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Summary

Using panel data from the Ethiopian Productive Safety Net Program, this paper explores the degree to which this social protection programme has been successful in protecting its beneficiaries against the various shocks that have affected the Horn of Africa in the recent past. The analysis suggests that although the PSNP has managed to improve households' food security and wellbeing, the positive effects of the programme are not robust enough to shield recipients completely against the impacts of severe shocks.

Key-words: coping strategies; resilience; vulnerability; poverty; Africa.

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1 Introduction

Since the 1980s, a growing body of evidence has pointed to the debilitating impacts that seasonal or unexpected shocks can have on the livelihoods of poor people in developing countries (Morduch 1995; Dercon and Krishnan 2000a; Baulch and Hoddinott 2000; Yamano, Alderman and Christiaensen 2003). Small events such as delay in monsoon rainfall, individual illness, or more severe idiosyncratic or covariant shocks such as the death of the household head, two consecutive harvest failures, or the devastations induced by tropical storms, can have irreversible impact on people's lives, affecting their income, food security and health, sometimes driving –or maintaining- them into destitution.

Households in poor developing countries are typically ill-equipped to cope with these shocks. Formal insurance schemes are mostly absent and informal risk-sharing arrangements and savings often offer only partial covering or consumption smoothing mechanisms (Morduch 1995, Townsend 1995; Dercon 2002). In this context, households, especially poorer ones, may then opt for less risky technologies and portfolios in order to avoid irreversible damage. While providing some additional protections against risks, these strategies come however often at the cost of income loses. In India for instance, Morduch (1990) showed that asset-poor households devote a larger share of the land they cultivate to safer traditional varieties of rice and castor rather than to (possibly riskier but) higher-value activities. In the same vein, farmers in semi-arid districts in western Tanzania, with limited options to smooth consumption, were found to grow more lower return, but safer crops (in this case sweet potatoes) foregoing up to 20% of their income as implicit insurance premium (Dercon 1996).

Against this background, social protection policies have been identified in recent years as one potential approach for overcoming these multiple causes of persistent poverty and rising vulnerability in developing countries. Originating with safety net interventions in the 1980s-90s, where the effort was essentially on establishing protection measures for transitory, shock-induced poverty, the concept of social protection has evolved into a broader concept that still recognizes the importance of transitory poverty but also takes into account longer-term mechanisms designed to combat chronic poverty as well as marginalization and social exclusion (Devereux and Sabates-Wheeler 2004; Barrientos and Hulme 2008; Cook and Kabeer 2009).

A growing literature is now available on social protection (Ellis, White, Lloyd-Sherlock, Chhotray and Seeley 2008; Devereux, Davies, McCord, Slater, Freeland, Ellis and White 2010; Barrientos 2010; Dercon 2011; Arnold, Conway and Greenslade 2011) which reflects the emerging consensus amongst development practitioners and academics that social protection can play a critical role in helping the chronic poor reduce risk, ameliorate the impact on their consumption of the realisation of risk, and facilitate long-term investment in human and physical capital, leading to sustainable reductions in chronic poverty.

The recent food price crisis and the global economic shock of 2008-09 represent serious threats for the success of these emerging social protection programmes. Across the globe, the food crisis pushed an additional 115 million people into hunger between 2008 and 2009, mainly in developing countries (FAO 2009). At the same time more localised shocks, such as floods, droughts and hurricanes, are part of the wider pool of climate-change related events and natural disasters that are also increasingly impacting the lives and wellbeing of poor households (e.g. Carter, Little, Mogues and Negatu 2007), possibly including those who are already benefiting from social protection programmes. It is likely therefore that, in some cases, climate change will affect social protection interventions and programmes, reducing or even cancelling out their positive effects. A good example of this possible scenario has been the severe drought that affected the Horn of Africa (Ethiopia, Kenya, Djibouti and Somalia) in 2008 (Oxfam 2008). Among the households affected were some that had slowly managed to build – or rebuild – their assets through the cash transfers they were receiving from the Productive Safety Net Programme in Ethiopia or the Hunger Safety Net Programme in Kenya. There were fears that the most severely affected households in these countries could have 'fallen back' below their initial poverty level before these programmes started.

This specific example points to a critical issue. While there is a growing literature documenting and analysing how social protection programmes can help in reducing income poverty and food insecurity, very little research has been done (see Eriksen, Brown and Kelly 2005 for one exception) about the ability of these programmes to protect households against specific idiosyncratic or covariant shocks, or even larger crises such as the global food price crisis that affected the world in 2008-2009. For instance, in the case of Ethiopia, although the Productive Safety Net Programme has been designed to include a contingency fund and a US$ 25 million risk-financing plan that can be triggered in the case of major shock, very little is known about the actual effectiveness of the programme in 'shielding' these beneficiaries from these unexpected shocks. Whether the Productive Safety Net Programme – or, for that matter, similar cash transfer programmes elsewhere – are fully effective at protecting households against particular types of shocks, or whether they make specific groups of households more (or less) resilient than others to particular shocks, has not been fully investigated.

Using the Ethiopian Productive Safety Net Programme (PSNP) as our case study, we will explore these questions and investigate in particular the degree to which the PSNP has been successful at protecting its beneficiaries from the local and more global shocks that have recently affected the region.

The rest of this article is structured as follows: Section 2 presents rapidly the Productive Safety Net Programme. Section 3 presents the methodology, including the data and econometric tests used for the analysis. The results are then presented in Section 4 while a more thorough discussion follows in Section 5. Section 6 concludes.

2 The Ethiopian Productive Safety Net Programme

Ethiopia has suffered recurrent food crises and famines for centuries (Pankhurst 1989). Until recently, responses to acute food insecurity were dominated by emergency food aid (Devereux 2010). Between 1994 and 2003, an average of five million Ethiopians were considered at risk and in need of emergency assistance every year, and from 1998 to 2005 the annual number of food aid beneficiaries fluctuated between 5 and 14 million (Devereux, Sabates-Wheeler, Tefera and Taye 2006).

Recognising this situation, the Government of Ethiopia initiated the Productive Safety Net Programme (PSNP) in 2004 with the support of a group of development partners. The overarching principle of the PSNP was to facilitate ‘a gradual shift away from a system dominated by emergency humanitarian aid to productive safety net system resources via multi-year framework’ (GoE 2004). At its start in 2005, the PSNP targeted approximately five million chronic food insecure people, but the number of PSNP beneficiaries was increased to eight million in 2006. The PSNP is now the largest social protection programme in Sub-Saharan Africa outside South Africa. At the operational level, the PSNP aims to provide ‘predictable transfers to meet predictable needs’ (GoE 2004) whereby chronically food insecure households receive support for several months of the year for up to 5 years, bridging their annual food consumption gap and building their resilience, until they are no longer chronically food insecure and are better able to cope with moderate shocks. At this point, the household is considered to be food sufficient and is ready to graduate from the PSNP (Devereux, Sabates-Wheeler, Slater, Brown and Teshome 2008). The two components through which transfers are made are (i) public works – provision of employment on rural infrastructure projects such as road construction and maintenance, small-scale irrigation and reforestation; and (ii) direct support – provision of direct unconditional transfers of cash or food to vulnerable households with no able-bodied members who can participate in public works projects.

3 Data, Survey, and Evaluation Methodology

3.1 Sampling and survey

The two panel surveys used in this research were part of the ‘Trends in Transfers’ study that was implemented in 2006 and 2008 in eight *woredas*[1] in four regions in Ethiopia where the PSNP is operational (Devereux et al., 2006; 2008). The survey was administered through a face-to-face questionnaire to 960 PSNP beneficiary and non-beneficiary households.

A stratified random sampling procedure was followed, with three stages of stratification (i) peasant associations or *kebeles*[2], (ii) village, and (iii) household. The survey targeted 960 households, disaggregated as 120 households per *woreda*, and 60 households per *kebele*

[1] A *woreda* is an administrative zone similar to a district.
[2] A *kebele* is an administrative unit consisting of a number of villages.

(at two *kebeles* per *woreda*), and 60 households per village (at one village per *kebele*), unless the selected village had a small population, in which case 30 households were interviewed per village, in two contiguous villages per *kebele*. The *kebeles* were selected in advance of the 2006 survey, the main criteria being each *kebele's* level of participation in the PSNP. A number of non-beneficiaries (20 percent of the total) were also included in the survey, using the list of village households. Non-beneficiaries were randomly selected from the pool of households that were not participating in the PSNP within each village visited.

The household questionnaire included modules covering household demographics (age, sex, labour capacity, parental status of children, education level); livelihood activities and income; ownership of and access to land; crop farming; saving, lending and borrowing; formal and informal transfers; asset inventory (livestock, productive assets, household goods, consumer durables). In addition, specific questions were included on food security (food shortage months, meals per day); coping strategies over the past year (rationing, asset sales, borrowing, etc.); asset protection and asset building; and a self-assessment measure of how well the household felt it had been doing over the last 12 months (see section 3.2 below).

3.2 Shocks, responses, and outcomes

A specific household-level 'shocks' module was included in the questionnaire to document the various shocks that affected households in the past five years. The households were asked to consider a list of adverse events and indicate whether they had been adversely affected by these shocks. Those include a number of broad categories such as climate-related events: drought and flooding, but also loss of crops or livestock due to pest, disease, or frost; economic shocks such as lack of access to inputs (both physical access and large increases in price), referred as 'high price' shock in the rest of this paper, decreases in output prices and difficulties in selling agricultural and non-agricultural products (referred as 'low price'); crime shocks including theft and/or destruction of crops, livestock, housing, tools or household durables; health shocks including death, disability, and illness. Finally, miscellaneous shocks such as divorce or separation were also considered.

Another series of questions was included to look specifically at the various coping strategies adopted by the households during the previous hungry season. These were grouped into four broad categories: (i) behavioural changes in relation to food consumption (eating less, reducing meal frequency, collecting bush products); (ii) selling assets (land, livestock or other assets) to buy food; (iii) withdrawing children from school, sending them to stay with relatives or sending them to work; and (iv) reducing expenditures on non-food items, or borrowing food or cash. Those were interpreted as coping strategies being part of the buffer capacity of households in face of severe shocks.

A second set of questions focuses more specifically on the asset disposal strategies. Questions were asked to the households to identify which assets were disposed in the past 12 months. The questions covered the following four asset categories: livestock; productive assets (e.g. tools, plough); household or personal assets (e.g. furniture, jewellery); and land. For each of these categories a further distinction was made between selling assets to purchase food or non-food products.

A third module of the questionnaire focused on asset protection and asset building. In contrast to the two previous modules that looked at asset-depleting coping strategies, this module identifies the various strategies which households adopted to protect or build human, financial or physical assets. These asset building strategies include: child school enrolment, children school attendance; use of health facilities; acquisition of new household assets; and investment in new skill or knowledge. The details of these modules (coping strategies, assets disposal, and assets building) are presented in Table 3.1.

Table 3.1 Household response strategies considered in the survey, including (a) coping strategies, (b) assets disposals, (c) asset building

Households responses		Description	Nature
(a) Coping strategy	Reduce Food Consumption	Ate less food (smaller portions) or reduced the number of meals per day or collected bush products to eat or sell for food	ordinal
	Sell assets to buy food	Sold land to buy food or sold livestock to buy food or sold other assets to buy food	ordinal
	Children strategy	Sent children to stay with relatives or withdrew children from school or sent children to work	ordinal
	Reduce spending on non-food	Reduced spending on non-food items or borrowed food or cash to purchase food	ordinal
(b) Asset disposal	Sell livestock for food	Sold livestock to meet the family's food needs	binary
	Sell livestock for non-food	Sold livestock to raise cash for non-food emergencies (e.g. health, funeral)	binary
	Sell productive assets for food	Sold productive assets (e.g. tools, plough) to meet the family's food needs	binary
	Sell productive assets for non-food	Sold productive assets (e.g. tools, plough) to raise cash for non-food emergencies (e.g. health expenses, funeral costs)	binary
	Sell other assets for food	Sold other assets (e.g. furniture, jewellery) to meet the family's food needs	binary
	Sell other assets for non-food	Sold other assets (e.g. furniture, jewellery) to raise cash for non-food emergencies (e.g. health, funeral)	binary
	Sell or rent land for non-food	Sold or rented out any land in order to meet the family's food needs	binary
	Sell or rent land for food	Sold or rented out any land to raise cash for non-food emergencies (e.g. health)	binary
(c) Asset building	Child school enrolment	Enrolled more children in school in the last 12 months than last year	binary
	Child school attendance	Kept children in school for longer this year than last year	binary
	Use of Health facilities	Used healthcare facilities this year more than last year	binary
	Avoid use of own saving	Avoided using savings to buy food	binary
	Acquire new assets	Acquired any new household assets (e.g. livestock, roof, bicycle, radio, plough, land)	ordinal
	Acquired new skills	Acquired new skills or knowledge which have increased your income this year	ordinal

Finally, two sets of outcomes were considered. The first is directly linked to the PSNP's main objective to reduce chronic household food insecurity. A series of questions was included in the survey to evaluate the food gap of each household (i.e. the number of months in the last 12 months for which these households reported problems satisfying their food needs). Because this indicator was recorded in both 2006 and 2008 we were able to compute the change in food gap and use it as the first outcome indicator. The second outcome indicator was generated by evaluating households' overall wellbeing. Using a four-category scale: 'doing well'; 'doing just okay'; 'struggling'; or 'unable to meet needs', households were asked to assess their level of wellbeing in both 2006 and 2008.

For both food security and wellbeing, the final forms of the two indicators FS_i and WB_i were computed as follows (we use here food security FS_i as the illustration; a similar computation was performed for the wellbeing indicator WB_i).

$$FS_i = w_i \times Diff_i \qquad \text{(household } i = 1 \text{ to } 960\text{),}$$

Where the first component w_i is a vector reflecting household *i* 's food gap (*FG*) in 2008. w_i is normalized (ranging from 0 to 1) with $w_i = 0$ when $FG_i = 12$ and $w_i = 1$ when $FG_i = 0$. The second component $Diff_i$ captures the change in *FG* of household *i* between 2006 and 2008. $Diff_i$ is also normalized to range from 0 to 1, in such a way that $Diff_i = 0$ when there is a negative difference of 12 months (complete degradation) in the *FG* of household *i* ; $Diff_i = 0.5$ when there is no difference (i.e. household *i*'s 2008 *FG* = 2006 *FG*) and $Diff_i = 1$ when there is a 12 month positive difference (i.e. complete improvement from a 12-month food insecure situation in 2006 to a full food security status in 2008) for household *i.*

The reason for using a combined indictor $w_i \times Diff_i$ is that neither the food gap w_i nor the change in food gap $Diff_i$ alone would appropriately reflect the household's food security status in 2008: two households *i* and *j* that are both 3-month food insecure in 2008 would have the same food gap $w_i = w_j$, even if one of them, say *i*, had actually substantially reduced its food gap between 2006 and 2008 while the other, *j*, could have worsened it. Symmetrically, two households *k* and *l* that had both managed to reduce their food gap between 2006 and 2008 by the same number of months would have the same *Diff*, even if one of them, say *k*, is still food insecure while the other *l* is now fully food secure. Only by using a food security indicator *FS* that combines both *w* and *Diff*, are we able to reflect appropriately the real food security status of households. A similar reasoning holds for the wellbeing indicator WB_i.

3.3 Evaluation methodology

Two main series of statistical tests were conducted. The first estimated the degree to which different shocks have impacted on the likelihood that households engage in coping strategies and/or asset disposal. For this, we used statistical analyses to explore the potential relationships between the responses (the dependent variable) and the reported shocks (the explanatory variable). However, as the dependent variables capturing the households' responses are not continuous but binary or even ordinal for some (see below), conventional least square techniques could not be used. Instead multivariate probit models were used (Maddala 1992). Additional variables were added to the models to control for the geographical location and household social and demographic characteristics (see Table 3.2) and Wald goodness-of-fit tests were used to verify the statistical validity of the models.

