65 and older in the payment period) and *Treatment* is an indicator variable equal to one for the years when the pension was paid. β_2 is the parameter of interest yielding the treatment effect. X_{it} is a vector of l household and geographic controls including the education, gender and ethnicity of the oldest household member, the education of the head and spouse of the household, household size (adult equivalence used is children 10 and younger equal to 0.5 adults) the demographic composition given by the age-gender composition of the household, three assets that serve as wealth proxies and which would not likely be influenced by the BONOSOL transfer (adobe walls, existence of a bathroom and car ownership), a control for rural households, and geographic dummies for the 9 Bolivian departments. *Time* are dummies for each round of data and *Age* is a binary variable for the age category of the oldest household member (N age groups). The specification includes robust standard errors clustered at the level of the primary sampling unit.

The effect of the BONOSOL program is estimated for total household food consumption and home produced food consumption. Assuming the entirety of home production is consumed, the return on household investments can be found using

estimated parameters on the impact of the program on total food consumption and home produced consumption. Total consumption is given by:

(2a) $C = \beta T + \gamma(1-\beta)T = \alpha + \phi T$

where $\phi = [\beta + \gamma(1-\beta)]$, C is total consumption, β is the proportion of the transfer T consumed directly, and γ is the return on investments into production. We can write a household's home production of food as:

(2b) $C_f = \Phi T$, where $\Phi = \gamma(1-\beta)$

Where C_f is a household's consumption of home produced goods. With an exogenous change in the cash transfer, we can estimate the impact on total food consumption as well as home produced consumption, obtaining estimates for ϕ and Φ. These parameters allow us in turn to estimate the return on agricultural investments, γ. Equation (2a) yields $\beta = {\phi - \gamma}/{1-\gamma}$ which is substituted into (2b) to find a solution to γ in terms of the estimated parameters: $\gamma = {\Phi}/{1-\phi+\Phi}$.

Table 2 presents summary statistics of key variables for all rural and urban households in the analysis sub-sample and for eligible rural households in treatment and non-treatment periods. The large differences between rural and urban areas confirm the dire situation of households in rural Bolivia. Mean food consumption (deflated to 1999 prices) in rural areas is 129 pesos per capita, which at an exchange rate of approximately 6 pesos to the US dollar gives a mean food consumption under $1 US dollar per day. Not surprisingly, levels of home produced consumption are higher in rural areas and non-food consumption is much lower in rural areas. It is clear that the oldest household member, head and spouse in rural households have fewer years of education and are more likely to speak a native language. Rural households have significantly fewer assets and lower quality housing. To mention a few, 72% of rural households have dirt flooring, compared to fewer than 14% in urban areas. Only 45% of rural households have bathroom or outhouse facilities (compared to 83% in urban areas) and 35% have electricity (compared to almost 93% in urban).

For the purposes of this study it is important to take note of the demographic structure of households in urban and rural areas. A significantly larger fraction of rural

households have a beneficiary age household member. 28% of rural households have an eligible household member (counted as 66 or older) compared to 18.5% in urban areas. Furthermore, rural households are larger and have higher proportions of young children and elderly, whereas urban households have larger proportions of adult males and females between the ages of 18 and 49. This description of the demographic structure of rural households suggests that multi-generational households are more commonplace in rural areas. Finally, it is interesting to note that a larger proportion of the sample is concentrated in rural areas on the highlands and valleys (for example in the departments of Chuquisaca and Cochabamba), but not in the tropical low lands (for example Santa Cruz and Beni).

Comparing eligible households in the pre-treatment and treatment periods we observe that food consumption per capita and home produced consumption per capita are larger in the treatment period (results available on request). There are no significant differences in characteristics of the oldest household member such as age, education, gender or language. The comparison of asset ownership and housing quality between households in the two periods is a mixed bag. For example, households in the pre-treatment period are more likely to own a radio, closet, bicycle, sewing machine, car and oven, but households in the treatment period are more likely to own a stove, refrigerator or motorcycle. On the other hand, observed differences between households around the eligibly threshold (a five year bandwidth on each side) show very few differences in the demographic composition, asset ownership and household characteristics of eligible and ineligible households in treatment or pre-treatment period (results available upon request). These observed differences warrant the inclusion of controls for household characteristics in the regression analysis.

4. Cash Transfers and Consumption

The MECOVI analysis of food consumption uses a sub-sample of 12,246 households with the oldest household member between 35 and 90 years old. Results are robust to the inclusion of a wider range of households (using households with the oldest member older than 18 adds another 4,000 households to the analysis), but using the 35 year cutoff point drops very young families which are least similar to the pension age

households being studied. Results are also robust to a smaller age bandwidth around the eligibility cutoff, as discussed below. The MECOVI socioeconomic modules contain detailed information on a household's food and non-food consumption. Food consumption includes a comprehensive list of 58 food categories, including cereals, meats, dairy, fruits, vegetables, beverages (non-alcoholic) and condiments. Households report the value of expenditures, transfers and home production for each of the 58 categories over time intervals of the household's choice. All values are converted to monthly units and are deflated to 1999 prices for comparability. The consumption module was generally very clean, with most households reporting positive values of staple food items and less then 1% of the sample with missing consumption information. The analysis cuts outliers in the extreme top and bottom 0.5% of consumption values (for a total of 1% of the sample) and 19 households with over 30 household members are dropped.

The effect of the BONOSOL program on food consumption is illustrated graphically in the Graphs Appendix. Graph 1 plots mean food consumption per capita by the age of the oldest household member during the treatment period of 2001-2002 (dots indicate mean value and cross indicates the regression adjusted value). There is a clear downward trend over ages 35 to 65. At 66 there is a "jump" upwards, which persists over an eight year period more or less. The volatility in mean per capita consumption after age 76 can be explained in part by thinning sample sizes, as there are only few households with individuals 80 and older. Graph 2 presents the same graphical analysis for the non treatment period over 1999 and 2000. There is a clear downward trend in consumption over the age of the oldest household member, and no distinct break in the trend.

Graphs 3 and 4 are broken down by rural and urban areas, respectively. Circles indicate mean food consumption per capita for each age group during the treatment period, and crosses are mean food consumption per capita over the pre-treatment period. We observe that for rural households mean consumption in pre-treatment and treatment periods overlap fairly closely for ineligible households (oldest member younger than 66). For eligible households in the treatment period, however, there is a clear increase in mean per capita consumption over many age groups. For urban areas, average consumption is lower during treatment periods, likely a result of the worsening recession over this

period, and the increased effects of higher consumption for treatment households are not perceivable.

Table 3 presents the main results for the effect of the BONOSOL program on household food consumption. Model 1 regresses total monthly household consumption on an indicator variable for household eligibility in treatment years, household eligibility in all years, household size and the full set of indicator variables for the age of the oldest household member. We see that eligible households in treatment years have an 82.4 peso increase in monthly household consumption compared to eligible households in non-treatment years, significant at the 1% level. There is a large negative coefficient on eligible age households, which is absorbed by household controls included in model 2. Model 2 incorporates a series of controls for household characteristics and geographic fixed effects. We observe that the coefficient on eligible households in treatment periods declines slightly to 67.9 pesos per month, and the coefficient for eligible households in non-treatment goes to zero with the additional covariates included. These results show a proportionally large increase in household food consumption equivalent to 97% of the BONOSOL annuity of 840 pesos (70 pesos per month) during treatment periods. Controlling for household characteristics, there is no change in food consumption across the discontinuity.

With rural households as the largest group of poor and liquidity constrained households in Bolivia, it is conceivable that the impact of increased consumption through reduced liquidity constraints would be largest for this group. Model 3 shows that in fact a majority of the positive increase in food consumption is from rural beneficiary households, which increase food consumption by 90.4 pesos per month, equivalent to 129% of the transfer. The aggregate effect for treatment households is equivalent to 165% of the transfer. For urban households the effect is positive but not significant. Model 4 interacts eligibility with the gender of the oldest household member. We observe that households with female beneficiaries are no more likely to increase food consumption in urban or rural areas, although female eligible households in all periods have significantly higher food consumption (54.5 pesos per month). Finally model 5 interacts eligibility with the number of years of education of the oldest household

member and finds a significant negative effect for rural households in treatment years and no effect for urban households.

Table 4 estimates the same models as table 3 on home produced food consumption. Eligible households have a significant increase in total home produced food consumption of 22.6 pesos per moth. The increase is almost entirely for beneficiary household in rural areas, which increase home production by 38.4 pesos per month in treatment years. Interestingly, in model 4 there is a large and significant negative coefficient for female beneficiaries in treatment periods, implying that the increase in home produced food consumption is larger for male beneficiary households. This may be a consequence of the higher participation rates of men in agricultural activities. Households with a male beneficiary household member increase home produced food consumption by 68 pesos per month, equivalent to almost 100% of the transfer value. Assuming that households consume the entirety of home production, households with male beneficiaries increase total consumption by 137% of the value of the transfer, and increase home produced food consumption by 97% of the value of the transfer. In this case, returns to investment in home production are estimated at 1.63 (0.97/1-1.37+0.97). The underlying assumption of this estimate on returns is that the entirety of home production is consumed, and is not sold or stored. Finally, model 5 of table 4 interacts eligibility with education and finds a negative but insignificant effect on home produced consumption.

Table 5 disaggregates total food consumption into key food groups. Beneficiary households in rural areas are increasing consumption of meat products, vegetables and fruit (fruit is significant at the 10% level). Consumption of dairy and cereal products is positive but insignificant. There is no significant increase in other food categories: oils, sugars and other processed foods. Table 6 estimates the same models on home produced food consumption. The food categories most amenable to home production are positive and significant in rural areas. In particular, there is a 9 peso per month increase in home produced cereals (corn, wheat, quinua, etc), a 16 peso per month increase in home produced meats (beef, chicken, llama, pork, etc) and a 12 peso per month increase in consumption of home produced vegetables such as onions, tomatoes, faba beans, potatoes, yucca, etc. Although we observe positive increases in the consumption of fruit

for beneficiary households in rural areas, there is no effect of the program on home produced fruit. Investments in fruit plantations would not yield short term returns since most types of fruit cultivation take multiple years before a crop is available.