Table 3.2 Household socio-demographic variables (values for 2008).

variables	Unit	N	mean	median	Std Dev	max	min
Sex of the household head	male=1; female=0	960	0.73	1.00	0.44	1	0
Household head education [(a)]	Ranking number	958	0.95	0.00	2.02	11	0
Age of the household head	Integer	960	48.43	47.00	16.17	97	15
Household total labour units [(b)]	Real number	960	2.91	2.60	1.55	8	0
Household size [(c)]	Integer number	960	5.37	5.00	2.70	20	1
Household dependency ratio [(d)]	Real number	960	1.39	1.35	0.36	4.47	0.95
Household diversification [(e)]	Integer number	960	4.73	5.00	2.04	11	0
Household livestock assets [(f)]	Ethiopian Birr[(k)]	960	2847	2050	2717	23962	0
Household productive assets [(g)]	Ethiopian Birr	960	229	66.97	879	12746	0
Household house goods [(h)]	Ethiopian Birr	960	41	0.00	139	1700	0
Household consumable durables [(i)]	Ethiopian Birr	960	217	0.00	639	7801	0
Household total assets	Ethiopian Birr	960	3337	2411	3131	24366	0
Household total annual income [(j)]	Ethiopian Birr	960	2465	1994	2094	19914	0

Notes:

[(a)] Household head education: from grade 1 to grade 11, 0 = no school.

[(b)] Household total labour units (LU): calculated using standard FAO/ILO LU system.

[(c)] Household size (HHsize): Total number of persons.

[(d] Household dependency ratio (DR): calculated using the formula: DR = $\sqrt{\mathrm{HH\ size}/(\mathrm{LU}+0.1)}$.

[(e)] Household diversification: Number of activities in which household members are engaged.

[(f)] Household livestock assets: include oxen, bulls, cows, heifers, calves, sheep, goats, donkeys, mules, horses, camels, poultry.

[(g)] Household productive assets: include plough, sickle, pick axe, hoe, spade, traditional beehive, modern beehive, water pump, diesel water pump, stone grain mill, diesel grain mill.

[(h)] Household house goods: include charcoal/wood stove, kerosene stove, sofa, leather/wood bed, modern chair, modern table, metal bed, wheelbarrow, animal cart.

[(i)] Household consumable durables includes: mobile telephone, radio, television, jewellery, bicycle, wristwatch.

[(j)] Total annual income estimated using self-reported farm and non-farm income from all household members over a 1-year period from 42 livelihood activities, ranging from agricultural activities to paid employment, services and trading. Does not include the value of direct transfers (such as Direct Support); but include payments made to participants on public works. Includes also the value of agricultural produced consumed by the households, valued at local market prices.

[(k)] 9.5 Ethiopian = 1UDS (2008)

For asset disposal strategies, household responses were binary (Yes = 1; No = 0), and standard multivariate probit models were used to test the impact of shocks on these strategies. For coping strategies, household responses were made of the aggregation of several sub-strategies[3]. For these coping strategies, the responses could therefore display several values (0, 1, 2 or 3) depending on the degree of intensity of the responses (the number of sub-strategies in which households had engaged). In that case the appropriate models to test the effect of shock on these ordinal variables were ordered probit models. The details of these distinctions are indicated in the right-hand column in Table 3.1 above.

The second series of tests consisted in estimating the degree to which the PSNP has had effects on household food security (*FS*) and wellbeing (*WB*) indicators. However, identifying the causal effect of some variables (in our case PSNP) on other variables (household *FS* and *WB* indicators) is particularly difficult especially when the 'treatment effect' (the benefits of the PSNP transfers) is non-randomly assigned. Indeed, as PSNP beneficiaries were not randomly selected but instead were initially recognized to be chronic food insecure, comparing them to non-beneficiaries would mean trying to compare two systematically different groups of households. In that case, one can reasonably expect differences between these two groups and, particularly in our case, in their ability to respond to risk and to shocks. Whether this difference is the result of the PSNP (treatment) or reflects some other (initial)

[3] For instance the coping strategy 'reducing food consumption' includes in fact three sub-strategies: 'eating less', 'reducing meal frequency', or 'collecting bush products' (cf. Table 1). Similarly 'selling assets' consists of three sub-strategies: 'selling land', 'selling livestock' or 'selling other assets'.

household characteristics (e.g. aversion to risk, level of income or assets, education, social networks, etc.) is difficult to determine. Propensity score matching (PSM) techniques (Rosenbaum and Rubin 1983; Heckman, Ichimura and Todd 1997, Dehejia and Wahba, 2002) were therefore used to test potential effects of PSNP on household food security and wellbeing indexes.

In our particular case, PSM involved estimating a probit model that predicted the probability of each household receiving the PSNP as a function of observed household and community characteristics, using a household sample that contained both PSNP beneficiaries and non-beneficiaries. The probit model specification was then checked to test the equality of the mean and standard deviation of the observed characteristics across the beneficiary, or 'treatment', sample and the non-beneficiary comparison group sample. This test is called the 'balancing propensity' test (Rosenbaum and Rubin 1983; Heckman et al. 1997, Heckman, Ichimura and Todd 1998; Dehejia and Wahba 2002).

The next step in the PSM involved testing the 'match'. This means using the propensity scores estimated in the first instance to identify non-beneficiary matching households that compares to a beneficiary household (i.e. with the closest propensity score values) using the 'nearest neighbour' algorithm. Once the matching was done for each beneficiary household, the impact estimate (average treatment effect) was constructed by computing the difference in outcome for each matching pair (the treated unit and its nearest neighbour) and then the mean difference across pairs. Standard errors of the impact estimates were estimated by bootstrap using 100 replications. These different tests and procedures are available through various econometric software packages. We used Stata 10 and the Stata commands *pscore* (to identify the matching) and *attnd* (to perform the nearest neighbour matching) (Becker and Ichino 2003).

The PSM approach assumes that after controlling for all observable household and community characteristics, non-beneficiaries have the same average outcome as beneficiaries would have, had these beneficiaries not been included in the programme. If it was not possible to control for enough observable characteristics, PSM would be likely to provide biased estimates. But the fact that non-beneficiary households are from the same communities as PSNP beneficiaries helps reducing this risk as it provides a similar distribution of household and community characteristics than these obtained for the beneficiaries.

Finally, PSM tests were also used to explore the degree to which different types of shocks affect household food security and wellbeing. For this second series of analyses however, the analysis included only PSNP-recipients (i.e. omitting non-recipients). The underlying objective was to determine whether PSNP transfers were effective at protecting households from shock impacts. The use of PSM tests is justified in this case due to the methodological difficulty of comparing food security and wellbeing status of two groups that are not necessary comparable in the first place. Indeed PSNP recipients who declare they have been affected by shocks may have been so not because of the shocks per se but because of other factors, such as households' initial level of income, assets or education. Since the two groups (affected, non-affected) are possibly different, testing the effect of shocks on them needs to be done using PSM techniques.

4 Results

4.1 Shock analysis

The shock analysis begins with Table 4.1, which shows the percentage of households that reported various shocks affecting their livelihoods in the five years preceding the survey. While such reporting by itself cannot be taken as an indicator of vulnerability (as it does not take into account the severity of shocks, nor the household's ability to recover), it provides valuable information as to what types of shocks are most likely to affect different types of households.

Table 4.1 Shocks experienced by rural Ethiopian households (2004 -2008)

Shock	Definition		Occurrence [(a)] (%)
Drought	Drought (too little rain)		56.6
LossCrop	Loss of crops (disease, pests, frost, hail)		36.1
Illness	Serious illness of a family member		26.1
HighPrices	No access to inputs (high prices, no market)	Shocks were identified as any	22.0
LossLivestock	Livestock loss (disease, theft, accident)	events (amongst these listed)	20.1
Flood	Flood (too much rain)	having resulted in (perceived)	18.0
LowPrices	Loss of crop/ trade income (low prices, no market)	lost of income or assets, or	13.2
Death	Death of a family member	led to reduction in	7.6
Theft	Theft (cash, crops, or assets)	consumption	2.6
Disability	Disability of a family member (accident, crime)		2.5
Split	Splitting of family (divorce or separation)		1.9
Idiosyncratic	Idiosyncratic shocks [(b)]		32.3

Notes:
[(a)] Occurrence: percentage of households having been affected.
[b)] Idiosyncratic shocks: include illness, death, disability, theft, and family split

The data indicate that drought is the most prevalent shock faced by households in the rural areas covered by the survey. Across the four regions, 57 percent of households reported some loss of income or assets, or impact on food consumption due to drought. The second most important shock reported was loss of crops, which affected more than 36 percent of households in the past five years. The third major shock was illness – more than one quarter of respondents reported that serious illness had affected their household within the past five years. Next were shocks induced by high prices, restricting households' access to input markets (22 percent of households affected), followed by loss of livestock due to disease or theft (20 percent), shock induced by floods (18 percent), and low prices for farm products (13 percent). Shocks with lower prevalence were death of a family member, theft of crop, assets or cash, disability of a family member, and family splitting. Altogether, idiosyncratic shocks including serious illness, death, disability, theft, and family splitting affected 32 percent of households.

The figures in Table 4.1 represent averages that mask disparities between regions and types of households. Table 4.2 further explores these disparities. Data show that – as one could expect – regions are not affected equally by climate-related shocks. While drought shocks are relatively common in all regions, there is considerable variation in the degree reported by the households. In particular, households in Oromiya and Southern Nations Nationalities and Peoples Region (SNNPR) appear to have been particularly affected by drought in the past five years with more than 90 percent of the households in Oromiya reporting drought and 68 percent in SNNPR. In contrast only 28 percent of households in Tigray and 38 percent in Amhara reported drought shocks.

Although drought and flood are not systematically inversely related, Oromiya appears to be also the region with the lowest flood prevalence (4 percent), whereas Tigray displays the highest flood prevalence (25 percent). Crop losses due to disease, pest or climate-related events are also largely region-specific, with a 5-fold difference between the highest rate in Oromiya (65 percent) and the lowest in Amhara (13 percent). Similarly, illness is four times more prevalent in SNNPR (45 percent) than in Tigray (11 percent)[4].

Table 4.2 Characteristics of rural Ethiopian households affected by shocks (2004-2008). Figures are percentages of households affected

	Drought	Flood	Loss Crop	Loss Livestock	High Prices	Low Prices	Illness	Death	Disability	Theft	Split
By region											
Tigray	28	25	26	11	8	9	11	5	2	3	2
Amhara	38	20	13	10	14	8	27	8	2	2	3
Oromiya	93	4	65	43	34	13	22	5	2	2	1
SNNPR*	68	24	40	16	32	24	45	13	5	3	2
By PSNP status											
Beneficiaries	56	18	35	19	23	13	24	8	3	2	2
Non-Beneficiaries	57	19	39	24	19	13	31	6	2	4	0
By demographic characteristics											
Sex of head											
Female	47	22	25	13	20	12	25	11	3	2	4
Male	60	16	40	23	23	14	26	6	2	3	1
Education of head											
No schooling	58	18	38	20	24	14	26	8	3	2	2
Any schooling	51	18	30	19	17	10	27	7	2	4	2
By wealth characteristics											
Income 2008											
Poorest quintile	55	14	28	18	17	11	31	12	5	3	5
2nd quintile	69	18	39	17	25	12	36	11	2	2	2
3rd quintile	68	17	44	20	29	19	23	9	3	2	1
4th quintile	51	19	39	21	20	10	22	2	1	4	1
Richest quintile	40	22	31	24	20	13	17	3	2	2	2
Household assets values 2008											
Poorest quintile	53	19	25	12	16	14	35	13	4	3	3
2nd quintile	54	21	39	16	28	16	37	11	4	3	4
3rd quintile	57	21	34	20	26	18	22	6	1	5	2
4th quintile	60	14	45	23	23	11	25	6	3	2	1
Richest quintile	59	14	38	29	18	7	10	2	1	1	1

* = Southern Nations Nationalists and Peoples Region

Table 4.2 also shows the disaggregated analysis by beneficiary and non-beneficiary. No clear pattern emerges, suggesting that beneficiaries of the PSNP are neither more nor less likely to be affected by shocks than households who are not in the programme. Other demographic or socio-economic data were also considered. Male-headed households appear more likely to be impacted by climate-related shocks (drought, loss of crop, loss of livestock, the exception being flood) than female-headed households. In contrast there is no clear difference between male- and female-headed households as far as economic or

4 Potential explanations for this include the facts that SNNPR is poorer on average than Tigray, and that it has a lower coverage of services such as clinics. Tigray is also a highland region while SNNPR is a lowland region, with greater exposure to water-borne diseases like malaria and cholera.

idiosyncratic shocks are concerned. The data also show that households headed by individuals who have received some form of schooling (22 percent of households) are slightly less likely to be affected by drought shocks, loss of crop or economic shocks, than households with an uneducated head.

Finally, because poorer households are often described as being more vulnerable to shocks than richer people, we explored this hypothesis by disaggregating households by wealth levels. We used two wealth indicators: the household's total income and the household's total asset values, both estimated in 2008 (i.e. post-shock situation). The analysis shows that while some wealth-dependent relationships emerge, they do not necessarily follow the expected pattern. In particular, for households affected by flood and loss of livestock shocks, the patterns are reversed: the richest households in income terms appear likely to be more affected by these shocks than the poorer households. A similar pattern is observed with household assets (our second wealth indicator) in the case of loss of livestock. The only types of shock that seem to follow more closely the expected pattern are illness and death, for which the poorest households systematically reported a higher prevalence than the richest households.

4.2 Household response analysis

The next step in the analysis was the identification of the different response strategies (coping strategies, asset disposal, and asset protection and building) adopted by households in the face of shocks. Figure 4.1 shows the percentage of households who adopted these various strategies in the 12 months preceding the survey. The most frequent coping strategy was food consumption reduction (reported by 70 percent of the households). Forty percent also reported having engaged in reduction of non-food expenditure. The third most prevalent coping strategy was selling assets to buy food, adopted by 29 percent of the households interviewed.

The asset disposal data indicate that the type of asset that was sold most frequently was livestock: 20 percent of households surveyed reported selling some of their livestock to buy food during the 2007-2008 crisis. This is consistent with what is known about the role that livestock often plays in relation to consumption smoothing behaviour in this part of the world (see e.g. Dercon 1998; Carter, Little, Mogues and Negatu 2007). The data indicate that livestock were also sold to purchase non-food products during these crisis months. Other types of asset disposal strategies (selling productive, land or other types of assets) were much less frequent (involving less than 5 percent of households).

In contrast, the percentage of households declaring that they managed to protect or to build assets during the past 12 months is relatively high. Thirty percent of the households for instance declared that they enrolled more frequently their children at school in the last 12 months than they did in previous years, and 25 percent managed to preserve their children's school attendance for longer periods. The data also show that, after education, health is the second most important human asset that households aimed at protecting. Twenty-eight percent declared that they used health facilities more often in 2007-2008 than in the past. Finally, acquiring household assets, avoiding running down savings and acquiring new skills were some of the other major asset building strategies reported by households.