When estimates are obtained for the differential effect on female beneficiaries, an interesting pattern emerges. Table 7 shows that home produced consumption of meat products increases by 45 pesos per months for households with male beneficiaries, but is essentially zero for female beneficiaries. This suggests that male beneficiaries may be using the cash transfer for investments in farm animals. Consistent with this hypothesis, home production of dairy products and eggs is positive and significant for male beneficiaries, with an increase of 13.8 pesos significant at the 5% level for male beneficiary households. There is no difference between male and female beneficiaries for increased home production of vegetables, and there is a marginally significant increase of 9.7 pesos per month for home production of "other" products for female beneficiaries (herbal teas, coffee, chocolate, peppers, salt, and other condiments).

Table 8 looks for differential effects by geographical zones. The departments of La Paz, Potosi and Oruro are counted as high lands or altiplano, Chuqisaca, Tarija and Cochabamba are classified as valleys, and Santa Cruz, Beni and Pando as low lands. The omitted category is low lands. We observe that although home production is lower across all years in valleys and high lands, there is no systematic differential effect in treatment years between the three geographical areas (home production of milk is lower in the high lands, significant at the 10% level).

Given the timing of the transfer payments, by 2002 there was a group of seniors age 68 and older that received two consecutive payments of the BONOSOL for years 2001 and 2002. This group of households would arguably have the largest reduction in liquidity constraints and potentially returns on investments made in the first period. Regressions 1 and 2 in table 9 verify the differential effect of the cash transfer on this group of households for food consumption and home produced food consumption respectively. We see that the coefficient on food consumption for households with two consecutive payments in rural areas is large and significant, although the coefficient on home produced food consumption is no different compared to households with only one payment. It is also possible to estimate a differential effect for those households that

would have received the original BONOSOL transfer in 1997, taking households with beneficiaries age 69 and older in 2001 and 70 and older in 2002. Although the coefficients on food consumption and home produced consumption are positive, they are not significantly different from zero.

Tables 10 through 12 perform a number of robustness checks on the results reviewed thus far. Model 1 of table 10 uses a three year bandwidth around the discontinuity to estimate the impact of the pension on food consumption, finding a positive coefficient, but not statistically significant. Model 2 takes a 10 year bandwidth around the age cutoff and finds a significant increase or 67 pesos per month in food consumption, slightly smaller than the base model including the entire sample. Model 3 excludes the ages at the discontinuity with no change in the result. Finally, model 4 includes the entire sample but excludes the ages at the discontinuity and again finds results very close to estimates from the base regression model. Models 5 through 8 perform the same robustness checks on home produced consumption and find that the results are maintained in each case.

Table 11 performs a number of tests on the combined difference in differences regression discontinuity model used here. Models 1 and 4 run a pure regression discontinuity model with a 10 year bandwidth around the cutoff and excluding pre-treatment periods. The estimate on food consumption is larger in magnitude than the base specifications, but is only significant at the 14% level. Model 4 for home produced consumption yields a significant and positive value larger than previous estimates. Model 2 runs the regression discontinuity model on the pre-intervention period and accordingly finds no effect at the threshold. Model 5 replicates this result for home produced consumption. Models 3 and 6 perform a "placebo" or false experiment test of the difference in difference regression discontinuity assigning a "false treatment" to eligible households in the year 2000. That no effect is found serves as a test for the empirical strategy employed throughout.

Additional specification and functional forms are tested in table 12. Model 1 uses a linear specification for the age of the oldest household member and finds a similar result. Model 2 estimates the effect separately for each of the two treatment years and finds comparable estimates in each period, so it is not the case that one period is driving

all the results. Model 3 uses a log specification of the dependent variable and model 4 estimates the standard model on per capita consumption. In all cases, results from these checks are consistent with the original specification. In results not show, results are verified by cutting various percentages of top and bottom values of food consumption, with results holding for a reduction of the sample by up to 50% (25% on each end).

5. Cash Transfers and Farm Investments

The MECOVI surveys collect separate modules with detailed information of animal ownership, crop production and agricultural investments over the year prior to the interview. A similar econometric strategy as in the previous section is applied to various indicators of farm asset ownership and investments. Results from section 5 show that rural households with BONOSOL eligible household members experience relatively large gains in home produced food consumption, especially for meat and vegetables. The argument made thus far is that these increases are likely the consequence of agricultural investments which increase food production and consumption over the medium to long run. This section presents evidence to support this hypothesis by estimating the effect of the BONOSOL program on animal stocks and agricultural investments.

Animal ownership is reported by categories: cows (and bulls and calves), sheep, pigs, goats, llamas (and alpacas, vicunas), chickens (and turkeys), and rabbits (and guinea pigs). Table 14 presents results for the effect of the program on the number of animals owned for rural households with agricultural production (over 80% of rural households report farm output). Since there appear to be significant differences between home produced food consumption given the gender of the oldest household member, the effect of the program is estimated separately for male and female beneficiary households. Male beneficiary households have more goats in treatment periods, and female beneficiary households more pigs. Male beneficiaries may also have more llamas (significant at the 15% level). Since animal ownership may vary by region, I repeat this analysis for highlands, valleys and low lands (results available upon request). For high lands, male beneficiary households have significantly more llamas and female beneficiaries significantly more chickens. For valleys, only female beneficiaries appear to have more sheep. Finally, for low lands, female beneficiaries have significantly more pigs. Although

the quality of these animals is not observed (for example size or age), taken together these results support the hypothesis that beneficiary households in rural areas acquire more animals, with the specific type of animal varying by region and by the gender of the beneficiary.

Farm investments are given as expenditures on inputs to animal and crop production, such as animal feed, seeds, fertilizer, pesticides, and renting of framing equipment. Again, only rural households that report agricultural activity are used in the analysis. Results suggest that especially female beneficiary households increase agricultural investments for crop production. Results presented in table 16 show that female beneficiary households increase expenditures amounts on seed and pesticides. Including all rural households in table 17, female beneficiary households are 8.8 percentage points more likely to purchase pesticides and 7.5 percentage points more likely to rent a plow. These results again imply that increases in home produced consumption for beneficiary households are likely the direct result of investments into agricultural production.

6. Cash Transfers and Human Capital Investments

This section investigates the potential effects of the BONSOL program on investments in children's health and education. The same econometric strategy as in the rest of the paper is used to estimate the impact of the program on the school enrollment status of children in beneficiary households and also on health outcomes (note that health is not reported in this version of the paper). Detailed data on the health and education of children is available in the ENDSA (*Encuesta Nacional de Demografia y Salud)* health and demographic survey for the pre and post treatment periods for the first BONOSOL payment in 1997. Pre-treatment data is available for 1994, and post treatment data was collected starting in the first half of 1998, between 9 and 15 months following the first payment. Given that individuals 65 and older in 1997 were eligible for the first BONSOL payment, the 65 cutoff will include some people who turned 65 in 1998 and would not have been eligible for payment. I will maintain the 65 cutoff and confirm that the results hold when this age group is dropped (results available upon request. In fact the positive

effect of the program increases, as would be expected if the 65 cutoff results were biased downwards because of the inclusion of a group of non-treatment households).

Increased household income could be expected to impact investments in children's health and education through a number of channels. Increased food consumption will boost both the quantity and potentially the quality of food available to children, and could help improve nutrition. Higher income could lead to increased expenditures on school supplies. Furthermore, older household members may invest in the education of children if these are expected to provide income in the future. On the other hand, if children are required to stay home from school to participate in the production of food given higher investments in farm activities, the effect on schooling could be negative. The purpose of the analysis here is merely to explore the possibility of positive spillovers from program participation onto children's health and education, and I leave a more detailed analysis for a separate study.

Estimates for the impact of the program on school enrollment are presented in table 18. Given the availability of larger sample sizes in the ENDSA, compared to the MECOVI surveys, the sample is restricted to children between the ages of 6 to 17 in households with the oldest member between 50 and 80 years of age. Model 1 includes both urban and rural households and uses a 65 year threshold for eligible status. Children ages 9 and older have a positive effect on enrollment status, reporting an increase of 7 percentage points on the probability of enrollment (mean enrollment is 83%). Model 2 incorporates a number of controls for rural/urban and household characteristics, and the result holds for children 9 to 14. Models 3 and 4 split the sample into rural and urban households. It is apparent that a majority of the effect is driven by rural households, where there is a negative effect on the enrollment status of young children (6 to 8) of 12 percentage points (significant at the 10% level) and an increase in the probability of enrollment for older children of 14 percentage points (mean enrollment is 73%). It is clear that there is no effect for children living in beneficiary households in urban areas.

7. Conclusion

Cash transfers to poor and liquidity constrained households can unleash productive potential through investments in household economic activities such as

farming, which in turn increase consumption through multipliers on the transfer. This study uses the discontinuity introduced by the 65 years of age requirement for eligibility to the BONOSOL program and data for pre- and post-treatment periods to estimate the program's impact on food consumption, non-food consumption, agricultural investments, and human capital investments in beneficiary households. This estimation strategy allows for the comparison of eligible and ineligible households across treatment and non-treatment years, reducing potential biases in the estimation process.

One of the principal goals of the BONOSOL pension to elderly Bolivians was to alleviate poverty within a particularly poor and vulnerable population. For rural areas with a high concentration of poor households, the pension has achieved large increases in food consumption proportional to the transfer amount. Around half of this increase in food consumption is derived from increased home production of agricultural goods, and evidence from agricultural investments supports the hypothesis that beneficiary households use the transfer at least in part to alleviate liquidity constraints on agricultural production. Furthermore, there is some evidence that the multiplier effect on cash transfers may be extended over at least one year, as the investments bear fruit. Finally, preliminary evidence shows that there are positive spillovers for children in beneficiary households in the form of increased school enrollment. There are large returns for investments in the under-capitalized farming sector in rural Bolivia. These results are consistent with the presence of liquidity constraints that keep poor households from fully exploiting productive assets and opportunities.

With a total cost of around 90 million US dollars per year in payments (half of this amount for the period studied here, and a quarter of this amount for rural areas in these periods), the BONOSOL program has achieved large increases in the food consumption for impoverished households in rural Bolivia. These increases are fueled by household investments which promote increased production of traditional crops and increased consumption of meat from animal ownership. These results support the idea that poor households are limited by liquidity constraints that inhibit productive investments. Cash transfer programs have been shown to have a number of positive effects on beneficiary households. These programs may prove an even more effective means to fight poverty when households put the cash to work.

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Tables Appendix

Table 1: Schedule of Payments and Data for BONOSOL

Year	BONOSOL Annuity	Payment Dates	Survey	Date Collected	Households	Individuals	Notes
1994	0	NA	ENDSA	Nov 93 – June 94	9,112	42,590	Baseline pre-intervention year for ENDSA
1997	$248 USD	May	ENDSA	Feb(98)-Jul(98)	12,109	53,647	First BONOSOL payment
1998	0	NA	NA	NA	NA	NA	BONOSOL suspended
1999	0	NA	MECOVI	Nov-Dec	3,247	13,031	BONOSOL suspended – MECOVI pre intervention year
2000	0	NA	MECOVI	Nov - Dec	4,994	20,815	BONOSOL suspended – MECOVI pre intervention year
2001	$120USD ($820 BOL)	Late December (2000) to April (2001)	MECOVI	Nov-Dec	5,999	25,166	BOLIVIDA payments began on December 20th, 2000. The payment corresponds to two payments of $60 a piece from 1998 and 1999.
2002	$120 USD ($840 BOL)	Late December (2000) to June (2001)	MECOVI	Nov- Dec	5,746	24,933	BOLIVIDA payments began in late December of 2001. The payment corresponds to two payments of $60 a piece from 2000 and 2001.
2003	$248 USD ($1800 BOL)	Paid on person's birthday	MECOVI	Nov-Oct04	NA	NA	BONOSOL reinstituted under its original name. Payments were made on person's birthday starting on January 6th (including beneficiaries born before the 6th).
2004	($1800 BOL)	June – Dec	NA	NA	NA	NA	Payments begin June 1, 2004, paid on schedule according to Beneficiary's day of birth.

Notes: ENDSA(ENCUESTA NACIONAL DE DEMOGRAFIA Y SALUD) - Health and Demographic survey; MECOVI (MEJORAMIENTO DE CONDICIONES DE VIDA) – Living standards survey

Table 2: Summary Statistics

Section A: Summary Statistics by rural and urban

	RURAL		URBAN		
	Mean N=4733	SD	Mean N=7513	SD	T-Stat for difference in Means
Food consumption per capita	129.155	2.259	201.110	1.960	-23.911
Home produced food consumption per capita	35.890	0.905	9.810	0.440	25.957
Non-food Consumption Per Capita	48.601	5.180	177.400	19.605	-6.351
Oldest HH member - age	56.510	0.248	52.372	0.168	13.856
Oldest HH member - years of education	3.114	0.077	7.497	0.094	-35.753
Oldest HH member - female	0.438	0.008	0.444	0.006	-0.599
Oldest HH member - speaks native language	0.738	0.015	0.378	0.011	19.603
Age - Head of Household	50.301	0.268	49.919	0.168	1.210
Age - Spouse	43.869	0.228	42.870	0.118	3.899
Head's years of education	4.061	0.078	8.087	0.095	-32.593
Spouse's years of education	3.327	0.063	6.736	0.074	-34.833
Female Head of Household	0.037	0.003	0.036	0.002	0.191
Head of household speaks native language	0.723	0.015	0.364	0.010	19.733
Spouse speaks native language	0.555	0.013	0.235	0.008	20.933
BONOSOL eligible HH =1	0.281	0.008	0.185	0.005	10.477
Household Size	5.649	0.104	4.153	0.026	14.029
Proportion males 0-5 years old	0.060	0.002	0.044	0.001	8.221
Proportion males 6-17 years old	0.141	0.002	0.137	0.002	1.334
Proportion males 18-49 years old	0.165	0.003	0.193	0.002	-7.237
Proportion males 50+ years old	0.137	0.004	0.102	0.002	8.136
Proportion females 0-5 years old	0.058	0.002	0.042	0.001	8.675
Proportion females 6-17 years old	0.132	0.002	0.134	0.002	-0.807
Proportion females 18-49 years old	0.160	0.002	0.218	0.002	-18.332
Proportion females 50+ years old	0.147	0.004	0.131	0.003	3.195
Prime age adult in household	0.737	0.008	0.785	0.005	-5.064
Owns bed = 1	0.878	0.008	0.991	0.001	-14.043
Owns radio = 1	0.563	0.010	0.760	0.006	-17.000
Owns stove =1	0.559	0.011	0.881	0.005	-25.378
Owns TV = 1	0.239	0.011	0.848	0.006	-47.862
Owns Closet = 1	0.211	0.009	0.615	0.008	-32.905
Owns Bicycle =1	0.329	0.011	0.356	0.007	-1.987
Owns Refrigerator = 1	0.228	0.010	0.608	0.010	-27.163
Owns Sewing Machine = 1	0.174	0.008	0.331	0.007	-15.179
Owns Dining set = 1	0.141	0.008	0.492	0.009	-29.767
Owns Sofa = 1	0.015	0.002	0.224	0.007	-27.556
Owns VHS = 1	0.029	0.003	0.224	0.007	-25.453
Owns car = 1	0.027	0.003	0.124	0.005	-15.810
Owns oven = 1	0.046	0.005	0.109	0.004	-9.289
Owns motorcycle =1	0.178	0.010	0.162	0.006	1.448
Adobe walls = 1	0.765	0.015	0.447	0.013	16.603
Metal roof = 1	0.438	0.016	0.542	0.012	-5.229
Straw/dirt roof = 1	0.447	0.015	0.036	0.004	26.059
Dirt floor = 1	0.724	0.011	0.138	0.007	43.925

Indoor running water = 1	0.059	0.005	0.421	0.010	-32.054
Outdoor running water = 1	0.371	0.014	0.466	0.009	-5.795
Bathroom or outhouse = 1	0.452	0.014	0.830	0.008	-22.879
Electricity =1	0.356	0.015	0.928	0.005	-36.561
Kitchen = 1	0.843	0.007	0.818	0.005	2.893
Cooks with wood = 1	0.789	0.011	0.102	0.006	55.099
Number of rooms	3.538	0.060	3.054	0.028	7.344
Number of rooms used for sleeping	2.169	0.038	2.015	0.017	3.747
Phone = 1	0.023	0.003	0.373	0.010	-33.649
Department of Chuqisaca = 1	0.134	0.018	0.060	0.009	3.635
Department of La Paz = 1	0.290	0.023	0.250	0.016	1.454
Department of Cochabamba = 1	0.191	0.016	0.143	0.013	2.297
Department of Oruro = 1	0.078	0.011	0.086	0.009	-0.550
Department of Potosi = 1	0.102	0.011	0.084	0.009	1.207
Department of Tarija = 1	0.054	0.008	0.082	0.009	-2.224
Department of Santa Cruz = 1	0.106	0.011	0.197	0.015	-4.796
Department of Beni = 1	0.028	0.006	0.082	0.009	-4.959
Department of Pando = 1	0.018	0.004	0.018	0.004	0.033

Notes: Standard deviation adjusted for clustering at the primary sampling unit. Household size uses adult equivalence of children 10 and younger equal to 0.5 adults. Sub-sample of households with oldest household member between the ages of 35 and 90.

Table 3: Food Consumption
Dependent variable is value of monthly household food consumption (Bolivianos (Bs); 1USD = 6Bs)

	Model 1	Model 2	Model 3	Model 4	Model 5
BONOSOL eligible treatment period = 1	82.420**	67.992**	24.491	31.246	3.318
	(19.860)	(16.753)	(21.043)	(25.430)	(25.040)
BONOSOL eligible = 1	-293.218**	-1.281	23.834	-26.110	38.434
	(80.293)	(66.655)	(67.811)	(71.346)	(67.983)
BONOSOL eligible treatment period * rural			90.433**	96.575*	126.843**
			(30.496)	(40.721)	(34.647)
BONOSOL eligible * rural			-49.466*	-27.415	-82.222**
			(23.444)	(28.174)	(26.591)
BONOSOL eligible treatment period * rural * female oldest HH member				-6.765	
				(50.146)	
BONOSOL eligible * rural * female oldest HH member				-45.754	
				(34.511)	
BONOSOL eligible treatment period * female oldest HH member				-14.327	
				(27.207)	
BONOSOL eligible * female oldest HH member				54.536*	
				(24.002)	
BONOSOL eligible treatment period * rural * oldest HH member's education (years)					-18.081*
					(8.224)
BONOSOL eligible * rural * oldest HH member's education (years)					21.011**
					(6.270)
BONOSOL eligible treatment years * oldest HH member's education (years)					4.542
					(3.980)
BONOSOL eligible * oldest HH member's education (years)					-2.024
					(2.823)
Rural =1		-48.281**	-49.607**	-49.326**	-51.342**
		(10.339)	(11.347)	(11.360)	(11.407)
Oldest HH member's education (years)		8.143**	8.209**	8.125**	7.600**
		(1.710)	(1.716)	(1.710)	(1.767)
Female Oldest HH member = 1		22.693*	22.687*	29.333**	23.081**
		(8.920)	(8.953)	(9.334)	(8.934)
Oldest HH member speaks native language = 1		-66.940**	-66.798**	-65.899**	-66.088**
		(10.333)	(10.337)	(10.329)	(10.315)
Head of household education (years)		-0.398	-0.486	-0.456	-0.397
		(1.694)	(1.692)	(1.691)	(1.688)
Spouse education (years)		15.578**	15.552**	15.865**	15.821**
		(1.165)	(1.167)	(1.174)	(1.172)
Proportion males 0-5 years old		-13.236	-12.990	-6.953	-12.920
		(43.997)	(43.986)	(44.102)	(44.077)
Proportion males 6-17 years old		35.152	35.536	38.628	33.982
		(30.983)	(30.955)	(30.944)	(30.988)
Proportion males 18-49 years old		57.317*	58.040*	63.231*	58.688*
		(25.985)	(26.011)	(26.224)	(26.001)
Proportion males 50+ years old		-50.916**	-49.962**	-35.751	-52.064**
		(18.437)	(18.543)	(22.508)	(18.463)
Proportion females 0-5 years old		-22.551	-21.931	-17.052	-23.729