Fig.4.1 Household response strategies: percentage of households relying on (a) coping strategies, (b) asset disposal, or (c) asset building strategies between April 2007 and April 2008

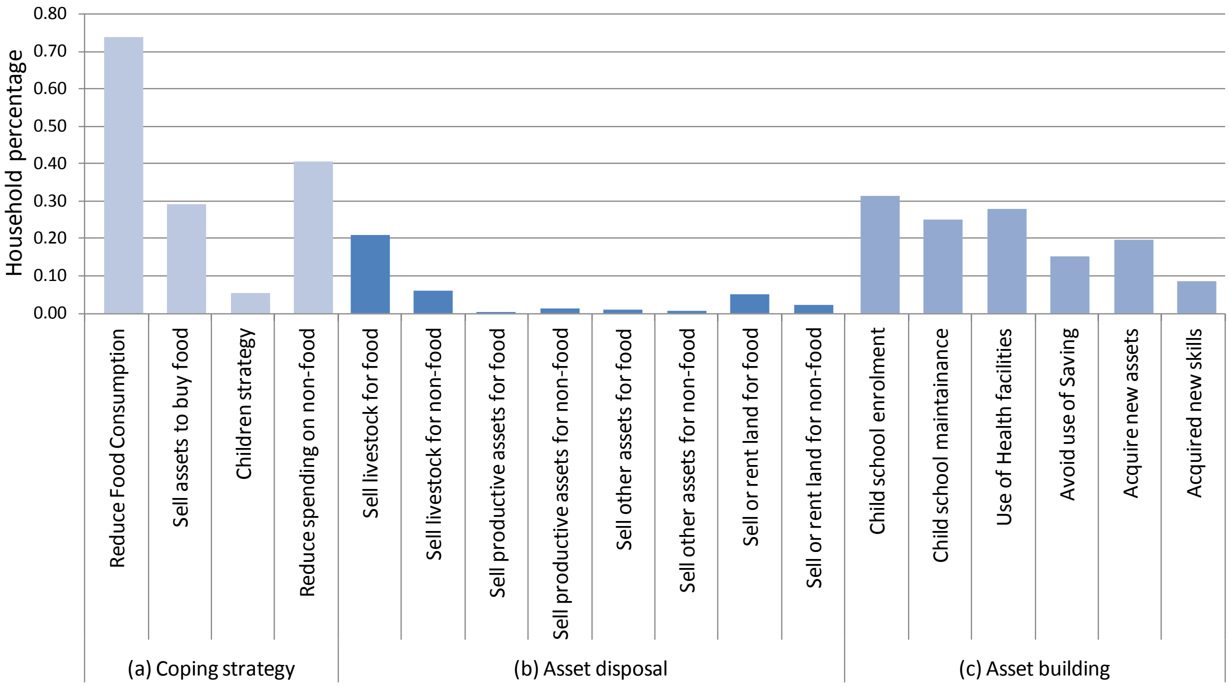


Table 4.3 shows these same figures disaggregated by region and households' socio-demographic characteristics. Reflecting the aggregate level situation, reducing food consumption appears to be highly prevalent in all regions. Almost all households (94%) in SNNPR reported having reduced their food consumption in the past 12 months. The percentage in the other three regions is also very high, ranging from 54 percent in Tigray to 75 percent in Amhara. Interestingly, the disaggregated analysis by beneficiary and non-beneficiary shows no clear pattern, suggesting that beneficiaries of the PSNP are not adopting different coping or asset building strategies to shocks than the households who are not in the programme. No clear pattern emerges either between female- and male-headed households responses to shocks. Likewise, the absence of education of the household head does not seem to influence the level of coping/ asset disposal strategies but it does influence asset building strategies: households with no education seem to be less likely or able to engage in these asset building strategies than households with some level of education.

Several notable results emerge when households are disaggregated by wealth level. First, households with higher incomes are systematically more likely and/or able to adopt asset building strategies than poorer households. This trend is less clear but still observable when households are ranked by asset-holdings. Second, richer households are also less likely to engage in food consumption reduction strategies than poorer households. This consumption smoothing strategy is made possible for these richer households as they rely more heavily on asset disposals, especially selling livestock for food. Also, wealthier households are better able to avoid damaging strategies, as they usually have more options than poorer households. Finally, note that the poorest quintiles are more likely to reduce their spending on non-food items than richer quintiles.

Table 4.3 Response strategies adopted by the households during the 2007-2008 hunger season. Figures are percentages of adopting households

	Coping / asset disposal strategies				Building assets strategies			
	Reduce Food Consumption	Sell assets to buy food	Reduce spending on non-food	Sell livestock for food	Child school enrolment	Child school attendance	Use of Health facilities	Acquire new assets
By region								
Tigray	54	25	31	21	32	22	28	19
Amhara	75	45	38	25	24	24	17	17
Oromiya	72	25	30	33	13	10	08	09
SNNPR*	94	22	63	5	12	06	13	14
By PSNP status								
Beneficiaries	75	30	40	22	43	25	27	21
Non-Beneficiaries	71	29	43	20	39	26	33	18
By demographic characteristics								
Sex of head								
Female	77	23	37	15	27	22	19	15
Male	73	31	42	23	33	26	31	21
Education of head								
No schooling	75	29	41	20	30	24	25	19
Any schooling	71	30	39	24	37	29	37	23
By wealth characteristics								
Income 2008								
Poorest quintile	86	21	40	11	15	13	16	7
2nd quintile	89	27	50	17	29	22	22	12
3rd quintile	73	29	44	21	29	21	27	17
4th quintile	67	33	41	28	37	28	34	23
Richest quintile	53	35	27	27	46	41	41	39
Household assets values 2008								
Poorest quintile	86	19	43	8	17	17	26	9
2nd quintile	80	25	54	14	30	20	29	20
3rd quintile	71	33	44	25	35	25	28	20
4th quintile	70	38	36	27	37	29	28	26
Richest quintile	62	30	26	31	36	34	29	22

* = Southern Nations Nationalists and Peoples Region

4.3 Building asset strategies

Building on these findings, we then investigated more thoroughly the households' asset building strategies. For this we considered the demographic and socio-economic factors and looked for those that appear to influence, positively or negatively, the ability and/or willingness of households to invest in asset building. We focussed on the four strategies for which at least 20 percent of the households reported some engagement (child school enrolment, child school attendance, use of health facilities, and acquisition of new assets). Probit and ordered probit regressions were used to conduct the analysis. Results are displayed in Table 4.4. Goodness of fit tests show strong statistical coefficients for all four models.

The results of the models confirm some of the findings from Table 4.3. In particular, the level of education of the household head seems to have an influence on the degree to which households engage in asset building strategies. This relationship is statistically significant for child school enrolment and use of health facilities. Table 4.4 also indicates that – contrary to the conclusion from Table 4.3 where no clear pattern was found between gender of household head and asset building strategies – the probit models indicate that female heads are more likely than male heads to support school enrolment. Household size seems also to be an important factor, although the effect is not unidirectional: large households are more likely to support school enrolment and school attendance but less likely to make use of health facilities.

Table 4.4 Effect of households' socio-demographic characteristics on their probability to engage in asset building strategies

	Child school enrolment[1]		Child school attendance[1]		Use of Health facilities[1]		Acquire new assets[2]	
Explanatory variables	Coef.	z	Coef.	z	Coef.	z	Coef.	z
Sex of the household head	**-0.225**	**-7.64*** **	-0.272	-1.77	0.097	0.53	-0.015	-0.14
Household head education	**0.041**	**2.94** **	0.020	1.04	**0.045**	**3.30*** **	0.011	0.50
Age of the household head	0.000	-0.23	0.004	1.48	-0.001	-0.27	0.002	0.98
Household dependency ratio	**-0.070**	**-2.19* **	-0.103	-0.78	0.010	0.07	-0.210	-0.88
Household size	**0.095**	**2.08* **	**0.097**	**2.19* **	**-0.016**	**-2.09* **	0.004	0.24
Household diversification	0.043	0.55	0.091	1.58	0.034	0.77	0.053	0.99
Household livestock assets	**0.040**	**3.82* **	0.017	1.80	-0.015	-0.47	**0.130**	**4.41*** **
Household productive assets	**0.104**	**4.01*** **	**0.116**	**3.67*** **	**0.147**	**3.42*** **	**0.085**	**2.50* **
Household house goods	-0.035	-1.18	0.019	1.05	0.029	1.60	**0.065**	**4.24*** **
Household consumable durables	0.004	0.57	-0.011	-0.87	**0.029**	**2.56*** **	0.019	0.69
Household total annual income	0.035	1.41	0.028	0.49	**0.134**	**2.80** **	0.120	1.56
PSNP Beneficiaries	**0.408**	**2.04* **	0.256	1.16	0.395	1.41	**0.536**	**2.29* **
Goodness-of-fit test								
Number of obs	958		958		958		958	
Wald chi2(4)	260***		135***		360***		33***	
Pseudo R2	0.079		0.093		0.165		0.124	
Log pseudolikelihood	-735.39		-637.35		-617.93		-526.67	

[1] Model estimated by probit regression; [2] model estimated by ordered probit regression. Standard errors are robust to locality cluster effects; *, **, and *** indicate significance at 5%, 1%, and 1‰ respectively. Dummies for the variables controlling for geographic areas (zone, *woreda*) were also included in the regression but not reported.

The effect of wealth on the probability that households will engage in asset building strategies is systematic across the models. In particular the level of productive assets is positively and significantly related to the four asset building strategies considered. In addition, although not always statistically significant, the levels of livestock assets, household goods, consumer durables and annual income all show some degree of positive significant correlation with asset building strategies, suggesting that wealth is indeed an important factor which increases the probability of households engaging in asset building strategies.

Finally, the analysis suggests that enrolment in the PSNP influences households' ability to build assets. The correlations between the dummy variable reflecting the household's enrolment in the PSNP in the past 12 months and the four asset building strategies are all positive and two are statistically significant (child school enrolment and acquisition of new assets).

4.4 Effect of shocks on households' response strategies

Next we investigated the degree to which different types of shocks have (or not) differential impacts on the coping and asset disposal strategies adopted by the households. To keep the analysis focused, only strategies that were reported by more than 10 percent of households were considered (cf. Figure 4.1). This includes the four coping strategies (reduction of food consumption, selling of assets to buy food, reduction of expenditure on non-food items, and children strategies as defined in Table 3.1); and two asset disposal strategies (selling livestock to buy food, and selling livestock for non-food purchase).

Table 4.5 Effect of shocks on household's response strategies (coping and asset disposal strategies). For each strategy, the first Wald test value and Pseudo R2 in the table refer to the whole probit model while the subsequent estimators (coef, t) are statistics referring to the specific shock (drought, flood, etc.) included as explanatory variables in these models

Response strategies	Shock							
	Drought	Flood	Loss Crop	Loss Livestock	High prices	Low prices	Illness	Idiosyn
Reduce Food Consumption[2]								
Wald chi2	220***	134***	214***	194***	186***	168***	217***	186***
Pseudo R2	0.181	0.176	0.176	0.178	0.181	0.177	0.178	0.176
coef (shock)	**0.192**	0.012	0.028	**0.197**	**0.25**	**0.115**	**0.326**	0.007
t stat (shock)	**3.09*** **	0.14	0.32	**2.9** **	**2.75** **	**4.18*** **	**3.07** **	0.04
Sell assets to buy food[2]								
Wald chi2	258***	127***	163***	191***	62***	93***	237***	236***
Pseudo R2	0.107	0.107	0.103	0.107	0.102	0.103	0.103	0.103
coef (shock)	0.154	-0.193	0.052	0.057	0.017	-0.079	-0.55	-0.059
t stat (shock)	1.62	-1.27	0.59	0.58	0.14	-0.73	-0.55	-0.36
Reduce spending on non-food[2]								
Wald chi2	74***	86***	86***	176***	216***	246***	183***	187***
Pseudo R2	0.097	0.095	0.101	0.093	0.093	0.0993	0.094	0.094
coef (shock)	**0.172**	0.141	**0.215**	0.02	0.088	0.238	**0.085**	**0.107**
t stat (shock)	**2.28***	1.18	**5.66*** **	0.16	0.48	1.92	**7.33*** **	**2.73** **
Sell livestock for food[1]								
Wald chi2	195***	563***	617***	1682***	679***	453***	973***	1103***
Pseudo R2	0.15	0.15	0.15	0.1494	0.1492	0.152	0.1492	0.1514
coef (shock)	**0.118**	-0.104	-0.118	0.102	-0.96	**-0.267**	-0.101	-0.203
t stat (shock)	**1.96***	-0.86	-1.76	1.11	-0.44	**-2.52***	-1.02	-0.255
Children Strategies[2]								
Wald chi2	2684***	109***	77***	290***	64***	158***	64***	127***
Pseudo R2	0.221	0.217	0.221	0.224	0.219	0.227	0.222	0.2252
coef (shock)	0.113	-0.197	0.112	0.246	-0.034	**0.27**	0.143	**0.281**
t stat (shock)	1.93	-0.96	1.63	1.44	-0.19	**3.32** **	1.33	**2.33***
Sell livestock for non-food[1]								
Wald chi2	3198***	444***	23***	2.23	2.49	4.00	29***	33***
Pseudo R2	0.13	0.126	0.126	0.127	0.1295	0.1271	0.1259	0.126
coef (shock)	0.121	0.073	0.032	0.062	-0.148	0.032	-0.005	-0.076
t stat (shock)	0.87	0.38	0.25	0.32	-0.93	0.19	-0.03	-0.25

[1] Model estimated by probit regression; [2] model estimated by ordered probit regression. *, **, and *** indicate significance at 5%, 1%, and 1‰ respectively. Number of obs: 958. Full details of the models provided in Appendix 2.

For each of these six strategies, we tested the effect of various shocks through probit models. Only shocks with occurrence greater than 10 percent were included in the analysis (cf. Table 4.1), meaning that eight types of shocks were considered: drought, loss of crop, illness, high prices, loss of livestock, flood, and low prices, plus the aggregated idiosyncratic shock variable. Results are displayed in Table 4.5. Because we are dealing with six strategies and eight types of shocks, 48 probit models were estimated. Table 4.5 shows only the relevant part of these 48 models (including the model's overall Wald test Chi2 and Pseudo R2, along with the estimates of the parameter and significance of the shock under consideration). Goodness of fit tests indicate strong statistical significance for all models while the full details of these models are provided in Appendix 1.

Table 4.5 reveals that food consumption reduction is the strategy that is most adopted by households facing various shocks (first row block). Indeed, along with drought, four other types of shocks are positively correlated with the occurrence of food consumption reduction: loss of livestock, high price and low price shocks, and illness. Reducing spending on non-food items (third row block) is also widely adopted by households as a response to shocks. The probit models show in particular that households are likely to adopt this strategy in face of drought, loss of crop, illness and more generally idiosyncratic shocks. These idiosyncratic shocks are also positively correlated, along with the effect of low price shocks, with 'children' strategy (i.e. the strategy that consists in withdrawing children from school and sending them to stay with relatives or to work) (fifth row block).

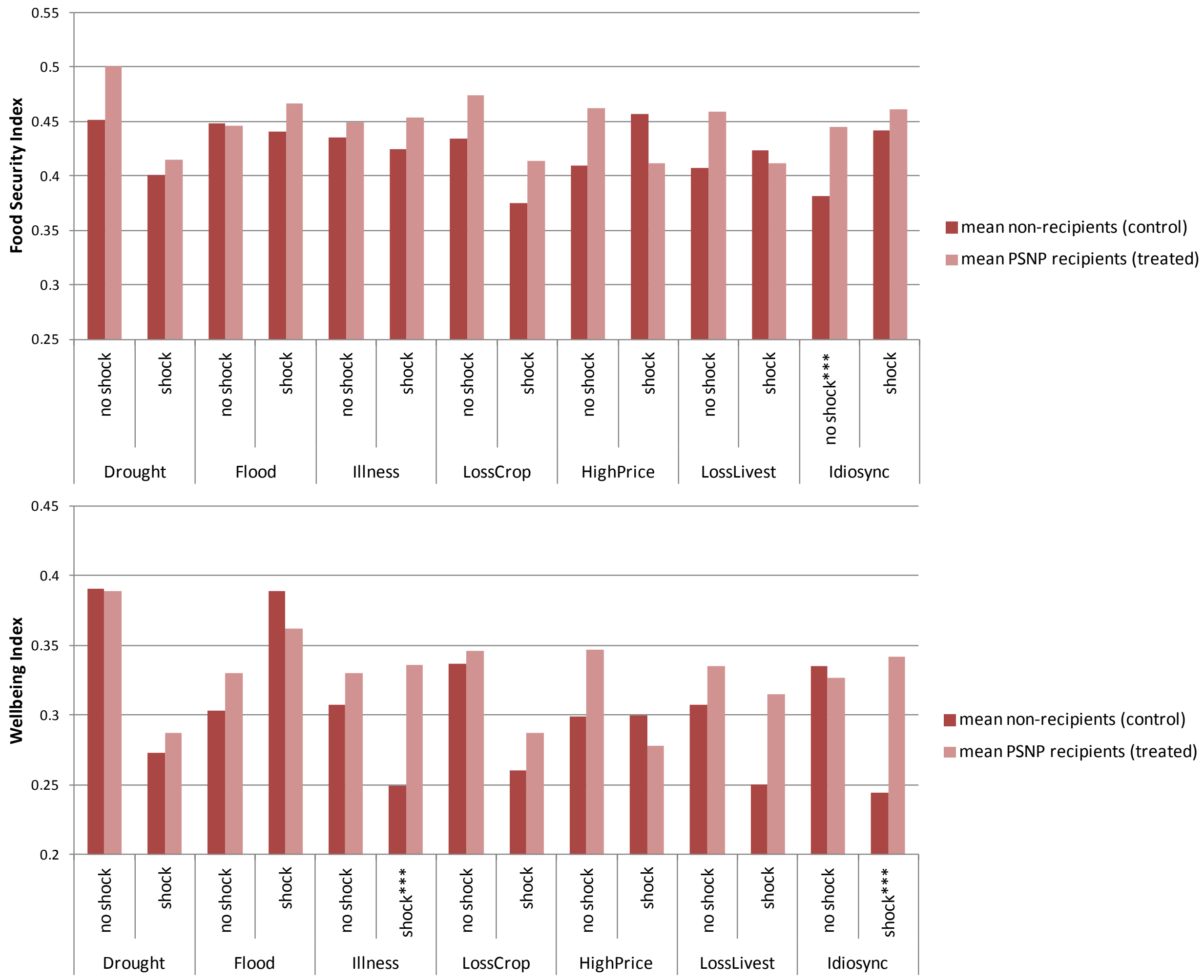
Overall we observe that all the significant correlations between household response strategies and shocks have positive signs. This is in line with what one could expect. The only exception where the correlation is negative is the effect of low price shock on the probability of households selling livestock for food. A potential explanation for this is that, when prices are particularly low, farming households are less likely to sell some of their food crop production – which they often do even if they are deficit producers, to raise money for essential non-food expenses – so they consume more of their own produced food and therefore need to sell less livestock to cover their food gap. The last result which is worth noticing is that flood is not correlated significantly with any specific response (second column) although all probit models show satisfactory level of fit. Possibly this lack of correlation is explained by the relatively low frequency of this types of shock in the regions where the survey was conducted.

4.5 Impact of shocks on households' food security and wellbeing

The final analysis involves the estimation of the impacts of shocks on the two outcome indicators (the households' food security and wellbeing indexes) for both PSNP recipients and non-recipients. The analysis was completed using Propensity Score Matching tests. Figure 4.2 and Figure 4.3 summarize the results of these PSM tests -showing the average outcomes for both treatment and control groups – while the full results of the PSM tests are presented in Appendixes 2 and 3.

Figure 4.2 shows the comparative analysis of food security and wellbeing indexes between PSNP recipients and non-recipients, controlling for shock effects, while Figure 4.3 focuses on PSNP recipients and compares among those recipients the food security and wellbeing indexes of households affected by shocks against those not affected.

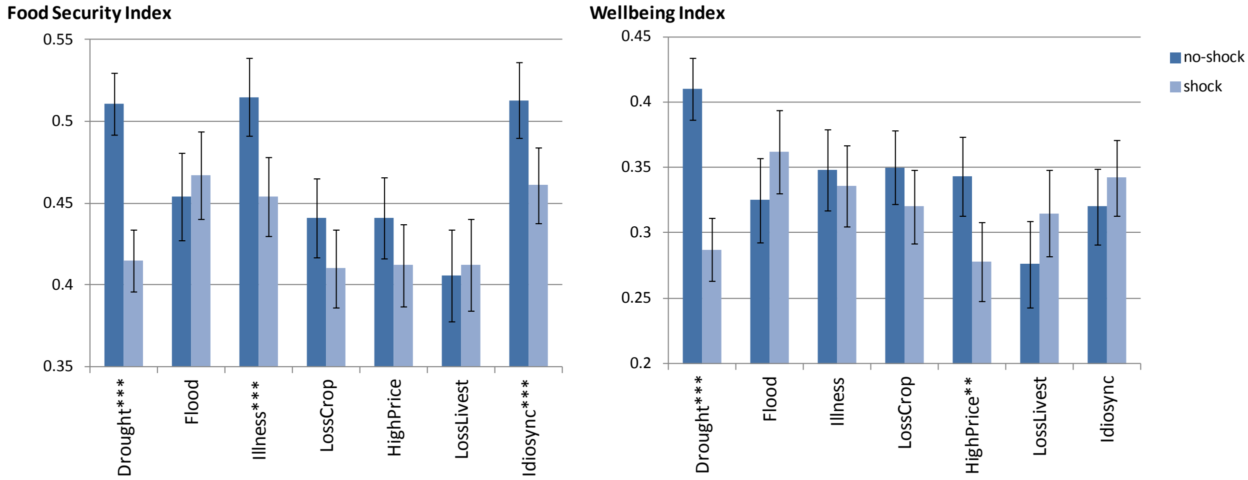
Fig.4.2 Impact of PSNP (treatment) on household food security and wellbeing indexes for shock-affected and non-shock affected households. Symbols *, **, and * indicate tests where the differences in food security or wellbeing indicators between PSNP recipients and non-recipients are significant at 5%, 1%, and 1‰.**



Several points emerge from these analyses. First, Figure 4.2 and Figure 4.3 indicate that households affected by shocks usually display lower food security and wellbeing indexes than households that have not experienced shocks. This trend is particularly clear in Figure 4.2 when comparing 'no shock' vs. 'shock' groups in the case of 'drought' and 'loss of crop' affecting both food security and wellbeing indicators; and in Figure 4.3 in the case of 'drought', 'illness', 'loss of crop', and 'high price' also affecting both food security and wellbeing indicators, and in the case of 'idiosyncratic shock' affecting food security. Interestingly these shocks are also the four shocks that were reported by the largest number of households (Table 4.1), suggesting a strong coherence between the different analyses.

The second important result shown in Figure 4.2 is that all households that have benefited from PSNP transfers systematically display higher food security and wellbeing values than non-beneficiaries, irrespective of whether these two groups of households have or have not been affected by shocks[5]. This finding suggests that PSNP transfers have positive impacts on the food security and wellbeing of households that benefit from the programme.

Fig. 4.3 Impact of shocks (treatment) on household food security and wellbeing indexes for PSNP recipients. Symbols *, **, and * indicate tests where the differences in food security or wellbeing indicators between shock-affected and non-shock-affected households are significant at 5%, 1%, and 1‰.**



A closer look, however, (Figure 4.3) reveals that within the group of PSNP-beneficiaries, households exposed to shock still have systematically lower food security and wellbeing indexes than PSNP recipients who were not exposed to these shocks. This result was already suggested in Figure 4.2 (see first point above) but Figure 4.3 illustrates this more clearly. In particular, the food security index of PSNP recipients is lower for households affected by drought, illness, loss of crop, high price, and idiosyncratic shocks, and statistically lower for drought, illness and idiosyncratic shocks. Similarly, well-being indexes are systematically lower for households that were affected by drought, illness, loss of crop, and high price, and statistically lower for drought and high price shocks. These results suggest that although PSNP does contribute to protecting households against shocks (as was suggested in Figure 4.2), the programme does not provide complete protection against the impacts of these shocks.

5 Discussion

A growing body of evidence points to the role that vulnerability, risk and shocks play in perpetuating poverty. Recent studies show in particular how shocks and adverse events that affect individuals' and households' income, consumption, or assets are not only a cause of short-term transient poverty, but may also lead to longer-term chronic poverty (Sinha, Lipton and Yaqub 2002; Alderman, Hoddinott and Kinsey 2004; Dercon, Hoddinott and Woldehanna 2005). In Africa the World Bank (2004) provides evidence on the impact of various shocks, notably rainfall and illness on consumption, using cross-sectional data from 1995 and 2000.

[5] The only exception to this general trend seems to be households affected by high price shocks, for which non-recipients display higher food security and well-being indexes than PSNP recipients.

Dercon (2004), Dercon and Krishnan (2000a, 2000b), Skoufias and Quisumbing (2003) and IDS/SC-UK (2002) also discuss the impact of shocks on household welfare and Yamano et al. (2003) examine the impact of rainfall shocks on child health. In Ethiopia, Dercon (2004) demonstrates that rainfall shocks (drought) have persistent impacts on growth and that covariate variables capturing the severity of the 1984-85 famine can be causally related to slower growth in household consumption in the 1990s.

In this context, the objective of this paper was to investigate the extent to which social protection interventions can help to buffer the impacts of these shocks. Using the Ethiopian Productive Safety Net Program as our case study, we explored the degree to which this particular social protection programme has been successful in protecting its beneficiaries against various shocks that occurred in the recent past.

The first part of our analysis (Table 4.1 and Table 4.2) is consistent with other recent studies conducted in the same region. Dercon and his colleagues, using two rounds of the Ethiopian Rural Household Survey (1999-2004) examined which households were vulnerable to different types of shocks in rural Ethiopia (Dercon et al. 2005). Although the terminology they used to identify shocks is slightly different from ours, the findings are remarkably similar. In particular, they found (like we did) that drought was the most common climatic shock for Ethiopian rural households, followed by what they called 'pest' – equivalent to 'loss of crop' in the present analysis. The reported rate of occurrence of these shocks is also remarkably similar (52 percent and 38 percent for Dercon's study and 56 percent and 36 percent for the present study). They also found (like we did) that illness was the major idiosyncratic shock reported by households. When disaggregating households by wealth groups (they used land ownership while we used income and assets) their analysis showed that better-off households are more likely to be affected by shocks related to 'pest', 'input' (equivalent to 'Highprices' in our typology) and 'output' ('Lowprices' in our typology). This is different from, but not contradicting to, our findings which suggest that the richest households (in income terms) are likely to be more affected by flood and loss of livestock than poorer households. In fact both studies question the widely held view that the poorest households are usually more affected by shocks. Interestingly this is also what Carter et al. (2007) observed when analysing the impact of the hurricane Mitch in Honduras. These authors found in particular that the percentage of households that were affected by the hurricane increases with household wealth[6]. In our case the data suggest that the only types of shock that follow the more widely accepted pattern are illness and death for which the poorest households systematically reported higher prevalence than the richest households. For the other shocks, the pattern is not clear (in particular for drought, which is the most frequent shock), and as mentioned above, the pattern is reversed for flood and loss of livestock. To some extent, these results reinforce the importance of recognising the difference between poverty and vulnerability, and the fact that the wealthier households in a poor community may be as vulnerable or possibly even more vulnerable than the poor, as they have more to lose than the assetless poor.

[6] As they correctly pointed out, however, this finding may be an artefact of the fact that poorer households had relatively little to lose. Indeed, in their case, Carter and his colleagues found that among those households suffering asset losses, poorer households lost a greater percentage of their productive wealth than the wealthier households did.

The analysis of household response strategies (Table 4.3 and Table 4.4) revealed some other important findings, in particular that the rate of occurrence of asset building strategies (including investment in education, health, assets and skills) is higher for better-off households than for poorer households. Moreover it seems that this trend is clearer when income is used (rather than assets) as a proxy for household wealth. This suggests that these asset building strategies are more strongly linked to income than to asset wealth, as if people were drawing more on cash than on existing assets to engage in these strategies. If this result was to be confirmed by other studies, it would confirm the hypothesis that cash transfers can be efficient channels to stimulate innovation and adaptive capacity (ILO 2010; Godfrey Wood 2011).

The analysis of the impact of shocks on household coping and asset disposal strategies (Table 4.5) helps us better understand the dynamics of households' responses and in particular identify under which circumstances these buffer strategies are adopted. The analysis shows for instance that the coping strategy that consists in reducing food consumption is adopted almost universally in the face of any adverse events: the probit regressions reveal that the probability to observe this specific strategy is significantly increased with five out of the eight different shocks analysed (drought, loss of livestock, high and low price shocks and illness), reiterating the predominance of this coping behaviour amongst vulnerable households (Downing, Gitu and Kamau 1989; Davies 1996; Devereux 2010). In fact when combined with behaviour that consists in reducing spending on non-food items, these two strategies are statistically positively correlated (either individually or in combination) with every single type of shock, with the notable exception of flood[7].

Still in relation to these behaviours/strategies triggered by shock, it is interesting to note that in contrast to coping strategies, asset depletion strategies (sell livestock for food or non-food, sell asset to buy food) are not only adopted less often (cf. Figure 4.1), but also do not seem to be correlated so strongly with shocks: 'sell asset to buy food' and 'sell livestock for non-food', for instance, are not correlated significantly with any shock, and 'sell livestock for food' (the most frequently adopted asset disposal strategy) is positively correlated (significantly) only with drought (cf. Table 4.5). These findings suggest that households are more reluctant to sell their assets (in particular their livestock) than to reduce their consumption when they are affected by shock.

These findings have some resonance with other empirical work in developing countries where it is observed that households may choose to smooth assets rather than consumption. Fafchamps, Udry and Czukas (1998) for example observed that households in Burkina Faso do not always draw down assets such as livestock holdings in the face of income shocks. In the same semi-arid region of Africa Kazianga and Udry (2006) found very little evidence of consumption smoothing even in periods of severe drought. Instead they found that village-level risk pooling mechanisms were not effective and in particular there was no evidence that livestock served as an effective buffer stock during drought periods. It seems therefore that although livestock is often presented as a buffer stock to insulate households' consumption from fluctuations in income, empirical studies have consistently found a small or insignificant response of livestock sales to shocks in other income streams (Fafchamps et al. 1998; Fafchamps and Lund 2003; Hoogeveen 2002).

7 Flood is the only shock that is not correlated statistically with any coping or asset disposal strategy.

More recently, Hoddinott (2006) argues that this opposition between asset smoothing and consumption smoothing may be artificial and that the true distinction may instead lie in households' choices regarding what type of capital - physical, financial, social, or human (e.g. health, education) - they should draw down given an income shock. It is also possible, as noted by Zimmerman and Carter (2003), that different households may in fact respond differently to shocks depending on the level of their asset holdings. Hoddinott (2006) for instance observed in Zimbabwe that only the poorest households with one or two oxen were unable/unwilling to draw down their livestock assets in the aftermath of the 1994/95 drought. In contrast better-off households were more likely to sell some of their livestock assets. Likewise, when households are ranked by asset level, our data suggest that wealthier households in Ethiopia rely more heavily on their livestock assets to smooth consumption than do poorer households (Table 4.3). Interestingly, Anderson, Mekonnen and Stage (2009), testing the role of PSNP on rural households' holdings of livestock and forest assets, found no evidence that the PSNP protects livestock in times of shock.

In this context, our last series of analyses (Figure 4.2 and Figure 4.3) is particularly relevant since it explores more systematically the extent to which PSNP transfers are successful at buffering the impacts of shocks, helping households to protect their assets, and improving their food security and wellbeing. The first result of these analyses is that households affected by shocks usually display lower food security and wellbeing indexes than households that had not experienced shocks. This result, in itself, is not too surprising in light of the points discussed above. There is no doubt that households in rural Ethiopia are still very vulnerable to many different types of shocks and our results illustrate but also quantify these effects.

Our analysis also reveals two other important points. First, when comparing PSNP recipients and non-recipients (Figure 4.2), data show that PSNP recipients generally have higher levels of food security and wellbeing than non-recipients. At first sight this observation sounds like good news as it suggests that PSNP has positive impacts on the food security and wellbeing of beneficiary households. Over-enthusiastic interpretation would be mistaken however, as it appears that only 3 out of these 28 comparisons are statistically significant. This ambivalent result is in line with other recent assessments that recognize that the overall impact of the PSNP is rather mixed. Gilligan and his colleagues for instance found that households who access both the PSNP and packages of agricultural support were more likely to be food secure than PSNP beneficiaries who did not access these complementary packages, and concluded that 'the program has little impact on participants on average' and that results 'depends critically on how participation is defined' (Gilligan, Hoddinott and Taffesses 2009, p.1703). The most recent evaluation of the PSNP (Hoddinott, Berhane, Kumar, Taffesse, Diressie, Yohannes, Sabates-Wheeler, Handino, Lind and Tefera 2011) is slightly more positive. It highlights in particular the positive effect of the programme on the food security of recipients (e.g. on average recipients' food gap fell from 3.6 months in 2006 to 2.3 months in 2010); but when these numbers are disaggregated, it appears that the food gap of recipients who have been affected by shock remains deeper in 2008 and 2010 (2.4 and 2.6 months respectively) than those who did not face these shocks (1.8 and 1.6 months respectively) (Hoddinott et al. 2011, p.30).