		(46.295)	(46.206)	(46.374)	(46.221)
Proportion females 6-17 years old		-6.979	-5.680	-2.064	-5.658
		(30.999)	(30.957)	(31.116)	(30.968)
Proportion females 18-49 years old		108.252**	108.168**	106.786**	109.298**
		(23.612)	(23.618)	(23.694)	(23.708)
Adobe walls = 1		-55.652**	-55.800**	-55.531**	-56.035**
		(9.495)	(9.491)	(9.481)	(9.490)
Bathroom = 1		101.479**	101.476**	100.920**	100.775**
		(9.880)	(9.886)	(9.882)	(9.876)
Own car = 1		162.904**	162.225**	162.382**	162.925**
		(15.934)	(15.936)	(15.918)	(15.916)
Department 2 (La Paz) = 1		87.342**	87.814**	87.718**	86.553**
		(16.930)	(16.946)	(16.937)	(16.913)
Department 3 (Cochabamba) = 1		61.717**	62.626**	62.161**	62.092**
		(18.309)	(18.288)	(18.309)	(18.237)
Department 4 (Oruro) = 1		81.378**	81.018**	81.351**	80.211**
		(18.187)	(18.195)	(18.220)	(18.165)
Department 5 (Potosi) = 1		17.668	17.291	17.099	16.732
		(20.927)	(20.887)	(20.872)	(20.826)
Department 6 (Tarija) = 1		196.973**	196.511**	196.963**	196.131**
		(23.003)	(22.934)	(22.933)	(22.944)
Department 7 (Santa Cruz) = 1		151.795**	151.803**	152.088**	150.624**
		(19.892)	(19.968)	(19.984)	(19.961)
Department 8 (Beni) = 1		233.762**	233.739**	234.357**	233.170**
		(29.136)	(29.147)	(29.187)	(29.161)
Department 9 (Pando) = 1		397.778**	397.564**	397.028**	395.942**
		(50.775)	(50.589)	(50.439)	(50.267)
Household size (adult equivalence: children 10 and younger = 0.5 adults)	88.456**	90.800**	91.073**	91.085**	91.201**
	(2.651)	(2.889)	(2.887)	(2.898)	(2.885)
Year = 2002	-182.471**	-142.925**	-142.786**	-142.789**	-142.878**
	(23.942)	(15.850)	(15.797)	(15.798)	(15.758)
Year = 2001	-190.826**	-129.545**	-130.012**	-130.080**	-130.053**
	(22.054)	(15.875)	(15.808)	(15.808)	(15.765)
Year = 2000	-138.861**	-129.197**	-129.776**	-129.822**	-130.111**
	(22.731)	(15.787)	(15.695)	(15.701)	(15.584)
Constant	491.988**	111.125**	110.468**	102.258**	114.252**
	(28.972)	(36.312)	(36.456)	(36.662)	(36.559)
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes
Observations	12246	12246	12246	12246	12246
R-squared	0.28	0.47	0.47	0.47	0.47
Mean Dependent Variable	722.208	722.208	722.208	722.208	722.208

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999.

Table 4: Home Produced Food Consumption
Dependent variable is value of monthly home-produced food consumption

	Model 1	Model 2	Model 3	Model 4	Model 5
BONOSOL eligible treatment period = 1	23.136**	22.642**	4.151	1.189	-2.542
	(8.571)	(7.981)	(6.988)	(8.388)	(8.510)
BONOSOL eligible = 1	31.482	-33.674	-23.118	-15.558	-14.873
	(36.915)	(35.543)	(35.649)	(37.163)	(35.955)
BONOSOL eligible treatment period * rural			38.420*	68.072**	53.378**
			(15.581)	(21.865)	(18.072)
BONOSOL eligible * rural			-20.799+	-28.790*	-36.352**
			(11.090)	(12.975)	(12.973)
BONOSOL eligible treatment period * rural * female oldest HH member				-57.431*	
				(27.409)	
BONOSOL eligible * rural * female oldest HH member				16.358	
				(17.868)	
BONOSOL eligible treatment period * female oldest HH member				5.713	
				(9.154)	
BONOSOL eligible * female oldest HH member				-7.122	
				(9.220)	
BONOSOL eligible treatment period * rural * oldest HH member's education (years)					-8.331
					(6.570)
BONOSOL eligible * rural * oldest HH member's education (years)					8.898
					(5.802)
BONOSOL eligible treatment years * oldest HH member's education (years)					1.373
					(0.980)
BONOSOL eligible * oldest HH member's education (years)					-1.300+
					(0.747)
Rural =1		118.211**	117.597**	117.731**	117.422**
		(6.147)	(6.587)	(6.590)	(6.619)
Household size (adult equivalence: children 10 and younger = 0.5 adults)	34.941**	32.559**	32.674**	32.617**	32.736**
	(1.500)	(1.810)	(1.817)	(1.818)	(1.823)
Constant	-80.675**	-27.835	-28.087	-26.444	-27.964
	(10.296)	(17.754)	(17.654)	(17.728)	(18.036)
15 Household Controls	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes
Observations	12246	12246	12246	12246	12246
R-squared	0.23	0.30	0.30	0.30	0.30
Mean Dependent Variable	102.835	102.835	102.835	102.835	102.835

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of table 3. All regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999.

Table 5: Food Consumption by Food Group
Dependent variable is value of monthly food consumption for each food group

	Model 1 cereals	Model 2 meat	Model 3 oil	Model 4 dairy	Model 5 vegetables	Model 6 fruits	Model 7 sugar	Model 8 other
BONOSOL eligible treatment period = 1	11.803	6.902	1.987	5.489	0.336	0.866	-0.003	-1.301
	(12.965)	(10.203)	(1.387)	(5.257)	(4.489)	(3.594)	(2.885)	(3.035)
BONOSOL eligible = 1	-5.476	28.868	-10.080*	-4.778	2.192	15.901+	0.464	-2.232
	(24.551)	(23.358)	(4.734)	(13.735)	(16.626)	(8.276)	(6.186)	(8.128)
BONOSOL eligible treatment period * rural	8.836	37.383**	-0.049	11.416	17.180*	7.805+	-0.674	4.260
	(14.752)	(14.416)	(1.959)	(7.280)	(6.905)	(4.480)	(2.532)	(4.829)
BONOSOL eligible * rural	-9.563	-27.627*	-1.314	-8.631	-6.636	-7.047*	-0.318	1.520
	(6.541)	(11.683)	(1.971)	(5.873)	(5.421)	(3.206)	(3.326)	(3.565)
Rural =1	-8.181*	-34.364**	5.063**	2.036	-9.431**	-10.086**	-1.316	9.202**
	(3.246)	(5.319)	(1.217)	(3.323)	(3.344)	(1.850)	(3.880)	(2.077)
Household size	26.127**	24.373**	5.160**	8.716**	16.458**	4.832**	5.540**	6.535**
	(1.237)	(1.484)	(0.284)	(0.695)	(0.670)	(0.406)	(0.375)	(0.410)
Constant	-3.761	23.292	7.292+	7.247	0.165	4.271	2.462	10.666+
	(15.032)	(16.538)	(3.772)	(13.314)	(11.239)	(5.214)	(6.916)	(6.009)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12246	12246	12246	12246	12246	12246	12246	12246
R-squared	0.29	0.30	0.16	0.16	0.23	0.21	0.03	0.12
Mean dependent variable	166.669	213.465	29.262	87.688	131.344	53.979	35.523	44.603

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of table 3. All Regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 6: Food Consumption by Food Group – Home Production
Dependent variable is value of monthly home produced consumption for each food group

	Model 1 cereals	Model 2 meat	Model 3 oil	Model 4 dairy	Model 5 vegetables	Model 6 fruit	Model 7 sugar	Model 8 other
BONOSOL eligible treatment period = 1	-2.477	3.248	0.095	3.456	-3.076	0.522	-0.044	-0.463
	(2.540)	(3.794)	(0.331)	(2.333)	(2.169)	(1.235)	(0.432)	(0.981)
BONOSOL eligible = 1	0.308	-19.786*	-1.149+	-12.442+	7.129	2.086	1.656	0.376
	(12.528)	(9.866)	(0.669)	(7.530)	(12.461)	(6.515)	(2.463)	(4.307)
BONOSOL eligible treatment period * rural	9.471+	16.358+	0.536	6.170	11.995*	-1.020	0.452	3.183
	(5.162)	(8.911)	(0.573)	(4.952)	(5.095)	(2.180)	(0.507)	(2.678)
BONOSOL eligible * rural	-7.196	-11.339+	0.023	-2.598	-0.820	-4.472*	-0.616	0.214
	(4.379)	(6.487)	(0.391)	(3.272)	(4.073)	(1.749)	(0.440)	(1.376)
Rural =1	22.032**	41.346**	0.375+	23.649**	24.667**	9.824**	0.156	1.982+
	(1.958)	(4.163)	(0.205)	(1.774)	(2.811)	(1.461)	(0.252)	(1.139)
Household size	7.895**	12.252**	0.243**	5.850**	5.884**	2.003**	0.123*	0.196+
	(0.610)	(1.147)	(0.065)	(0.587)	(0.559)	(0.318)	(0.048)	(0.106)
Constant	1.555	-11.896	1.999**	-4.241	-12.837	-7.069**	0.704	-2.537
	(5.762)	(10.262)	(0.632)	(5.638)	(9.096)	(2.729)	(0.715)	(2.495)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12246	12246	12246	12246	12246	12246	12246	12246
R-squared	0.16	0.14	0.02	0.16	0.13	0.08	0.01	0.02
Mean dependent variable	24.417	29.016	1.284	17.159	25.337	6.684	1.558	3.132

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. All Regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 7: Food Consumption by Food Group – Home Production by Gender of Beneficiary
Dependent variable is value of monthly home produced consumption for each food group