These results are in line with our findings. Our analysis in particular shows that PSNP beneficiaries who have been exposed to shocks display systematically lower indexes of food security and wellbeing than PSNP recipients who had not been exposed to those same shocks (Figure 4.3). Drought in particular stands out as being the shock for which both food security and wellbeing indexes of PSNP households seem to be significantly affected, but illness and idiosyncratic shocks more generally also appear to have significant impacts on food security. These different results suggest that although PSNP seems to contribute to protecting households against shocks, the positive effects of the programme are not robust enough to shield recipient households completely against the impacts of severe shocks.

6 Conclusion

The background of this research lies at the heart of two converging discussions around vulnerability and shocks. First is the now widely accepted reality that poor households in developing countries are becoming increasingly vulnerable to a combination of inter-related and mutually reinforcing climate shocks or trends, and local or more global market-based risks and economic crises; second is the growing consensus that social protection may offer some solution to buffer the impact of these shocks and reduce the risk that households will fall into chronic poverty.

This paper draws on these elements to analyse the situation in Ethiopia where a multi-million dollar social protection programme (the Productive Safety Net Programme) has been implemented since 2005 in an attempt to reduce chronic food insecurity (Devereux et al. 2008; Gilligan et al. 2009).

Our findings are consistent with some of the results proposed in the literature. In particular they all highlight the predominance of drought and illness as two major (respectively covariant and idiosyncratic) shocks impacting severely food security and more broadly the general wellbeing of households in this part of Africa (see, e.g. World Bank 2004; Dercon et al. 2005). Our analysis is also in line with the literature on coping strategies as it shows the almost systematic use of specific strategies (in particular reduction of food consumption) by households as buffering mechanisms in the face of shocks (e.g. Devereux 2010). In that sense our further analysis of the links between different types of shocks and households' coping and asset disposal strategies was useful as it helped understand better households' response strategies and in particular identify under which circumstances buffer or coping strategies are adopted by these households.

Finally our analysis also reveals that asset building strategies seem to be more strongly linked to income than to asset wealth, as if people were drawing more on cash than on pre-existing assets to engage in these strategies.

Appendices

Appendix 1 – Effect of shocks on households' response strategies

Variables controlling for geographic areas (zone, woreda) were also included in the regression but are not reported here. Models estimated by probit regression

Model 1. Impact of drought on reduction of food consumption

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.141	0.082	0.08	-0.019	0.301
Household head education	-0.011	0.026	0.67	-0.061	0.040
Age of the household head	0.001	0.002	0.53	-0.003	0.006
Household total labour units	0.113	0.016	0.00	0.081	0.144
Household dependency ratio	0.043	0.136	0.75	-0.224	0.309
Household diversification	0.100	0.012	0.00	0.077	0.123
Household livestock assets	-0.038	0.046	0.40	-0.128	0.052
Household productive assets	-0.121	0.061	0.04	-0.240	-0.002
Household house goods	-0.121	0.020	0.00	-0.160	-0.082
Household consumable durables	0.005	0.016	0.77	-0.027	0.036
Household total annual income	-0.093	0.045	0.04	-0.181	-0.005
PSNP Beneficiaries	0.218	0.101	0.03	0.019	0.417
Drought	0.193	0.062	0.00	0.071	0.315
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	220	
Log pseudo-likelihood	-724.29		Pseudo R2	0.181	

Model 2. Impact of flood on reduction of food consumption

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.13	0.08	0.13	-0.04	0.30
Household head education	-0.01	0.03	0.62	-0.07	0.04
Age of the household head	0.00	0.00	0.51	0.00	0.01
Household total labour units	0.11	0.01	0.00	0.09	0.14
Household dependency ratio	0.05	0.14	0.74	-0.22	0.32
Household diversification	0.11	0.01	0.00	0.09	0.13
Household livestock assets	-0.04	0.04	0.32	-0.13	0.04
Household productive assets	-0.11	0.06	0.06	-0.23	0.01
Household house goods	-0.12	0.02	0.00	-0.16	-0.09
Household consumable durables	0.00	0.02	0.92	-0.03	0.03
Household total annual income	-0.09	0.04	0.03	-0.17	-0.01
PSNP Beneficiaries	0.22	0.10	0.02	0.03	0.41
Flood	0.01	0.09	0.89	-0.17	0.19
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	133.48	
Log pseudo-likelihood	-728:96		Pseudo R2	0.176	

Model 3. Impact of loss of crop on reduction of food consumption

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.13	0.09	0.15	-0.05	0.30
Household head education	-0.01	0.03	0.61	-0.06	0.04
Age of the household head	0.00	0.00	0.49	0.00	0.01
Household total labour units	0.11	0.02	0.00	0.08	0.15
Household dependency ratio	0.05	0.14	0.75	-0.23	0.32
Household diversification	0.11	0.01	0.00	0.09	0.13
Household livestock assets	-0.04	0.04	0.31	-0.13	0.04
Household productive assets	-0.11	0.06	0.05	-0.23	0.00
Household house goods	-0.12	0.02	0.00	-0.16	-0.08
Household consumable durables	0.00	0.02	0.92	-0.03	0.03
Household total annual income	-0.09	0.04	0.04	-0.18	-0.01
PSNP Beneficiaries	0.22	0.09	0.02	0.04	0.40
Loss of Crop	0.03	0.09	0.75	-0.15	0.20
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	213.00
Log pseudo-likelihood	-728.88			Pseudo R2	0.176

Model 4. Impact of loss of livestock on reduction of food consumption

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.13	0.09	0.14	-0.04	0.30
Household head education	-0.02	0.03	0.51	-0.07	0.03
Age of the household head	0.00	0.00	0.56	0.00	0.01
Household total labour units	0.11	0.01	0.00	0.09	0.13
Household dependency ratio	0.04	0.14	0.79	-0.23	0.31
Household diversification	0.11	0.01	0.00	0.09	0.13
Household livestock assets	-0.04	0.04	0.29	-0.13	0.04
Household productive assets	-0.12	0.06	0.06	-0.24	0.01
Household house goods	-0.12	0.02	0.00	-0.16	-0.08
Household consumable durables	0.00	0.02	0.89	-0.03	0.04
Household total annual income	-0.10	0.05	0.04	-0.19	0.00
PSNP Beneficiaries	0.23	0.09	0.01	0.05	0.42
Loss of livestock	0.20	0.07	0.00	0.06	0.33
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	192.25
Log pseudo-likelihood	-726.96			Pseudo R2	0.178

Model 5. Impact of high price shocks on reduction of food consumption. Model estimated by ordered probit regression

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.13	0.09	0.12	-0.03	0.30
Household head education	-0.01	0.03	0.72	-0.06	0.04
Age of the household head	0.00	0.00	0.62	0.00	0.01
Household total labour units	0.12	0.01	0.00	0.10	0.15
Household dependency ratio	0.04	0.14	0.75	-0.23	0.31
Household diversification	0.11	0.02	0.00	0.08	0.14
Household livestock assets	-0.04	0.04	0.30	-0.13	0.04
Household productive assets	-0.11	0.06	0.06	-0.23	0.00
Household house goods	-0.12	0.02	0.00	-0.16	-0.09
Household consumable durables	0.00	0.02	0.95	-0.04	0.03
Household total annual income	-0.10	0.05	0.05	-0.19	0.00
PSNP Beneficiaries	0.21	0.10	0.03	0.02	0.39
High price	0.25	0.09	0.01	0.07	0.43
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	184.21	
Log pseudo-likelihood	-724.87		Pseudo R2	0.181	

Model 6. Impact of low price shocks on reduction of food consumption. Model estimated by ordered probit regression

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.13	0.09	0.12	-0.04	0.30
Household head education	-0.01	0.03	0.62	-0.06	0.04
Age of the household head	0.00	0.00	0.59	0.00	0.01
Household total labour units	0.12	0.01	0.00	0.09	0.14
Household dependency ratio	0.05	0.14	0.74	-0.23	0.32
Household diversification	0.11	0.01	0.00	0.08	0.13
Household livestock assets	-0.04	0.04	0.31	-0.13	0.04
Household productive assets	-0.11	0.06	0.06	-0.23	0.00
Household house goods	-0.12	0.02	0.00	-0.16	-0.08
Household consumable durables	0.00	0.02	0.95	-0.03	0.03
Household total annual income	-0.09	0.05	0.04	-0.18	0.00
PSNP Beneficiaries	0.22	0.10	0.03	0.03	0.41
Low price	0.12	0.02	0.00	0.07	0.16
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	166.90	
Log pseudo-likelihood	-728.22		Pseudo R2	0.177	

Model 7. Impact of illness shocks on reduction of food consumption

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.12	0.08	0.14	-0.04	0.29
Household head education	-0.01	0.03	0.63	-0.07	0.04
Age of the household head	0.00	0.00	0.37	0.00	0.01
Household total labour units	0.11	0.01	0.00	0.09	0.14
Household dependency ratio	0.04	0.13	0.75	-0.22	0.31
Household diversification	0.11	0.01	0.00	0.09	0.13
Household livestock assets	-0.04	0.04	0.30	-0.13	0.04
Household productive assets	-0.11	0.06	0.06	-0.23	0.00
Household house goods	-0.12	0.02	0.00	-0.16	-0.08
Household consumable durables	0.00	0.02	0.92	-0.03	0.04
Household total annual income	-0.09	0.04	0.04	-0.18	0.00
PSNP Beneficiaries	0.23	0.09	0.02	0.04	0.41
Illness	0.33	0.11	0.00	0.12	0.54
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	214.64	
Log pseudo-likelihood	-727.25		Pseudo R2	0.178	

Model 8. Impact of idiosyncratic shocks on reduction of food consumption

Reduce Food Consumption	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.13	0.09	0.14	-0.04	0.30
Household head education	-0.01	0.03	0.61	-0.07	0.04
Age of the household head	0.00	0.00	0.47	0.00	0.01
Household total labour units	0.11	0.02	0.00	0.08	0.14
Household dependency ratio	0.05	0.14	0.75	-0.23	0.32
Household diversification	0.11	0.01	0.00	0.09	0.13
Household livestock assets	-0.04	0.04	0.30	-0.13	0.04
Household productive assets	-0.11	0.06	0.06	-0.23	0.01
Household house goods	-0.12	0.02	0.00	-0.16	-0.09
Household consumable durables	0.00	0.02	0.91	-0.03	0.03
Household total annual income	-0.09	0.05	0.05	-0.18	0.00
PSNP Beneficiaries	0.22	0.09	0.01	0.04	0.40
Idiosyncratic	0.01	0.20	0.97	-0.38	0.39
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	283.93	
Log pseudo-likelihood	-728.98		Pseudo R2	0.178	

Model 9. Impact of drought shocks on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.07	0.12	0.55	-0.16	0.31
Household head education	0.02	0.03	0.51	-0.04	0.07
Age of the household head	0.00	0.00	0.74	0.00	0.00
Household total labour units	0.10	0.04	0.01	0.03	0.17
Household dependency ratio	0.11	0.20	0.57	-0.27	0.50
Household diversification	0.05	0.05	0.35	-0.05	0.15
Household livestock assets	0.10	0.03	0.01	0.03	0.16
Household productive assets	-0.04	0.06	0.50	-0.16	0.08
Household house goods	0.02	0.05	0.71	-0.08	0.11
Household consumable durables	-0.01	0.02	0.57	-0.05	0.03
Household total annual income	0.04	0.02	0.06	0.00	0.08
PSNP Beneficiaries	0.09	0.18	0.60	-0.26	0.44
Drought	0.16	0.10	0.11	-0.03	0.34
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	257.69
Log pseudo-likelihood	-569.83			Pseudo R2	0.107

Model 10. Impact of flood on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.07	0.13	0.61	-0.19	0.32
Household head education	0.01	0.03	0.66	-0.04	0.07
Age of the household head	0.00	0.00	0.63	0.00	0.00
Household total labour units	0.09	0.03	0.01	0.02	0.16
Household dependency ratio	0.10	0.18	0.58	-0.26	0.46
Household diversification	0.05	0.05	0.30	-0.05	0.16
Household livestock assets	0.09	0.03	0.00	0.04	0.15
Household productive assets	-0.04	0.06	0.51	-0.15	0.07
Household house goods	0.01	0.05	0.84	-0.08	0.10
Household consumable durables	-0.01	0.02	0.48	-0.05	0.02
Household total annual income	0.04	0.01	0.00	0.02	0.07
PSNP Beneficiaries	0.08	0.18	0.66	-0.27	0.42
Flood	-0.19	0.15	0.20	-0.49	0.10
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	126.67
Log pseudo-likelihood	-569.82			Pseudo R2	0.107

Model 11. Impact of loss of crop on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.06	0.13	0.66	-0.20	0.32
Household head education	0.02	0.03	0.49	-0.03	0.07
Age of the household head	0.00	0.00	0.69	0.00	0.00
Household total labour units	0.10	0.03	0.00	0.04	0.16
Household dependency ratio	0.11	0.19	0.56	-0.26	0.48
Household diversification	0.06	0.05	0.31	-0.05	0.16
Household livestock assets	0.09	0.03	0.00	0.03	0.15
Household productive assets	-0.04	0.06	0.54	-0.15	0.08
Household house goods	0.02	0.05	0.75	-0.08	0.11
Household consumable durables	-0.01	0.02	0.50	-0.06	0.03
Household total annual income	0.03	0.02	0.11	-0.01	0.08
PSNP Beneficiaries	0.10	0.19	0.60	-0.27	0.46
Loss of Crop	0.05	0.09	0.56	-0.12	0.23
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	162.01
Log pseudo-likelihood	-572.25			Pseudo R2	0.103

Model 12. Impact of loss of livestock on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.06	0.13	0.66	-0.20	0.32
Household head education	0.02	0.03	0.49	-0.03	0.07
Age of the household head	0.00	0.00	0.69	0.00	0.00
Household total labour units	0.10	0.03	0.00	0.04	0.16
Household dependency ratio	0.11	0.19	0.56	-0.26	0.48
Household diversification	0.06	0.05	0.31	-0.05	0.16
Household livestock assets	0.09	0.03	0.00	0.03	0.15
Household productive assets	-0.04	0.06	0.54	-0.15	0.08
Household house goods	0.02	0.05	0.75	-0.08	0.11
Household consumable durables	-0.01	0.02	0.50	-0.06	0.03
Household total annual income	0.03	0.02	0.11	-0.01	0.08
PSNP Beneficiaries	0.10	0.19	0.60	-0.27	0.46
Loss of livestock	0.05	0.09	0.56	-0.12	0.23
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	162.01
Log pseudo-likelihood	-572.25			Pseudo R2	0.103

Model 13. Impact of high price shocks on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.03	0.11	0.82	-0.19	0.24
Household head education	0.02	0.03	0.47	-0.04	0.08
Age of the household head	0.00	0.00	0.26	0.00	0.00
Household total labour units	-0.01	0.03	0.86	-0.07	0.06
Household dependency ratio	0.08	0.04	0.03	0.01	0.15
Household diversification	0.05	0.06	0.35	-0.06	0.16
Household livestock assets	0.09	0.03	0.01	0.03	0.15
Household productive assets	-0.03	0.06	0.56	-0.15	0.08
Household house goods	0.02	0.05	0.75	-0.08	0.12
Household consumable durables	-0.01	0.02	0.50	-0.06	0.03
Household total annual income	0.03	0.02	0.06	0.00	0.06
PSNP Beneficiaries	0.10	0.19	0.59	-0.27	0.48
High price	0.02	0.13	0.90	-0.24	0.27
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	300.74	
Log pseudo-likelihood	-569.73		Pseudo R2	0.107	

Model 14. Impact of low price shocks on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.02	0.11	0.82	-0.19	0.23
Household head education	0.02	0.03	0.50	-0.04	0.07
Age of the household head	0.00	0.00	0.16	0.00	0.00
Household total labour units	-0.01	0.03	0.81	-0.07	0.06
Household dependency ratio	0.08	0.04	0.03	0.01	0.15
Household diversification	0.05	0.05	0.33	-0.05	0.16
Household livestock assets	0.09	0.03	0.00	0.03	0.15
Household productive assets	-0.03	0.06	0.56	-0.15	0.08
Household house goods	0.02	0.05	0.76	-0.08	0.12
Household consumable durables	-0.01	0.02	0.52	-0.05	0.03
Household total annual income	0.03	0.02	0.07	0.00	0.06
PSNP Beneficiaries	0.11	0.20	0.59	-0.28	0.49
Low price	-0.08	0.12	0.48	-0.31	0.14
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	136.00	
Log pseudo-likelihood	-569.39		Pseudo R2	0.107	

Model 15. Impact of illness shocks on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.06	0.13	0.62	-0.19	0.32
Household head education	0.02	0.03	0.54	-0.04	0.07
Age of the household head	0.00	0.00	0.75	0.00	0.00
Household total labour units	0.10	0.04	0.01	0.03	0.17
Household dependency ratio	0.11	0.19	0.55	-0.26	0.49
Household diversification	0.06	0.05	0.30	-0.05	0.16
Household livestock assets	0.09	0.03	0.00	0.03	0.15
Household productive assets	-0.03	0.06	0.56	-0.15	0.08
Household house goods	0.01	0.05	0.77	-0.08	0.11
Household consumable durables	-0.01	0.02	0.52	-0.05	0.03
Household total annual income	0.03	0.02	0.05	0.00	0.07
PSNP Beneficiaries	0.09	0.18	0.61	-0.27	0.45
Illness	-0.06	0.10	0.58	-0.25	0.14
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	235.42
Log pseudo-likelihood	-572.36			Pseudo R2	0.103

Model 16 . Impact of idiosyncratic shocks on selling asset

Selling asset	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.07	0.13	0.62	-0.19	0.32
Household head education	0.02	0.03	0.54	-0.04	0.07
Age of the household head	0.00	0.00	0.76	0.00	0.00
Household total labour units	0.10	0.04	0.01	0.03	0.17
Household dependency ratio	0.11	0.19	0.56	-0.26	0.48
Household diversification	0.06	0.06	0.31	-0.05	0.16
Household livestock assets	0.09	0.03	0.00	0.03	0.15
Household productive assets	-0.03	0.06	0.56	-0.15	0.08
Household house goods	0.01	0.05	0.76	-0.08	0.11
Household consumable durables	-0.01	0.02	0.52	-0.05	0.03
Household total annual income	0.03	0.02	0.05	0.00	0.07
PSNP Beneficiaries	0.10	0.19	0.60	-0.27	0.46
Idiosyncratic	-0.06	0.16	0.71	-0.38	0.26
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	235.12
Log pseudo-likelihood	-572.40			Pseudo R2	0.103

Model 17. Impact of drought shocks on reduction of non-food expenses

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.22	0.10	0.02	0.03	0.42
Household head education	-0.02	0.04	0.57	-0.09	0.05
Age of the household head	-0.01	0.00	0.03	-0.01	0.00
Household total labour units	0.03	0.05	0.56	-0.07	0.13
Household dependency ratio	-0.03	0.07	0.69	-0.18	0.12
Household diversification	0.03	0.02	0.13	-0.01	0.07
Household livestock assets	-0.04	0.02	0.04	-0.09	0.00
Household productive assets	-0.01	0.02	0.64	-0.06	0.04
Household house goods	-0.08	0.04	0.04	-0.15	0.00
Household consumable durables	-0.01	0.03	0.77	-0.06	0.05
Household total annual income	0.04	0.00	0.00	0.04	0.05
PSNP Beneficiaries	0.08	0.07	0.27	-0.06	0.22
Drought	0.17	0.08	0.02	0.02	0.32
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	77.77	
Log pseudo-likelihood	-781.19		Pseudo R2	0.098	

Model 18. Impact of flood on reduction of non-food expenses

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.21	0.10	0.04	0.01	0.42
Household head education	-0.02	0.03	0.59	-0.09	0.05
Age of the household head	-0.01	0.00	0.03	-0.01	0.00
Household total labour units	0.04	0.05	0.43	-0.06	0.13
Household dependency ratio	-0.03	0.08	0.65	-0.18	0.11
Household diversification	0.04	0.02	0.05	0.00	0.08
Household livestock assets	-0.05	0.02	0.01	-0.09	-0.02
Household productive assets	0.00	0.02	0.88	-0.05	0.04
Household house goods	-0.08	0.04	0.04	-0.15	0.00
Household consumable durables	-0.01	0.03	0.74	-0.07	0.05
Household total annual income	0.04	0.01	0.00	0.02	0.05
PSNP Beneficiaries	0.10	0.07	0.16	-0.04	0.23
Flood	0.14	0.12	0.24	-0.09	0.38
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	85.68	
Log pseudo-likelihood	-783.18		Pseudo R2	0.096	

Model 19. Impact of loss of crop on reduction of non-food expenses

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.19	0.10	0.07	-0.01	0.40
Household head education	-0.02	0.04	0.63	-0.09	0.05
Age of the household head	-0.01	0.00	0.05	-0.01	0.00
Household total labour units	0.04	0.05	0.38	-0.05	0.13
Household dependency ratio	-0.03	0.07	0.66	-0.16	0.10
Household diversification	0.04	0.02	0.06	0.00	0.07
Household livestock assets	-0.05	0.02	0.02	-0.09	-0.01
Household productive assets	-0.01	0.02	0.68	-0.06	0.04
Household house goods	-0.08	0.04	0.04	-0.15	0.00
Household consumable durables	-0.01	0.03	0.67	-0.07	0.04
Household total annual income	0.04	0.00	0.00	0.03	0.05
PSNP Beneficiaries	0.09	0.08	0.27	-0.07	0.25
Loss of Crop	0.22	0.04	0.00	0.14	0.29
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	86.15	
Log pseudo-likelihood	-778.22		Pseudo R2	0.101	

Model 20. Impact of loss of livestock on reduction of non-food expenses

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.22	0.10	0.03	0.02	0.41
Household head education	-0.02	0.03	0.51	-0.09	0.05
Age of the household head	-0.01	0.00	0.03	-0.01	0.00
Household total labour units	0.03	0.05	0.54	-0.06	0.12
Household dependency ratio	-0.05	0.07	0.53	-0.19	0.10
Household diversification	0.04	0.02	0.05	0.00	0.08
Household livestock assets	-0.05	0.02	0.02	-0.09	-0.01
Household productive assets	-0.01	0.02	0.80	-0.05	0.04
Household house goods	-0.08	0.04	0.03	-0.15	-0.01
Household consumable durables	-0.01	0.03	0.72	-0.06	0.04
Household total annual income	0.04	0.01	0.00	0.03	0.06
PSNP Beneficiaries	0.08	0.08	0.29	-0.07	0.24
Loss of livestock	0.02	0.13	0.87	-0.24	0.28
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	185.63	
Log pseudo-likelihood	-785.29		Pseudo R2	0.093	

Model 21. Impact of high price shocks on reduction of non-food expenses

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.22	0.10	0.03	0.02	0.41
Household head education	-0.02	0.04	0.57	-0.09	0.05
Age of the household head	-0.01	0.00	0.04	-0.01	0.00
Household total labour units	0.03	0.05	0.53	-0.07	0.13
Household dependency ratio	-0.05	0.07	0.53	-0.19	0.10
Household diversification	0.04	0.02	0.03	0.00	0.08
Household livestock assets	-0.05	0.02	0.02	-0.09	-0.01
Household productive assets	-0.01	0.02	0.74	-0.05	0.03
Household house goods	-0.08	0.04	0.03	-0.15	-0.01
Household consumable durables	-0.01	0.03	0.69	-0.06	0.04
Household total annual income	0.04	0.01	0.00	0.03	0.06
PSNP Beneficiaries	0.08	0.08	0.32	-0.08	0.24
High price	0.09	0.18	0.63	-0.27	0.45
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	226.17	
Log pseudo-likelihood	-784.69		Pseudo R2	0.094	

Model 22. Impact of low price shocks on reduction of food consumption

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.20	0.09	0.03	0.02	0.38
Household head education	-0.02	0.03	0.61	-0.08	0.05
Age of the household head	-0.01	0.00	0.04	-0.01	0.00
Household total labour units	-0.01	0.06	0.88	-0.12	0.10
Household dependency ratio	0.04	0.02	0.02	0.01	0.07
Household diversification	0.03	0.02	0.11	-0.01	0.06
Household livestock assets	-0.05	0.02	0.01	-0.09	-0.01
Household productive assets	-0.01	0.02	0.73	-0.05	0.03
Household house goods	-0.08	0.04	0.03	-0.15	-0.01
Household consumable durables	-0.01	0.03	0.70	-0.07	0.05
Household total annual income	0.04	0.00	0.00	0.04	0.05
PSNP Beneficiaries	0.09	0.08	0.26	-0.07	0.26
Low price	0.24	0.12	0.06	0.00	0.48
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	257.94	
Log pseudo-likelihood	-780.00		Pseudo R2	0.096	

Model 23. Impact of illness shocks on reduction of non-food expenses

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.21	0.10	0.03	0.02	0.41
Household head education	-0.02	0.04	0.55	-0.09	0.05
Age of the household head	-0.01	0.00	0.06	-0.01	0.00
Household total labour units	0.03	0.05	0.57	-0.06	0.12
Household dependency ratio	-0.05	0.07	0.49	-0.19	0.09
Household diversification	0.04	0.02	0.06	0.00	0.08
Household livestock assets	-0.05	0.02	0.02	-0.09	-0.01
Household productive assets	-0.01	0.02	0.80	-0.05	0.04
Household house goods	-0.08	0.04	0.04	-0.15	0.00
Household consumable durables	-0.01	0.03	0.71	-0.07	0.04
Household total annual income	0.05	0.01	0.00	0.03	0.06
PSNP Beneficiaries	0.08	0.08	0.29	-0.07	0.24
Illness	0.08	0.01	0.00	0.06	0.11
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	189.66
Log pseudo-likelihood	-784.66			Pseudo R2	0.094

Model 24. Impact of idiosyncratic shocks on reduction of non-food expenses

Reduction of non-food expenses	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	0.21	0.10	0.04	0.01	0.42
Household head education	-0.02	0.04	0.54	-0.09	0.05
Age of the household head	-0.01	0.00	0.05	-0.01	0.00
Household total labour units	0.03	0.05	0.56	-0.06	0.12
Household dependency ratio	-0.04	0.07	0.54	-0.19	0.10
Household diversification	0.04	0.02	0.06	0.00	0.08
Household livestock assets	-0.05	0.02	0.01	-0.09	-0.01
Household productive assets	-0.01	0.02	0.83	-0.05	0.04
Household house goods	-0.08	0.04	0.03	-0.15	-0.01
Household consumable durables	-0.01	0.03	0.70	-0.07	0.04
Household total annual income	0.05	0.01	0.00	0.04	0.06
PSNP Beneficiaries	0.08	0.08	0.33	-0.08	0.24
Idiosyncratic	0.11	0.04	0.01	0.03	0.18
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	193.00
Log pseudo-likelihood	-784.65			Pseudo R2	0.093

Model 25. Impact of drought shocks on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.03	0.13	0.80	-0.28	0.21
Household head education	0.05	0.03	0.10	-0.01	0.11
Age of the household head	0.00	0.01	0.68	-0.02	0.01
Household total labour units	0.10	0.05	0.03	0.01	0.19
Household dependency ratio	-0.02	0.03	0.52	-0.07	0.03
Household diversification	0.10	0.02	0.00	0.06	0.14
Household livestock assets	0.10	0.04	0.01	0.03	0.17
Household productive assets	-0.01	0.02	0.61	-0.06	0.04
Household house goods	0.00	0.03	0.97	-0.05	0.05
Household consumable durables	0.00	0.01	0.67	-0.02	0.01
Household total annual income	0.01	0.03	0.71	-0.04	0.06
PSNP Beneficiaries	-0.01	0.11	0.95	-0.22	0.21
Drought	0.12	0.06	0.05	0.00	0.24
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	193.42	
Log pseudo-likelihood	-417.184		Pseudo R2	0.150	

Model 26. Impact of flood on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	*t* stat	[95% Conf. Interval]	
Sex of the household head	-0.08	0.14	0.58	-0.34	0.19
Household head education	0.05	0.03	0.09	-0.01	0.10
Age of the household head	0.00	0.01	0.56	-0.02	0.01
Household total labour units	0.10	0.04	0.01	0.02	0.18
Household dependency ratio	0.23	0.20	0.24	-0.16	0.62
Household diversification	0.10	0.02	0.00	0.06	0.14
Household livestock assets	0.10	0.04	0.01	0.03	0.16
Household productive assets	-0.01	0.02	0.59	-0.05	0.03
Household house goods	0.00	0.03	0.98	-0.06	0.06
Household consumable durables	0.00	0.01	0.57	-0.02	0.01
Household total annual income	0.01	0.03	0.59	-0.04	0.06
PSNP Beneficiaries	0.02	0.09	0.85	-0.15	0.19
Flood	-0.10	0.12	0.40	-0.34	0.13
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	532.62	
Log pseudo-likelihood	-417.75		Pseudo R2	0.151	

Model 27. Impact of loss of crop on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.03	0.13	0.79	-0.28	0.21
Household head education	0.04	0.03	0.14	-0.02	0.10
Age of the household head	0.00	0.01	0.69	-0.02	0.01
Household total labour units	0.10	0.04	0.02	0.02	0.17
Household dependency ratio	-0.02	0.03	0.55	-0.06	0.03
Household diversification	0.11	0.02	0.00	0.06	0.15
Household livestock assets	0.09	0.03	0.01	0.03	0.16
Household productive assets	-0.01	0.02	0.81	-0.05	0.04
Household house goods	0.00	0.02	0.97	-0.05	0.05
Household consumable durables	-0.01	0.01	0.50	-0.02	0.01
Household total annual income	0.02	0.02	0.47	-0.03	0.06
PSNP Beneficiaries	-0.01	0.11	0.91	-0.23	0.20
Loss of Crop	-0.12	0.07	0.08	-0.25	0.01
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	576.192
Log pseudo-likelihood	-417.79			Pseudo R2	0.151

Model 28. Impact of loss of livestock on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.04	0.12	0.74	-0.28	0.20
Household head education	0.05	0.03	0.10	-0.01	0.10
Age of the household head	0.00	0.01	0.70	-0.02	0.01
Household total labour units	0.10	0.05	0.02	0.01	0.19
Household dependency ratio	-0.02	0.03	0.50	-0.07	0.04
Household diversification	0.11	0.02	0.00	0.07	0.15
Household livestock assets	0.09	0.04	0.01	0.02	0.16
Household productive assets	-0.01	0.02	0.75	-0.06	0.04
Household house goods	0.00	0.02	1.00	-0.05	0.05
Household consumable durables	-0.01	0.01	0.47	-0.02	0.01
Household total annual income	0.01	0.02	0.76	-0.04	0.06
PSNP Beneficiaries	0.00	0.11	1.00	-0.21	0.21
Loss of livestock	0.10	0.09	0.26	-0.08	0.29
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	1659.84
Log pseudo-likelihood	-418.51			Pseudo R2	0.149

Model 29. Impact of high price shocks on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	*t* stat	[95% Conf. Interval]	
Sex of the household head	-0.04	0.13	0.74	-0.29	0.21
Household head education	0.05	0.03	0.10	-0.01	0.10
Age of the household head	0.00	0.01	0.70	-0.02	0.01
Household total labour units	0.10	0.04	0.02	0.02	0.18
Household dependency ratio	-0.01	0.03	0.55	-0.06	0.03
Household diversification	0.11	0.02	0.00	0.07	0.14
Household livestock assets	0.09	0.03	0.01	0.02	0.16
Household productive assets	-0.01	0.02	0.75	-0.05	0.04
Household house goods	0.00	0.03	0.99	-0.05	0.05
Household consumable durables	0.00	0.01	0.58	-0.02	0.01
Household total annual income	0.01	0.02	0.55	-0.03	0.06
PSNP Beneficiaries	0.00	0.11	1.00	-0.22	0.22
High price	-0.10	0.22	0.66	-0.52	0.33
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	406.80	
Log pseudo-likelihood	-418.60		Pseudo R2	0.149	