	Model 1 cereals	Model 2 meat	Model 3 oil	Model 4 dairy	Model 5 veges	Model 6 fruit	Model 7 sugar	Model 8 other
BONOSOL eligible treatment period = 1	-3.113	1.929	0.188	2.496	-3.033	-0.161	0.077	-0.414
	(2.952)	(5.055)	(0.542)	(2.508)	(2.712)	(1.411)	(0.540)	(1.093)
BONOSOL eligible = 1	5.910	-16.097	-1.301	-15.731+	5.437	4.401	1.518	2.216
	(12.804)	(11.900)	(0.841)	(8.030)	(13.021)	(6.668)	(2.492)	(4.509)
BONOSOL eligible treatment period * rural	7.521	45.422**	0.254	13.824*	12.478+	0.727	0.097	-1.868
	(6.793)	(14.937)	(0.916)	(6.624)	(6.977)	(2.750)	(0.695)	(1.586)
BONOSOL eligible * rural	-4.457	-22.619**	0.428	-2.961	-2.223	-5.142*	-0.178	2.165
	(5.906)	(7.401)	(0.527)	(3.714)	(5.215)	(2.068)	(0.544)	(1.723)
BONOSOL eligible treatment period * rural * female oldest HH member	3.731	-56.490**	0.587	-14.391	-0.993	-3.499	0.728	9.699+
	(9.363)	(16.585)	(1.117)	(8.806)	(8.841)	(4.357)	(0.813)	(5.536)
BONOSOL eligible * rural* female oldest HH member	-5.364	22.905*	-0.819	0.631	2.774	1.409	-0.884	-3.889*
	(6.569)	(9.487)	(0.647)	(5.706)	(7.025)	(3.506)	(0.553)	(1.537)
BONOSOL eligible treatment period * female oldest HH member	1.317	2.527	-0.184	1.720	-0.102	1.353	-0.237	-0.043
	(2.610)	(5.011)	(0.596)	(3.248)	(2.661)	(1.529)	(0.545)	(0.987)
BONOSOL eligible * female oldest HH member	-5.327+	-3.656	0.210	3.622	1.488	-2.374+	0.199	-1.853+
	(2.850)	(4.978)	(0.480)	(2.936)	(3.051)	(1.387)	(0.327)	(1.109)
Rural =1	22.061**	41.441**	0.379+	23.687**	24.648**	9.828**	0.160	1.971+
	(1.955)	(4.173)	(0.205)	(1.776)	(2.817)	(1.458)	(0.252)	(1.133)
Household size	7.891**	12.200**	0.243**	5.841**	5.886**	1.998**	0.123*	0.202+
	(0.610)	(1.144)	(0.065)	(0.588)	(0.560)	(0.316)	(0.048)	(0.106)
Constant	2.194	-10.568	1.957**	-4.703	-13.009	-6.711*	0.664	-2.406
	(5.801)	(10.214)	(0.634)	(5.675)	(9.126)	(2.778)	(0.724)	(2.493)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12246	12246	12246	12246	12246	12246	12246	12246
R-squared	0.16	0.14	0.02	0.16	0.13	0.08	0.01	0.02
Mean dependent variable	24.417	29.016	1.284	17.159	25.337	6.684	1.558	3.132

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. All Regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 8: Food Consumption by Food Group – Home Production by Region
Dependent variable is value of monthly home produced consumption for selected food groups

	Model 1 Total	Model 2 Cereals	Model 3 Meats	Model 4 Dairy and Eggs	Model 5 Vegetables	Model 6 Fruit
BONOSOL eligible treatment period = 1	8.691	-1.867	7.262	-0.091	-4.179	2.983
	(14.286)	(4.739)	(8.714)	(4.597)	(3.041)	(2.686)
BONOSOL eligible = 1	-51.857	-7.272	-32.169**	-16.608*	9.107	-3.013
	(37.926)	(12.659)	(11.424)	(8.381)	(12.842)	(6.988)
BONOSOL eligible treatment period * rural	66.091	42.449+	22.215	28.098	5.792	-14.157
	(76.518)	(23.733)	(39.199)	(20.010)	(14.845)	(14.098)
BONOSOL eligible * rural	71.148	-1.160	41.250	7.738	-11.456	25.642*
	(57.518)	(14.489)	(26.831)	(12.247)	(14.543)	(12.021)
BONOSOL eligible treatment period * rural * High Lands	-46.866	-38.205	-9.022	-34.302+	3.286	16.092
	(77.591)	(24.478)	(40.449)	(20.387)	(16.136)	(14.261)
BONOSOL eligible treatment period * rural * Valleys	-8.768	-38.956	-1.661	-12.116	12.564	14.278
	(76.928)	(25.477)	(40.112)	(21.913)	(16.197)	(14.165)
BONOSOL eligible * rural * High Lands	-111.148+	-20.436	-59.828*	-8.651	16.728	-34.991**
	(58.701)	(14.974)	(27.341)	(13.156)	(15.447)	(12.552)
BONOSOL eligible * rural * Valleys	-112.074+	10.091	-67.760*	-18.772	5.862	-36.606**
	(60.371)	(16.980)	(28.116)	(13.554)	(15.211)	(12.636)
BONOSOL eligible treatment period * High Lands	-8.495	-0.284	-8.138	2.501	2.654	-3.938
	(15.295)	(5.359)	(8.865)	(4.706)	(3.410)	(2.670)
BONOSOL eligible treatment period * Valleys	-0.467	0.051	-1.369	7.861	-0.039	-2.303
	(15.825)	(5.390)	(9.154)	(6.364)	(3.154)	(2.897)
BONOSOL eligible * High Lands	48.465**	14.568**	20.288**	5.275	-2.037	8.262**
	(12.630)	(4.542)	(7.841)	(3.893)	(2.593)	(2.301)
BONOSOL eligible * Valleys	37.028**	4.054	19.548*	5.336	-3.087	8.948**
	(13.335)	(4.837)	(7.990)	(4.491)	(3.166)	(2.524)
High Lands = 1	-116.849**	-26.712**	-65.268*	-3.702	-5.637	-19.254**
	(35.899)	(7.699)	(25.486)	(4.314)	(4.785)	(5.484)
Valleys = 1	-109.658**	-10.770	-79.637**	1.308	-3.171	-23.067**
	(36.556)	(7.905)	(25.386)	(5.582)	(6.534)	(5.495)
Rural =1	117.633**	22.242**	41.170**	23.699**	24.649**	9.756**
	(6.617)	(1.963)	(4.166)	(1.789)	(2.864)	(1.477)
Household size	32.206**	7.778**	12.021**	5.771**	5.950**	1.891**
	(1.820)	(0.620)	(1.157)	(0.581)	(0.562)	(0.299)
Constant	83.420*	12.065	69.532*	-5.523	-9.909	16.765**
	(39.267)	(8.963)	(27.213)	(6.045)	(6.901)	(5.984)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12246	12246	12246	12246	12246	12246
R-squared	0.31	0.17	0.14	0.16	0.13	0.08
Mean dependent variable	102.835	24.417	29.016	17.159	25.337	6.684

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. All Regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 9: Food Consumption - Differential effect of multiple payments
Dependent variable is value of monthly Total or home produced (Home) food consumption

	Consecutive Beneficiaries 2001-2002		1997 BONOSOL Beneficiaries	
	Model 1 Total	**Model 2 Home**	**Model 3 Total**	**Model 4 Home**
BONOSOL eligible treatment period = 1	41.289+	0.341	37.629	7.718
	(23.951)	(8.215)	(31.875)	(11.019)
BONOSOL eligible = 1	22.256	-23.287	23.620	-22.739
	(67.655)	(35.681)	(68.272)	(35.808)
BONOSOL eligible treatment period * rural	54.741	41.400*	64.749	35.439+
	(34.992)	(19.063)	(45.307)	(21.394)
BONOSOL eligible * rural	-49.209*	-20.804+	-49.359*	-20.793+
	(23.452)	(11.096)	(23.446)	(11.084)
BONOSOL eligible treatment period *rural * 68 and older in 2002	81.367*	-6.241		
	(38.916)	(21.038)		
BONOSOL eligible * 68 and older in 2002	-36.230	8.606		
	(27.568)	(9.595)		
BONOSOL eligible treatment period *rural * 1997 BONOSOL recipient			32.553	3.831
			(44.162)	(22.193)
BONOSOL eligible * 1997 BONOSOL recipient			-16.863	-4.702
			(34.778)	(12.516)
Rural =1	-49.858**	117.575**	-49.644**	117.587**
	(11.348)	(6.593)	(11.348)	(6.587)
Household size	91.189**	32.671**	91.072**	32.675**
	(2.882)	(1.817)	(2.887)	(1.818)
Constant	110.852**	-28.155	110.435**	-28.052
	(36.404)	(17.663)	(36.454)	(17.651)
15 Household Controls	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes
Observations	12246	12246	12246	12246
R-squared	0.47	0.30	0.47	0.30
Mean dependent variable	722.208	102.835	722.208	102.835

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. All Regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 10: Food Consumption Robustness Checks
Dependent variable is value of monthly Total or home produced (Home) food consumption

	Total Food Consumption				Home Produced Food Consumption			
	Model 1 3 yr bandwidth	**Model 2 10 yr bandwidth**	**Model 3 10 yr bandwidth excluding 66 & 67**	**Model 4 entire bandwidth excluding 66 & 67**	**Model 5 3 yr bandwidth**	**Model 6 10 yr bandwidth**	**Model 7 10 yr bandwidth excluding 66 & 67**	**Model 8 Entire bandwidth excluding 66 & 67**
BONOSOL eligible treatment period = 1	18.595	3.991	-1.992	21.847	1.026	-4.336	-4.157	4.560
	(43.237)	(27.973)	(30.112)	(22.181)	(16.239)	(11.050)	(11.401)	(7.434)
BONOSOL eligible = 1	8.795	-20.261	-13.561	18.903	3.445	-7.111	-25.106	-25.705
	(48.633)	(52.279)	(47.960)	(68.389)	(21.696)	(22.297)	(22.623)	(35.629)
BONOSOL eligible treatment period * rural	37.827	66.991+	66.195+	93.879**	50.290*	46.076*	50.383*	35.922*
	(49.194)	(34.547)	(37.941)	(32.347)	(24.777)	(19.444)	(21.019)	(16.844)
BONOSOL eligible * rural	-64.978	-36.715	-24.437	-44.537+	-52.273*	-46.876**	-47.020**	-15.011
	(48.503)	(29.294)	(31.931)	(25.364)	(23.320)	(15.622)	(16.768)	(12.416)
Rural =1	3.823	-39.497+	-40.787*	-50.085**	146.526**	133.323**	133.654**	117.887**
	(36.292)	(20.144)	(20.597)	(11.397)	(19.842)	(11.300)	(11.493)	(6.623)
Household size	90.145**	90.969**	91.626**	91.435**	37.039**	39.956**	40.363**	32.897**
	(6.288)	(4.369)	(4.525)	(2.901)	(4.094)	(2.675)	(2.756)	(1.852)
Constant	155.126*	171.176**	158.383**	111.631**	-62.580*	-85.643**	-67.072**	-29.319
	(64.812)	(53.300)	(47.100)	(36.907)	(31.823)	(24.774)	(23.526)	(18.159)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1671	4275	3900	11871	1671	4104	3900	11871
R-squared	0.57	0.55	0.55	0.47	0.41	0.40	0.40	0.30
Mean dependent variable	685.334	700.766	703.814	723.887	124.196	125.669	127.647	102.763

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. All Regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults. Models with a three year bandwidth include households with oldest members between 63 and 70; models with 10 year bandwidth include maximum ages of 56 to 77.