Model 30. Impact of low price shocks on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	*t* stat	[95% Conf. Interval]	
Sex of the household head	-0.05	0.13	0.70	-0.31	0.21
Household head education	0.05	0.03	0.12	-0.01	0.10
Age of the household head	0.00	0.01	0.75	-0.01	0.01
Household total labour units	0.10	0.04	0.01	0.02	0.17
Household dependency ratio	-0.01	0.03	0.58	-0.06	0.04
Household diversification	0.11	0.02	0.00	0.07	0.15
Household livestock assets	0.09	0.03	0.01	0.03	0.16
Household productive assets	-0.01	0.02	0.77	-0.05	0.04
Household house goods	0.00	0.03	0.92	-0.05	0.05
Household consumable durables	0.00	0.01	0.87	-0.02	0.02
Household total annual income	0.01	0.02	0.59	-0.03	0.06
PSNP Beneficiaries	-0.01	0.10	0.93	-0.20	0.18
Low price	-0.27	0.11	0.01	-0.47	-0.06
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	483.96	
Log pseudo-likelihood	-416.82		Pseudo R2	0.153	

Model 31. Impact of illness shocks on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.04	0.13	0.73	-0.29	0.20
Household head education	0.05	0.03	0.10	-0.01	0.11
Age of the household head	0.00	0.01	0.69	-0.02	0.01
Household total labour units	0.10	0.04	0.02	0.02	0.18
Household dependency ratio	-0.01	0.03	0.59	-0.07	0.04
Household diversification	0.11	0.02	0.00	0.07	0.15
Household livestock assets	0.09	0.03	0.01	0.03	0.16
Household productive assets	-0.01	0.02	0.77	-0.05	0.04
Household house goods	0.00	0.02	0.91	-0.05	0.05
Household consumable durables	-0.01	0.01	0.48	-0.02	0.01
Household total annual income	0.01	0.03	0.72	-0.04	0.06
PSNP Beneficiaries	0.00	0.11	0.97	-0.21	0.20
Illness	-0.11	0.10	0.31	-0.31	0.10
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	979.61
Log pseudo-likelihood	-418.49			Pseudo R2	0.149

Model 32. Impact of idiosyncratic shocks on selling livestock for food

Selling livestock	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.04	0.13	0.75	-0.30	0.22
Household head education	0.05	0.03	0.11	-0.01	0.11
Age of the household head	0.00	0.01	0.65	-0.02	0.01
Household total labour units	0.10	0.05	0.03	0.01	0.19
Household dependency ratio	-0.01	0.03	0.63	-0.07	0.04
Household diversification	0.11	0.02	0.00	0.07	0.14
Household livestock assets	0.09	0.03	0.00	0.03	0.15
Household productive assets	-0.01	0.02	0.72	-0.05	0.04
Household house goods	0.00	0.02	0.91	-0.05	0.04
Household consumable durables	0.00	0.01	0.52	-0.02	0.01
Household total annual income	0.00	0.02	0.84	-0.04	0.05
PSNP Beneficiaries	0.00	0.11	1.00	-0.21	0.21
Idiosyncratic	-0.21	0.08	0.01	-0.37	-0.04
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	1114.00
Log pseudo-likelihood	-417.51			Pseudo R2	0.151

Model 33. Impact of drought shocks on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.62	0.18	0.00	-0.97	-0.27
Household head education	0.06	0.03	0.02	0.01	0.11
Age of the household head	0.00	0.00	0.47	-0.01	0.01
Household total labour units	0.06	0.08	0.42	-0.09	0.21
Household dependency ratio	0.10	0.05	0.05	0.00	0.19
Household diversification	0.02	0.14	0.89	-0.26	0.30
Household livestock assets	-0.04	0.05	0.42	-0.14	0.06
Household productive assets	0.06	0.04	0.19	-0.03	0.14
Household house goods	-0.10	0.01	0.00	-0.12	-0.07
Household consumable durables	0.01	0.03	0.57	-0.04	0.06
Household total annual income	0.06	0.10	0.54	-0.14	0.26
PSNP Beneficiaries	-0.23	0.23	0.32	-0.69	0.23
Drought	0.11	0.06	0.05	0.00	0.23
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	2684.31
Log pseudo-likelihood	-184.03			Pseudo R2	0.221

Model 34. Impact of flood on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.54	0.19	0.00	-0.92	-0.17
Household head education	0.05	0.03	0.05	0.00	0.10
Age of the household head	0.00	0.01	0.72	-0.01	0.01
Household total labour units	0.17	0.07	0.01	0.04	0.31
Household dependency ratio	0.10	0.20	0.61	-0.28	0.48
Household diversification	0.03	0.14	0.84	-0.24	0.30
Household livestock assets	-0.03	0.05	0.48	-0.13	0.06
Household productive assets	0.06	0.05	0.19	-0.03	0.15
Household house goods	-0.10	0.01	0.00	-0.12	-0.07
Household consumable durables	0.01	0.02	0.65	-0.03	0.05
Household total annual income	0.06	0.10	0.53	-0.13	0.26
PSNP Beneficiaries	-0.25	0.24	0.30	-0.73	0.22
Flood	-0.20	0.20	0.34	-0.60	0.20
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	105.99
Log pseudo-likelihood	-185.04			Pseudo R2	0.217

Model 35. Impact of loss of crop on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	*t* stat	[95% Conf. Interval]	
Sex of the household head	-0.62	0.18	0.00	-0.98	-0.26
Household head education	0.06	0.02	0.01	0.01	0.11
Age of the household head	0.00	0.00	0.45	-0.01	0.01
Household total labour units	0.07	0.07	0.37	-0.08	0.21
Household dependency ratio	0.09	0.05	0.05	0.00	0.18
Household diversification	0.02	0.14	0.87	-0.26	0.31
Household livestock assets	-0.04	0.05	0.40	-0.13	0.05
Household productive assets	0.06	0.05	0.24	-0.04	0.15
Household house goods	-0.10	0.01	0.00	-0.12	-0.07
Household consumable durables	0.01	0.03	0.62	-0.04	0.06
Household total annual income	0.06	0.10	0.55	-0.13	0.25
PSNP Beneficiaries	-0.23	0.24	0.34	-0.69	0.24
Loss of Crop	0.11	0.07	0.10	-0.02	0.25
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	76.28	
Log pseudo-likelihood	-184.02		Pseudo R2	0.221	

Model 36. Impact of loss of livestock on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.61	0.19	0.00	-0.98	-0.24
Household head education	0.05	0.02	0.02	0.01	0.10
Age of the household head	0.00	0.00	0.56	-0.01	0.01
Household total labour units	0.07	0.07	0.36	-0.08	0.21
Household dependency ratio	0.09	0.05	0.09	-0.01	0.18
Household diversification	0.02	0.14	0.89	-0.26	0.30
Household livestock assets	-0.04	0.05	0.34	-0.13	0.05
Household productive assets	0.06	0.04	0.15	-0.02	0.14
Household house goods	-0.09	0.01	0.00	-0.12	-0.07
Household consumable durables	0.02	0.02	0.52	-0.03	0.06
Household total annual income	0.05	0.11	0.61	-0.15	0.26
PSNP Beneficiaries	-0.19	0.22	0.39	-0.62	0.24
Loss of livestock	0.25	0.17	0.15	-0.09	0.58
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	290.87	
Log pseudo-likelihood	-183.37		Pseudo R2	0.224	

Model 37. Impact of high price shocks on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.04	0.13	0.74	-0.29	0.21
Household head education	0.05	0.03	0.10	-0.01	0.10
Age of the household head	0.00	0.01	0.70	-0.02	0.01
Household total labour units	0.10	0.04	0.02	0.02	0.18
Household dependency ratio	-0.01	0.03	0.55	-0.06	0.03
Household diversification	0.11	0.02	0.00	0.07	0.14
Household livestock assets	0.09	0.03	0.01	0.02	0.16
Household productive assets	-0.01	0.02	0.75	-0.05	0.04
Household house goods	0.00	0.03	0.99	-0.05	0.05
Household consumable durables	0.00	0.01	0.58	-0.02	0.01
Household total annual income	0.01	0.02	0.55	-0.03	0.06
PSNP Beneficiaries	0.00	0.11	1.00	-0.22	0.22
High price	-0.10	0.22	0.66	-0.52	0.33
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	406.80	
Log pseudo-likelihood	-418.60		Pseudo R2	0.149	

Model 38. Impact of low price shocks on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.05	0.13	0.70	-0.31	0.21
Household head education	0.05	0.03	0.12	-0.01	0.10
Age of the household head	0.00	0.01	0.75	-0.01	0.01
Household total labour units	0.10	0.04	0.01	0.02	0.17
Household dependency ratio	-0.01	0.03	0.58	-0.06	0.04
Household diversification	0.11	0.02	0.00	0.07	0.15
Household livestock assets	0.09	0.03	0.01	0.03	0.16
Household productive assets	-0.01	0.02	0.77	-0.05	0.04
Household house goods	0.00	0.03	0.92	-0.05	0.05
Household consumable durables	0.00	0.01	0.87	-0.02	0.02
Household total annual income	0.01	0.02	0.59	-0.03	0.06
PSNP Beneficiaries	-0.01	0.10	0.93	-0.20	0.18
Low price	-0.27	0.11	0.01	-0.47	-0.06
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	483.96	
Log pseudo-likelihood	-416.82		Pseudo R2	0.153	

Model 39. Impact of illness shocks on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.61	0.18	0.00	-0.96	-0.25
Household head education	0.06	0.02	0.01	0.02	0.11
Age of the household head	0.00	0.00	0.38	-0.01	0.01
Household total labour units	0.07	0.07	0.37	-0.08	0.21
Household dependency ratio	0.08	0.05	0.07	-0.01	0.17
Household diversification	0.02	0.15	0.87	-0.26	0.31
Household livestock assets	-0.04	0.05	0.39	-0.13	0.05
Household productive assets	0.06	0.05	0.21	-0.03	0.15
Household house goods	-0.09	0.01	0.00	-0.11	-0.07
Household consumable durables	0.01	0.03	0.65	-0.04	0.06
Household total annual income	0.07	0.10	0.48	-0.13	0.27
PSNP Beneficiaries	-0.20	0.23	0.37	-0.65	0.24
Illness	0.14	0.11	0.19	-0.07	0.36
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	63.88	
Log pseudo-likelihood	-183.90		Pseudo R2	0.222	

Model 40. Impact of idiosyncratic shocks on children school enrolment

Children school enrolment	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.61	0.18	0.00	-0.96	-0.26
Household head education	0.06	0.02	0.01	0.02	0.11
Age of the household head	0.00	0.00	0.43	-0.01	0.01
Household total labour units	0.07	0.07	0.35	-0.07	0.21
Household dependency ratio	0.09	0.05	0.06	0.00	0.17
Household diversification	0.02	0.15	0.87	-0.26	0.31
Household livestock assets	-0.04	0.05	0.38	-0.14	0.05
Household productive assets	0.06	0.05	0.20	-0.03	0.15
Household house goods	-0.09	0.01	0.00	-0.12	-0.06
Household consumable durables	0.01	0.03	0.65	-0.04	0.06
Household total annual income	0.08	0.10	0.43	-0.12	0.27
PSNP Beneficiaries	-0.22	0.23	0.35	-0.68	0.24
Idiosyncratic	0.28	0.12	0.02	0.04	0.52
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	125.78	
Log pseudo-likelihood	-183.21		Pseudo R2	0.225	

Model 41. Impact of drought shocks on livestock selling for non-food. Model estimated by ordered probit regression

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.19	0.12	0.11	-0.42	0.04
Household head education	0.01	0.03	0.78	-0.05	0.06
Age of the household head	0.00	0.01	0.55	-0.01	0.02
Household total labour units	0.03	0.05	0.61	-0.07	0.12
Household dependency ratio	0.04	0.04	0.30	-0.04	0.13
Household diversification	0.08	0.04	0.06	0.00	0.16
Household livestock assets	-0.04	0.01	0.00	-0.07	-0.01
Household productive assets	0.12	0.08	0.11	-0.03	0.28
Household house goods	0.01	0.02	0.81	-0.04	0.05
Household consumable durables	-0.01	0.05	0.84	-0.11	0.09
Household total annual income	0.10	0.09	0.24	-0.07	0.27
PSNP Beneficiaries	-0.27	0.19	0.16	-0.64	0.11
Drought	0.12	0.14	0.39	-0.16	0.40
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	4099.43	
Log pseudo-likelihood	-192.49		Pseudo R2	0.131	

Model 42. Impact of flood on livestock selling for non-food. Model estimated by ordered probit regression

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.18	0.11	0.09	-0.38	0.03
Household head education	0.01	0.03	0.82	-0.06	0.07
Age of the household head	0.00	0.01	0.63	-0.01	0.02
Household total labour units	0.10	0.04	0.02	0.01	0.18
Household dependency ratio	0.15	0.21	0.49	-0.27	0.57
Household diversification	0.09	0.03	0.01	0.02	0.16
Household livestock assets	-0.04	0.02	0.01	-0.08	-0.01
Household productive assets	0.13	0.07	0.07	-0.01	0.27
Household house goods	0.01	0.03	0.78	-0.04	0.06
Household consumable durables	-0.01	0.05	0.81	-0.11	0.08
Household total annual income	0.10	0.08	0.24	-0.07	0.27
PSNP Beneficiaries	-0.26	0.20	0.19	-0.64	0.13
Flood	0.07	0.19	0.71	-0.31	0.45
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	17.87	
Log pseudo-likelihood	-193.43		Pseudo R2	0.127	

Model 43. Impact of loss of crop on livestock selling for non-food

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.18	0.12	0.12	-0.42	0.05
Household head education	0.01	0.03	0.85	-0.05	0.06
Age of the household head	0.00	0.01	0.62	-0.01	0.02
Household total labour units	0.09	0.04	0.01	0.02	0.17
Household dependency ratio	0.15	0.22	0.49	-0.28	0.58
Household diversification	0.09	0.04	0.01	0.02	0.16
Household livestock assets	-0.04	0.02	0.01	-0.08	-0.01
Household productive assets	0.13	0.07	0.08	-0.02	0.27
Household house goods	0.01	0.03	0.83	-0.05	0.06
Household consumable durables	-0.01	0.05	0.81	-0.11	0.09
Household total annual income	0.10	0.09	0.24	-0.07	0.28
PSNP Beneficiaries	-0.26	0.20	0.19	-0.65	0.13
Loss of Crop	0.03	0.13	0.80	-0.22	0.29
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	15.74	
Log pseudo-likelihood	-193.46		Pseudo R2	0.126	

Model 44. Impact of loss of livestock on livestock selling for non-food

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.20	0.11	0.06	-0.41	0.01
Household head education	0.01	0.03	0.84	-0.06	0.07
Age of the household head	0.00	0.01	0.55	-0.01	0.02
Household total labour units	0.03	0.04	0.55	-0.06	0.11
Household dependency ratio	0.04	0.04	0.32	-0.04	0.13
Household diversification	0.08	0.04	0.02	0.01	0.16
Household livestock assets	-0.05	0.02	0.01	-0.08	-0.01
Household productive assets	0.13	0.07	0.08	-0.02	0.27
Household house goods	0.01	0.03	0.83	-0.05	0.06
Household consumable durables	-0.01	0.05	0.82	-0.11	0.08
Household total annual income	0.10	0.08	0.23	-0.06	0.25
PSNP Beneficiaries	-0.26	0.20	0.19	-0.65	0.13
Loss of livestock	0.06	0.20	0.76	-0.33	0.45
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	2.12	
Log pseudo-likelihood	-193.15		Pseudo R2	0.128	

Model 45. Impact of high price shocks on livestock selling for non-food

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.21	0.12	0.08	-0.44	0.02
Household head education	0.01	0.03	0.88	-0.06	0.07
Age of the household head	0.01	0.01	0.46	-0.01	0.02
Household total labour units	0.02	0.05	0.66	-0.07	0.11
Household dependency ratio	0.05	0.05	0.30	-0.04	0.14
Household diversification	0.08	0.04	0.04	0.01	0.16
Household livestock assets	-0.04	0.02	0.00	-0.08	-0.01
Household productive assets	0.13	0.07	0.08	-0.02	0.27
Household house goods	0.01	0.03	0.82	-0.05	0.06
Household consumable durables	-0.01	0.05	0.84	-0.10	0.08
Household total annual income	0.10	0.09	0.24	-0.07	0.27
PSNP Beneficiaries	-0.25	0.19	0.20	-0.63	0.13
High price	-0.15	0.16	0.34	-0.47	0.16
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	2.88	
Log pseudo-likelihood	-192.65		Pseudo R2	0.130	