Table 11: Food Consumption – Specification and False Treatment Tests
Dependent variable is value of monthly Total or home produced (Home) food consumption

	Total Food Consumption			Home Produced Food Consumption		
	Model 1 RD Treatment Years 10 yr bandwidth	**Model 2 RD Non-Treatment Years 10 yr bandwidth**	**Model 3 False dif in dif RD (1999-2000) 10 yr bandwidth**	**Model 4 RD Treatment Years 10 yr bandwidth**	**Model 5 RD Non-Treatment Years 10 yr bandwidth**	**Model 6 False dif in dif RD (1999-2000) 10 yr bandwidth**
BONOSOL eligible treatment period = 1	99.475			68.423*		
	(66.111)			(31.066)		
BONOSOL eligible = 1		-32.674	-26.765		-40.110	-35.517
		(77.285)	(82.773)		(35.551)	(37.314)
False treatment period (2000) =1			-10.138			-7.881
			(38.049)			(17.976)
Rural =1	-31.118	-56.798*	-56.761*	129.411**	115.348**	115.377**
	(19.155)	(26.911)	(26.918)	(12.643)	(12.988)	(13.007)
Household size	93.134**	89.653**	89.641**	40.660**	37.417**	37.407**
	(5.533)	(6.435)	(6.433)	(3.428)	(3.888)	(3.892)
Constant	-24.864	131.888	129.518	-87.398+	-57.015	-58.857
	(87.998)	(82.625)	(83.545)	(49.301)	(38.904)	(38.934)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2552	1723	1723	2552	1723	1723
R-squared	0.55	0.57	0.57	0.37	0.48	0.48
Mean Dependent Variable	660.552	760.328	760.328	125.900	125.327	125.327

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. All Regressions include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults. Models 1 and 4 include 10 year bandwidth around eligible age in treatment years (2001, 2002). Models 2,3,4,5

Table 12: Food Consumption – Specification checks 2
Dependent variable is value of monthly household food consumption

	Model 1 - Linear	Model 2 - Yearly	Model 3 – Log Consumption	Model 4 – Per Capita Consumption
BONOSOL eligible treatment period = 1	65.680**		0.063**	11.952**
	(16.336)		(0.024)	(4.125)
BONOSOL eligible = 1	-68.847**		0.207+	-37.690**
	(20.286)		(0.110)	(11.497)
BONOSOL eligible 2002 - treatment year		69.634**		
		(25.817)		
BONOSOL eligible 2001 - treatment year		63.979*		
		(26.562)		
BONOSOL eligible 2000 - non treatment year		-1.749		
		(25.781)		
Age of oldest HH member	-24.941			
	(15.780)			
Age of oldest HH member ^2	0.534+			
	(0.274)			
Age of oldest HH member ^3	-0.003*			
	(0.002)			
Rural =1	-49.661**	-48.275**	-0.160**	-9.368**
	(10.330)	(10.339)	(0.017)	(2.538)
Household size	91.257**	90.807**	0.101**	-6.369**
	(2.855)	(2.887)	(0.003)	(0.419)
Constant	466.170	110.864**	5.190**	225.101**
	(289.248)	(36.735)	(0.060)	(10.115)
15 Household Controls	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	No	Yes	Yes	Yes
Observations	12246	12246	12246	12246
R-squared	0.47	0.47	0.51	0.32
Mean Dependent Variable	722.208	722.208	6.335	173.3

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. Models 2 through 4 include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 13: Non-Food Consumption
Dependent variable is monthly non-food consumption, by category

	Model 1 Non-Food Category 1 (monthly)	Model 2 Non-Food Category 2 (Quarterly)	Model 3 Non-Food Category 3 (Yearly)	Model 4 Medical – Doctor Visits	Model 5 Medical - Pharmaceuticals	Model 6 Medical - Hospitalization	Model 7 Tobacco	Model 8 Transfers to other households
BONOSOL eligible treatment period = 1	35.358*	7.347	144.161	4.239*	3.861+	1.215	1.127	2.857
	(17.462)	(17.381)	(149.211)	(2.002)	(1.969)	(1.210)	(0.692)	(5.428)
BONOSOL eligible = 1	18.863	-1.571	228.285	10.357	0.711	1.265	0.128	-8.574
	(32.301)	(35.335)	(210.220)	(9.623)	(3.163)	(3.667)	(1.459)	(9.839)
BONOSOL eligible treatment period * rural	-34.701+	16.949	-132.426	-0.580	-2.007	-0.274	-2.066+	-8.992
	(19.517)	(19.819)	(152.177)	(2.069)	(2.442)	(1.493)	(1.236)	(6.609)
BONOSOL eligible * rural	22.027	-16.661	36.045	-1.888	-2.728	-1.392	1.718	9.211*
	(15.545)	(16.908)	(127.144)	(1.481)	(1.868)	(1.178)	(1.071)	(4.637)
Rural =1	-13.561*	13.060*	-193.419**	-1.071+	0.378	-0.098	1.131**	12.599**
	(6.877)	(6.331)	(40.285)	(0.620)	(0.643)	(0.406)	(0.283)	(3.203)
Household size	15.013**	17.365**	49.003**	0.559**	1.613**	0.291**	0.539**	-0.711+
	(1.351)	(1.480)	(9.386)	(0.122)	(0.186)	(0.081)	(0.103)	(0.405)
Constant	-82.765**	-22.722	-240.191	0.679	9.095**	1.066	-0.459	-16.714
	(26.860)	(25.272)	(168.569)	(2.167)	(2.582)	(1.806)	(1.005)	(12.229)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12070	12070	12070	12070	12070	12070	12070	12070
R-squared	0.30	0.16	0.15	0.05	0.08	0.02	0.05	0.04
Mean Dependent Variable	217.026	180.642	879.939	7.611	11.704	2.472	3.055	16.289

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. All models include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 14: BONOSOL Animal ownership
Dependent variables is number of animals owned at the time of survey (rural sample of agricultural households only).

	Model 1 Cows	Model 2 Sheep	Model 3 Pigs	Model 4 Goats	Model 5 Llamas	Model 6 Chickens	Model 7 Rabbits
BONOSOL eligible treatment period = 1	1.114	-2.694	-0.704	2.286*	1.605	-0.504	0.072
	(1.179)	(2.466)	(0.465)	(1.133)	(1.133)	(1.521)	(0.284)
BONOSOL eligible = 1	-0.819	4.982	-1.074	3.333	5.623	0.199	-0.012
	(2.864)	(9.720)	(0.993)	(7.415)	(5.653)	(6.870)	(0.678)
BONOSOL eligible treatment period * female oldest HH member	-0.847	-0.654	1.305*	-3.749*	-2.807*	1.324	-0.100
	(1.599)	(3.455)	(0.526)	(1.550)	(1.243)	(1.819)	(0.324)
BONOSOL eligible * female oldest HH member	-0.270	2.314	-0.968*	2.359+	1.461	-2.957+	-0.261
	(1.155)	(3.159)	(0.471)	(1.234)	(1.096)	(1.601)	(0.298)
Household size	0.799**	1.366**	0.382**	0.562**	0.037	1.819**	0.032+
	(0.137)	(0.209)	(0.042)	(0.108)	(0.067)	(0.145)	(0.017)
Constant	6.692+	1.444	3.844**	9.910**	-0.826	11.259**	-0.028
	(3.506)	(4.381)	(0.958)	(2.429)	(1.889)	(3.567)	(0.667)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3836	3836	3838	3836	3836	3838	3838
R-squared	0.18	0.26	0.24	0.22	0.19	0.42	0.09
Mean Dep Var	5.638	17.192	2.721	4.261	2.645	12.275	1.004

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1 Sample consists of all rural households with oldest household member between the ages of 35 and 90, inclusive, that report agricultural activity. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. Models 2 through 4 include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults.

Table 15: BONOSOL Animal ownership – Binary outcome for all rural households
Dependent variable = 1 if household owns one or more animal (dprobits) (BONOSOL_table_animals_binary_1)

	Model 1 Cows	Model 2 Sheep	Model 3 Pigs	Model 4 Goats	Model 5 Llamas	Model 6 Chickens	Model 7 Rabbits
BONOSOL eligible treatment period = 1	0.061	0.102**	0.007	0.021	0.042+	-0.048	0.009
	(0.040)	(0.039)	(0.040)	(0.029)	(0.023)	(0.040)	(0.023)
BONOSOL eligible = 1	0.233	-0.000	0.179	0.015	0.042	0.142	0.136
	(0.159)	(0.141)	(0.187)	(0.142)	(0.110)	(0.178)	(0.130)
BONOSOL eligible treatment period * female oldest HH member	-0.087+	-0.153**	-0.002	-0.054	-0.061*	0.049	-0.005
	(0.052)	(0.049)	(0.051)	(0.037)	(0.030)	(0.048)	(0.028)
BONOSOL eligible * female oldest HH member	0.030	0.088*	-0.038	0.027	0.035	-0.037	-0.020
	(0.047)	(0.039)	(0.040)	(0.030)	(0.028)	(0.037)	(0.023)
female oldest HH member = 1	0.012	0.025	-0.003	-0.003	0.012	0.002	0.012
	(0.019)	(0.017)	(0.018)	(0.013)	(0.008)	(0.017)	(0.011)
Household size	0.027**	0.012**	0.028**	0.014**	0.003+	0.028**	0.003*
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Constant	0.376**	0.303**	0.411**	0.351**	-0.057	0.440**	-0.007
	(0.081)	(0.075)	(0.068)	(0.055)	(0.039)	(0.078)	(0.046)
15 Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4808	4808	4808	4808	4808	4808	4808
R-squared	0.16	0.26	0.18	0.27	0.23	0.20	0.10
Mean Dependent Variable							

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all rural households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. Models 2 through 4 include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults. Regressions are probits with marginal effect reported.

Table 16: BONOSOL Farm Investments
Dependent variable is monthly expenditures on agricultural inputs

	Model 1 Farm Total	Model 2 Seeds	Model 3 Fertilizer	Model 4 Pesticides	Model 5 Plow Rental
BONOSOL eligible treatment period = 1	2.383	-2.800	-1.027	-0.942	0.131
	(13.739)	(2.221)	(1.935)	(1.172)	(0.203)
BONOSOL eligible = 1	103.974	-1.978	18.522	0.655	-0.566+
	(83.054)	(3.943)	(17.132)	(1.208)	(0.326)
BONOSOL eligible treatment period * female oldest HH member	0.225	5.108*	2.727	2.304+	0.103
	(14.409)	(2.301)	(2.185)	(1.244)	(0.245)
BONOSOL eligible * female oldest HH member	-11.208	-4.258*	-1.856	-2.142+	-0.072
	(12.923)	(2.162)	(2.037)	(1.177)	(0.210)
Female oldest HH member = 1	0.223	-0.048	0.655	-0.091	0.116
	(7.014)	(0.802)	(0.858)	(0.545)	(0.084)
Household size	10.233**	1.084**	0.985**	0.608**	0.026+
	(1.502)	(0.158)	(0.162)	(0.132)	(0.014)
Constant	18.807	6.007+	3.113	2.273	0.459
	(24.300)	(3.275)	(2.622)	(1.552)	(0.309)
15 Household Controls	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes
Observations	4760	4760	4760	4762	4066
R-squared	0.14	0.11	0.09	0.11	0.05
Mean Dependent Variable	63.183	8.190	7.592	3.775	0.512

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all rural households with oldest household member between the ages of 35 and 90, inclusive, that report agricultural activity. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. Models 2 through 4 include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults. Farm total includes expenditures on day laborers, seeds, fertilizers, transportation, pesticides, technical assistance, farm machinery rental, rental of animal traction (plows), land rental, animal feed, veterinary services, and others. All values are reported as yearly, and converted to month.

Table 17: BONOSOL Farm Investments – binary outcome for all rural households
Dependent variable =1 if household makes expenditures on farm input

	Model 1 Farm Total	Model 2 Seeds	Model 3 Fertilizer	Model 4 Pesticides	Model 5 Plow Rental
BONOSOL eligible treatment period = 1	0.035	-0.012	-0.043	-0.042	-0.003
	(0.035)	(0.041)	(0.038)	(0.031)	(0.026)
BONOSOL eligible = 1	0.061	0.132	-0.026	-0.057	0.007
	(0.117)	(0.184)	(0.180)	(0.152)	(0.093)
BONOSOL eligible treatment period * female oldest HH member	-0.039	0.062	0.088+	0.034	0.075+
	(0.052)	(0.055)	(0.054)	(0.048)	(0.050)
BONOSOL eligible * female oldest HH member	0.041	0.003	-0.009	-0.018	-0.040
	(0.038)	(0.049)	(0.042)	(0.035)	(0.024)
Female oldest HH member = 1	0.011	-0.008	0.013	0.005	0.011
	(0.018)	(0.022)	(0.019)	(0.017)	(0.012)
Household size	0.028**	0.030**	0.021**	0.020**	0.006**
	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)
15 Household Controls	Yes	Yes	Yes	Yes	Yes
8 Region Controls	Yes	Yes	Yes	Yes	Yes
3 Year Controls	Yes	Yes	Yes	Yes	Yes
55 dummies for age of oldest HH member	Yes	Yes	Yes	Yes	Yes
Observations	4808	4808	4808	4799	4099
Mean Dependent Variable	0.750	0.439	0.340	0.242	0.108

Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Sample consists of all rural households with oldest household member between the ages of 35 and 90, inclusive. All regressions include the full set of individual, household and regional controls included in models 2-5 of tables 3 and 4. Models 2 through 4 include a full set of indicator variables for the age of the oldest household member. Omitted demographic composition category is females 50 and older. Omitted department is Chuquisaca and omitted year is 1999. Household size uses adult equivalence of children 10 and younger = 0.5 adults. Farm total includes day laborers, seeds, fertilizers, transportation, pesticides, technical assistance, farm machinery rental, rental of animal traction (plows), land rental, animal feed, veterinary services, and others. Regressions are probits with marginal effect reported.

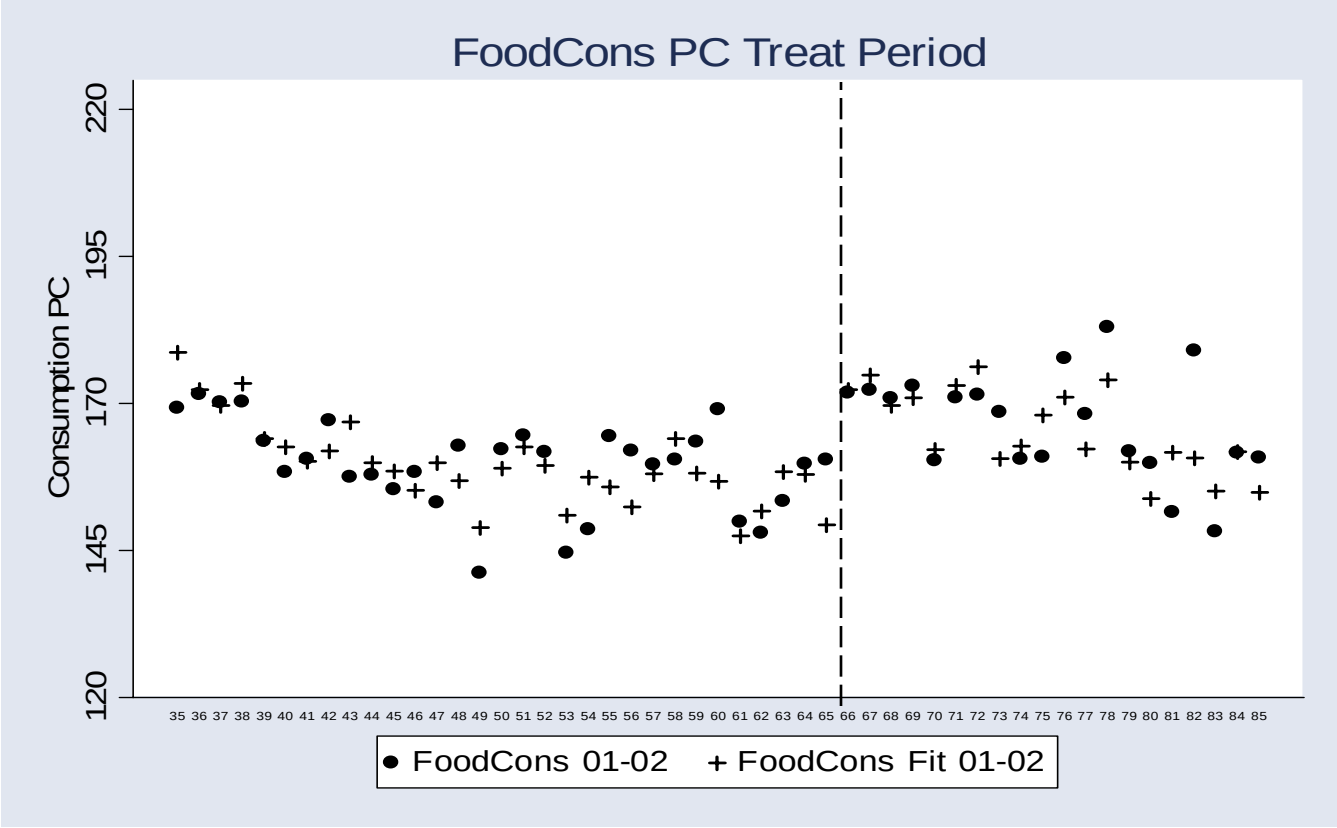
Table 18: ENDSA School Enrollment (probit)
Dependent variable: Child enrolled in school =1

	Model 1	Model 2 controls	Model 3 Rural	Model 4 Urban
BONOSOL eligible treatment period (1998) = 1	-0.066	-0.052	-0.128+	-0.013
	(0.040)	(0.038)	(0.074)	(0.027)
BONOSOL eligible = 1	0.060	0.028	0.084	-0.037
	(0.069)	(0.083)	(0.127)	(0.055)
BONOSOL eligible treatment period * children ages 9 to 14	0.070**	0.058*	0.134**	0.017
	(0.027)	(0.024)	(0.044)	(0.024)
BONOSOL eligible * children ages 9 to 14	-0.042	-0.043	-0.162*	0.002
	(0.036)	(0.035)	(0.074)	(0.024)
BONOSOL eligible treatment period * children ages 15 to 17	0.073**	0.042	0.144**	-0.012
	(0.026)	(0.027)	(0.040)	(0.033)
BONOSOL eligible * children ages 15 to 17	-0.062	-0.022	-0.170*	0.017
	(0.043)	(0.034)	(0.082)	(0.019)
children ages 9 to 14	0.154**	0.148**	0.203**	0.075**
	(0.024)	(0.023)	(0.043)	(0.019)
children ages 15 to 17	-0.156**	-0.132**	-0.409**	-0.043*
	(0.026)	(0.026)	(0.050)	(0.019)
Year 1998 = 1	0.039**	0.030**	0.039+	0.022+
	(0.012)	(0.011)	(0.021)	(0.011)
Female = 1		-0.025**	-0.084**	0.007
		(0.008)	(0.017)	(0.008)
Rural household = 1		-0.138**		
		(0.012)		
Household size		-0.003	0.005	-0.003
		(0.003)	(0.007)	(0.002)
Oldest HH member - years of education		0.012**	0.011*	0.008**
		(0.002)	(0.004)	(0.001)
Oldest HH member - female		0.049**	0.077**	0.026*
		(0.013)	(0.025)	(0.012)
Proportion males 0-5 years old		-0.185*	-0.318*	-0.121+
		(0.075)	(0.147)	(0.071)
Proportion males 6-17 years old		-0.034	-0.167	0.021
		(0.057)	(0.115)	(0.054)
Proportion males 18-49 years old		0.016	-0.066	0.024
		(0.061)	(0.116)	(0.061)
Proportion males 50+ years old		-0.008	0.019	-0.047
		(0.072)	(0.138)	(0.071)
Proportion females 0-5 years old		-0.142*	-0.190	-0.143*
		(0.073)	(0.154)	(0.064)
Proportion females 6-17 years old		-0.092	-0.239*	-0.005
		(0.057)	(0.114)	(0.055)
Proportion females 18-49 years old		0.170**	0.167	0.105*
		(0.055)	(0.113)	(0.050)
Observations	8294	8294	3991	4294
Mean Dependent Variable	0.830	0.830	0.736	0.917

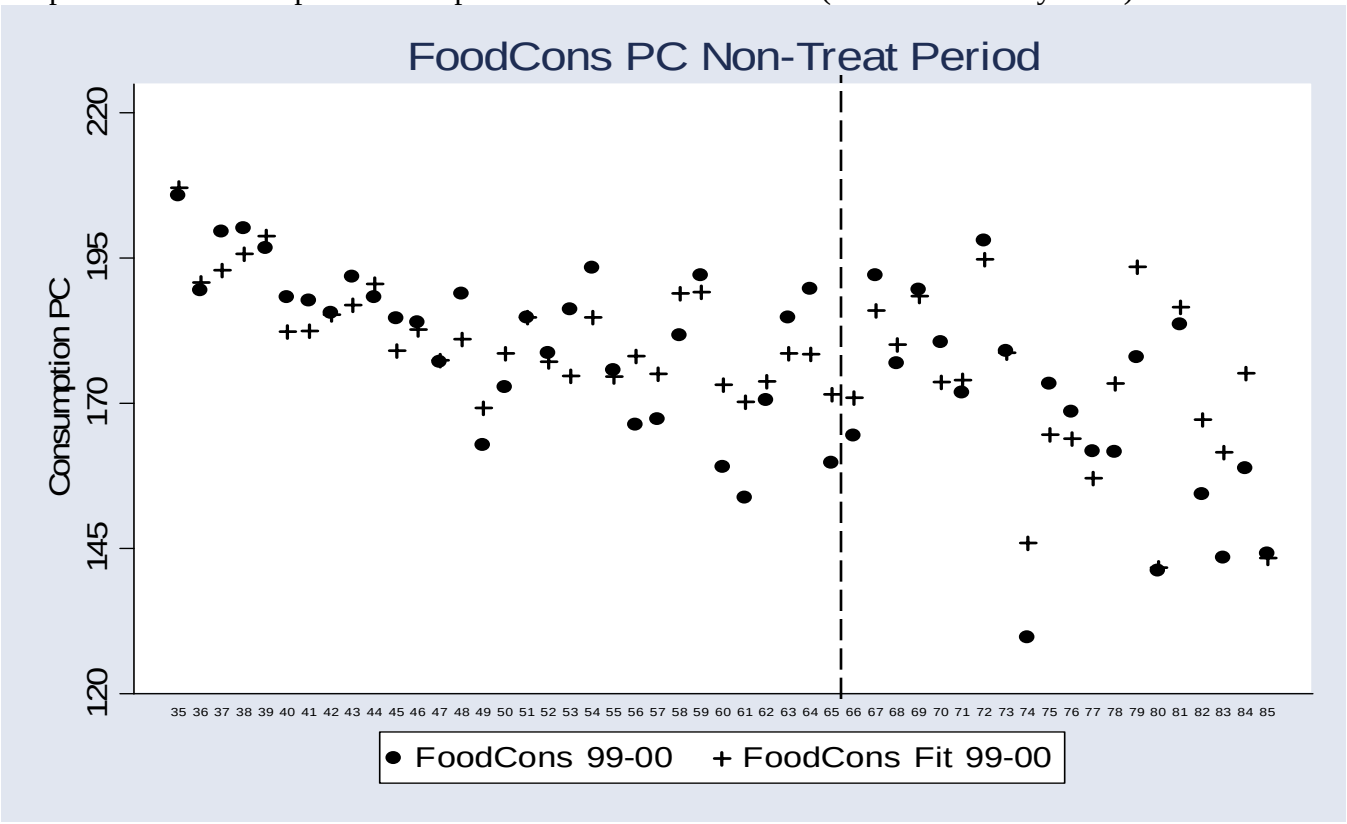
Notes: Robust standard errors clustered at the primary sampling unit level in parentheses (+ significant at 10%; * significant at 5%; ** significant at 1%). Probit regression with marginal effects reported. Data source: ENDSA 1994 and 1998. Sample consists of all households with oldest household member between the ages of 50 and 80, inclusive, and children between the ages of 6 and 17. Household size uses adult equivalence of children 10 and younger = 0.5 adults. Farm total includes day laborers, seeds, fertilizers, transportation, pesticides, technical assistance, farm machinery rental, rental of animal traction (plows), land rental, animal feed, veterinary services, and others. Regressions are probits with marginal effect reported.

Graphs Appendix

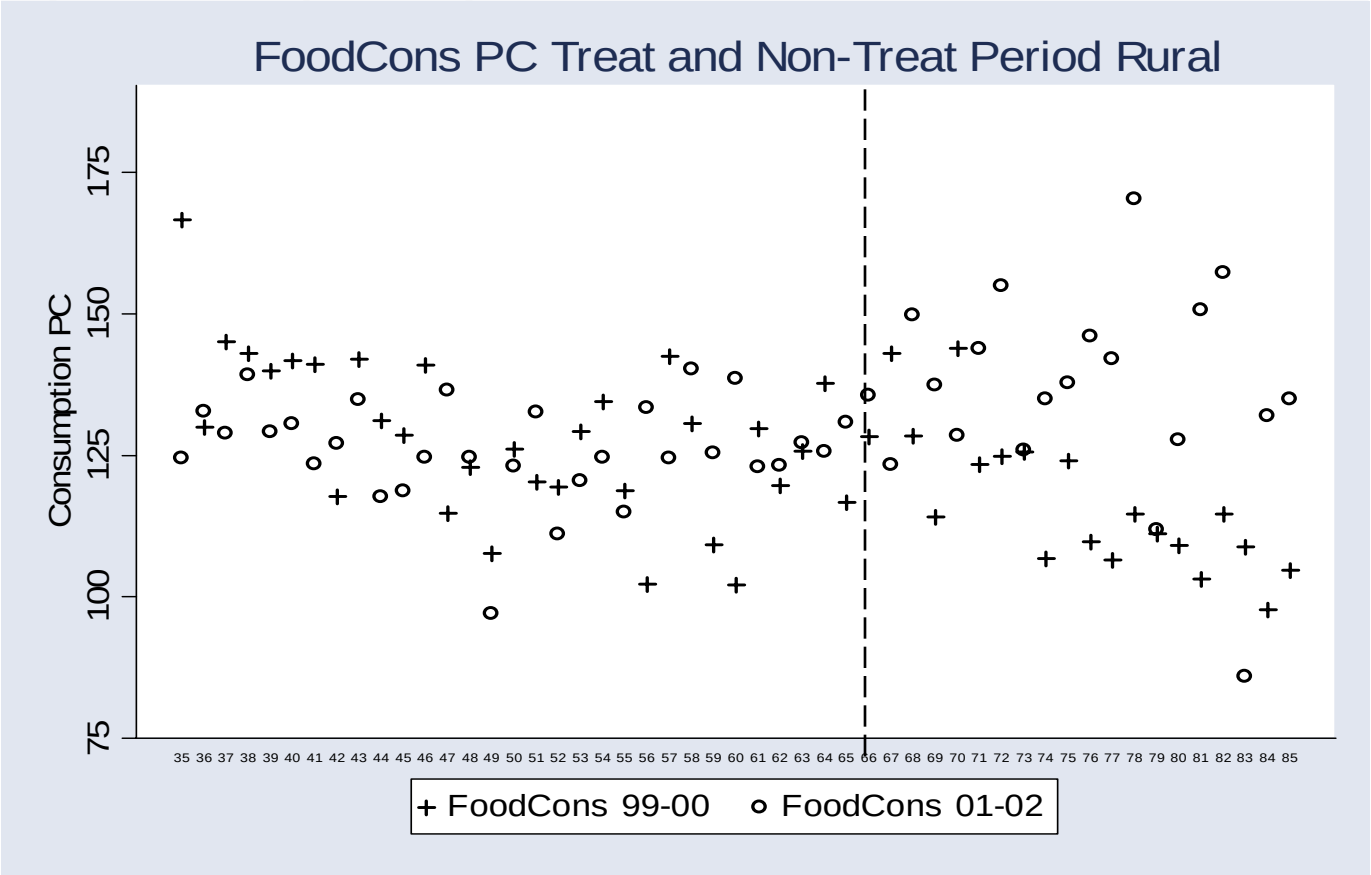
Graph1: Food Consumption Per Capita – Treatment Period (Discontinuity at 66)



Graph2: Food Consumption Per Capita – Non-treatment Period (No Discontinuity at 65)



Graph 3: Food Consumption Per-Capita (Rural) – Pre and Post Treatment Periods (Dif in Dif)



Graph 4: Food Consumption Per-Capita (Urban) – Pre and Post Treatment Periods (Dif in Dif)