Model 46. Impact of low price shocks on livestock selling for non-food

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.20	0.12	0.08	-0.42	0.03
Household head education	0.01	0.03	0.80	-0.05	0.07
Age of the household head	0.00	0.01	0.54	-0.01	0.02
Household total labour units	0.03	0.04	0.54	-0.06	0.12
Household dependency ratio	0.04	0.04	0.29	-0.04	0.13
Household diversification	0.08	0.04	0.03	0.01	0.16
Household livestock assets	-0.04	0.02	0.00	-0.07	-0.01
Household productive assets	0.13	0.07	0.08	-0.02	0.27
Household house goods	0.01	0.03	0.83	-0.04	0.06
Household consumable durables	-0.01	0.05	0.81	-0.11	0.09
Household total annual income	0.10	0.08	0.23	-0.06	0.26
PSNP Beneficiaries	-0.26	0.19	0.17	-0.64	0.12
Low price	0.03	0.18	0.87	-0.32	0.38
Goodness-of-fit test					
number of observations	958		Wald chi2(4)	4.08	
Log pseudo-likelihood	-193.20		Pseudo R2	0.128	

Model 47. Impact of illness shocks on livestock selling for non-food

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.18	0.11	0.09	-0.39	0.03
Household head education	0.01	0.03	0.86	-0.05	0.06
Age of the household head	0.00	0.01	0.59	-0.01	0.02
Household total labour units	0.09	0.04	0.01	0.02	0.17
Household dependency ratio	0.15	0.20	0.46	-0.25	0.54
Household diversification	0.09	0.04	0.01	0.02	0.16
Household livestock assets	-0.04	0.01	0.00	-0.07	-0.02
Household productive assets	0.13	0.07	0.06	-0.01	0.26
Household house goods	0.01	0.03	0.85	-0.05	0.06
Household consumable durables	-0.01	0.05	0.82	-0.11	0.09
Household total annual income	0.10	0.09	0.27	-0.08	0.29
PSNP Beneficiaries	-0.26	0.19	0.18	-0.64	0.12
Illness	0.00	0.20	1.00	-0.39	0.39
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	20.56
Log pseudo-likelihood	-193.51			Pseudo R2	0.126

Model 48. Impact of idiosyncratic shocks on livestock selling for non-food

Livestock selling for non-food	Coef.	Robust Std. Err.	P> |z |	[95% Conf. Interval]	
Sex of the household head	-0.18	0.12	0.12	-0.41	0.05
Household head education	0.00	0.03	0.88	-0.05	0.06
Age of the household head	0.00	0.01	0.60	-0.01	0.02
Household total labour units	0.09	0.04	0.01	0.02	0.17
Household dependency ratio	0.15	0.21	0.46	-0.25	0.55
Household diversification	0.09	0.03	0.01	0.02	0.15
Household livestock assets	-0.04	0.01	0.00	-0.07	-0.02
Household productive assets	0.13	0.07	0.06	-0.01	0.26
Household house goods	0.00	0.03	0.87	-0.05	0.06
Household consumable durables	-0.01	0.05	0.82	-0.11	0.09
Household total annual income	0.10	0.10	0.29	-0.09	0.29
PSNP Beneficiaries	-0.26	0.20	0.19	-0.65	0.13
Idiosyncratic	-0.07	0.31	0.82	-0.68	0.54
Goodness-of-fit test					
number of observations	958			Wald chi2(4)	22.97
Log pseudo-likelihood	-193.46			Pseudo R2	0.127

Appendix 2 – Full results of the PSM tests on the impact of PSNP (treatment) on household's food security index for shock-affected and non-shock-affected households –cf Fig.4.2

Results of the similar series of models estimated for the wellbeing index are available from the authors

Model 1a testing effect of PSNP on food security index for drought-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        130       23.90       23.90
          1 |        414       76.10      100.00
------------+-----------------------------------
      Total |        544      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -298.59307
Iteration 1:   log likelihood =  -284.1006
Iteration 2:   log likelihood = -283.66942
Iteration 3:   log likelihood = -283.66804

Probit regression                                 Number of obs   =        542
                                                  LR chi2(9)      =      29.85
                                                  Prob > chi2     =     0.0005
Log likelihood = -283.66804                       Pseudo R2       =     0.0500

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Kebele |   .0357751    .016502     2.17   0.030     .0034318    .0681185
     SexHead |  -.3459635   .1782271    -1.94   0.052    -.6952822    .0033553
   EducLevel |  -.0289391   .0331724    -0.87   0.383    -.0939558    .0360777
     Age2008 |   .0081636   .0045365     1.80   0.072    -.0007278     .017055
 HHLaborUnit |   .0119209   .1018115     0.12   0.907    -.1876261    .2114679
HHDependRa~o |  -.1348996   .3344051    -0.40   0.687    -.7903216    .5205223
      HHSize |  -.0520729   .0557211    -0.93   0.350    -.1612843    .0571385
LogAn_I~2008 |   .1031904   .0504913     2.04   0.041     .0042292    .2021515
LogTotA~2008 |  -.1247747   .0489634    -2.55   0.011    -.2207411   -.0288082
       _cons |   .9819631   .6505653     1.51   0.131    -.2931215    2.257048
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .5420186         .49577
 5%     .6107413       .5089376
10%     .6407342       .5264966       Obs                 542
25%      .695697       .5416664       Sum of Wgt.         542
50%     .7518423                      Mean           .7600114
                        Largest       Std. Dev.      .0952125
75%     .8241339       .9870808
```

90%	.8966071	.9873354	Variance	.0090654
95%	.921978	.98776	Skewness	.1445174
99%	.9794583	.9922133	Kurtosis	2.732102

****
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
****

The final number of blocks is 6

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

****
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
****

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

Inferior of block of pscore	PSNP recipients in the last 12 months 0	1	Total
0	0	2	2
.4	7	11	18
.6	49	76	125
.7	53	181	234
.8	21	144	165
Total	130	414	544

****
End of the algorithm to estimate the pscore
****

****
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****

Note: the common support option has been selected
The region of common support is [.49577, .99221328]

The outcome is FoodIndexwithout

Variable	Obs	Mean	Std. Dev.	Min	Max
FoodIndexw~t	508	.408864	.1861764	0	.8768116

The treatment is PSNPLast12months

PSNP recipients in the last 12 months	Freq.	Percent	Cum.
0	130	23.99	23.99
1	412	76.01	100.00
Total	542	100.00	

The distribution of the pscore is

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .5420186         .49577
 5%     .6107413       .5089376
10%     .6407342       .5264966       Obs                 542
25%      .695697       .5416664       Sum of Wgt.         542
50%     .7518423                      Mean           .7600114
                        Largest       Std. Dev.      .0952125
75%     .8241339       .9870808
90%     .8966071       .9873354       Variance       .0090654
95%      .921978         .98776       Skewness       .1445174
99%     .9794583       .9922133       Kurtosis       2.732102


 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(10 missing values generated)

 ****************************************************
 Backward search

(13 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  412

The number of treated which have been matched is
  412

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       412    .0026465    .0062461   1.72e-06   .0496625

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       398    .4158929    .1888114          0   .8260869

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      92         412     .409908    .196168   .0434783   .8768116


ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      412          92       0.006        0.026      0.226
```

```
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 1b testing effect of PSNP on food security index for drought non-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         98       23.56       23.56
          1 |        318       76.44      100.00
------------+-----------------------------------
      Total |        416      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -227.10592
Iteration 1:   log likelihood = -200.59556
Iteration 2:   log likelihood = -199.80645
Iteration 3:   log likelihood = -199.80227
Iteration 4:   log likelihood = -199.80227

Probit regression                                 Number of obs   =        416
                                                  LR chi2(9)      =      54.61
                                                  Prob > chi2     =     0.0000
Log likelihood = -199.80227                       Pseudo R2       =     0.1202

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Kebele |   .0392678   .0142982     2.75   0.006     .0112438    .0672918
     SexHead |  -.5078397   .1891245    -2.69   0.007    -.8785171   -.1371624
   EducLevel |  -.0858782   .0316286    -2.72   0.007    -.1478692   -.0238873
     Age2008 |   .0079777   .0055506     1.44   0.151    -.0029013    .0188566
 HHLaborUnit |  -.2012901   .1019892    -1.97   0.048    -.4011851    -.001395
HHDependRa~o |  -.3279803   .2604584    -1.26   0.208    -.8384693    .1825088
      HHSize |  -.0063411   .0529027    -0.12   0.905    -.1100285    .0973464
LogAn_I~2008 |   .0938512   .0556701     1.69   0.092    -.0152602    .2029625
LogTotA~2008 |  -.0666586   .0552969    -1.21   0.228    -.1750385    .0417213
       _cons |   1.370992   .5454378     2.51   0.012      .301954    2.440031
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .3304036        .167796
 5%     .4673245       .1994026
10%     .5543408       .2629839       Obs                 416
25%     .6767235       .3117866       Sum of Wgt.         416

50%     .7863526                      Mean           .7633968
                        Largest       Std. Dev.      .1521588
75%     .8766277       .9842279
```

```
90%     .9431939       .9861856       Variance       .0231523
95%     .9667953       .9861959       Skewness      -.8941123
99%     .9839006       .9881468       Kurtosis       3.743204

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         2          0 |         2
        .2 |         7          2 |         9
        .4 |        25         26 |        51
        .6 |        40        122 |       162
        .8 |        24        168 |       192
-----------+----------------------+----------
     Total |        98        318 |       416

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.31178663, .9881468]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       341    .4985125    .1838772          0          1

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         95       23.00       23.00
          1 |        318       77.00      100.00
------------+-----------------------------------
      Total |        413      100.00

 The distribution of the pscore is
```

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .3756441       .3117866
 5%     .4934484       .3304036
10%     .5673134       .3494598       Obs                 413
25%     .6795929       .3635319       Sum of Wgt.         413
50%     .7869397                      Mean           .7674162
                        Largest       Std. Dev.      .1451338
75%     .8791142       .9842279
90%     .9431939       .9861856       Variance       .0210638
95%     .9667953       .9861959       Skewness      -.7108763
99%     .9839006       .9881468       Kurtosis       3.040714

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(11 missing values generated)

 ****************************************************
 Backward search

(12 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  318

The number of treated which have been matched is
  318

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       318    .0038031     .004403   .0000123   .0376732

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       269    .5015624    .1840974          0          1

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      50  318.000005    .4556868   .2031128          0   .7391304


ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      318          50       0.046        0.038      1.215
---------------------------------------------------------
```

```
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

******************************************************************************
End of the estimation with the nearest neigbor matching (random draw) method
******************************************************************************
```

Model 2a testing effect of PSNP on food security index for flood-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         43       24.86       24.86
          1 |        130       75.14      100.00
------------+-----------------------------------
      Total |        173      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -96.721645
Iteration 1:   log likelihood = -75.389539
Iteration 2:   log likelihood = -74.250107
Iteration 3:   log likelihood = -74.219855
Iteration 4:   log likelihood =  -74.21981

Probit regression                                 Number of obs   =        172
                                                  LR chi2(12)     =      45.00
                                                  Prob > chi2     =     0.0000
Log likelihood =  -74.21981                       Pseudo R2       =     0.2326

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |  -.0340323   .0768892    -0.44   0.658    -.1847323    .1166677
        Zone |  -.0547674   .0322831    -1.70   0.090    -.1180411    .0085063
      Kebele |   .0337113   .0323358     1.04   0.297    -.0296658    .0970884
     SexHead |  -.4820314   .3413762    -1.41   0.158    -1.151116    .1870536
   EducLevel |  -.1375983   .0742571    -1.85   0.064    -.2831395    .0079429
     Age2008 |   .0128166   .0087174     1.47   0.141    -.0042692    .0299025
 HHLaborUnit |  -.0713456   .1810579    -0.39   0.694    -.4262126    .2835214
HHDependRa~o |   -.202326    .650797    -0.31   0.756    -1.477865    1.073213
      HHSize |  -.0698224   .0902799    -0.77   0.439    -.2467677    .1071229
diversif2008 |   .1845453   .0851171     2.17   0.030     .0177188    .3513717
LogAn_I~2008 |   .1765367   .1711253     1.03   0.302    -.1588628    .5119362
LogTotA~2008 |  -.1664221   .1304938    -1.28   0.202    -.4221852    .0893409
       _cons |   .5978645   1.620787     0.37   0.712    -2.578819    3.774548
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2099278       .1797776
 5%     .3360916       .2099278
10%      .415532       .2296022       Obs                 172
25%     .6074306       .2303386       Sum of Wgt.         172
50%     .8234609                      Mean           .7506783
                        Largest       Std. Dev.      .2172482
```

```
75%     .9329638       .9949946
90%     .9788058       .9951728       Variance       .0471968
95%     .9876422       .9959092       Skewness      -.8156671
99%     .9959092       .9971189       Kurtosis       2.576153

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 6

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         1          1 |         2
        .2 |        10          5 |        15
        .4 |        14         12 |        26
        .6 |         8         11 |        19
        .7 |         1         18 |        19
        .8 |         9         83 |        92
-----------+----------------------+----------
     Total |        43        130 |       173

*******************************************
End of the algorithm to estimate the pscore
*******************************************
****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.20992781, .99711887]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       153    .4386189    .1740581          0   .7826087

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         42       24.56       24.56
          1 |        129       75.44      100.00
------------+-----------------------------------
      Total |        171      100.00

 The distribution of the pscore is
```

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2296022       .2099278
 5%     .3366373       .2296022
10%     .4189403       .2303386       Obs                 171
25%     .6141957       .2626626       Sum of Wgt.         171
50%     .8246304                      Mean           .7540169
                        Largest       Std. Dev.      .2134151
75%     .9336659       .9949946
90%     .9788058       .9951728       Variance        .045546
95%     .9876422       .9959092       Skewness      -.7996252
99%     .9959092       .9971189       Kurtosis       2.528357

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(4 missing values generated)

 ****************************************************
 Backward search

(3 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  129

The number of treated which have been matched is
  129

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       129    .0201707    .0211617   .0002513   .0663614

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       116    .4678286    .1644389   .0724638   .7826087

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      22  129.000003    .4118471    .1977757   .1086956   .7391304

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      129          22       0.056        0.075      0.749
---------------------------------------------------------
```

```
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
****************************************************************************
```

Model 2b testing effect of PSNP on food security index for flood non-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        185       23.51       23.51
          1 |        602       76.49      100.00
------------+-----------------------------------
      Total |        787      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -428.90666
Iteration 1:   log likelihood = -369.39303
Iteration 2:   log likelihood = -366.95691
Iteration 3:   log likelihood = -366.93457
Iteration 4:   log likelihood = -366.93457

Probit regression                                 Number of obs   =        786
                                                  LR chi2(15)     =     123.94
                                                  Prob > chi2     =     0.0000
Log likelihood = -366.93457                       Pseudo R2       =     0.1445

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |  -.0126132   .0468289    -0.27   0.788    -.1043961    .0791697
        Zone |  -.0787877   .0170834    -4.61   0.000    -.1122706   -.0453048
      Kebele |    .032294   .0159062     2.03   0.042     .0011183    .0634697
     SexHead |  -.3025304   .1504276    -2.01   0.044    -.5973631   -.0076977
   EducLevel |  -.0345069    .026618    -1.30   0.195    -.0866773    .0176635
     Age2008 |   .0074897   .0042465     1.76   0.078    -.0008332    .0158126
 HHLaborUnit |  -.0503293   .0864143    -0.58   0.560    -.2196983    .1190397
HHDependRa~o |  -.1935252   .2443843    -0.79   0.428    -.6725096    .2854593
      HHSize |  -.0349578   .0470186    -0.74   0.457    -.1271126     .057197
diversif2008 |   .1861757   .0376523     4.94   0.000     .1123784    .2599729
LogAn_I~2008 |    .006352   .0428694     0.15   0.882    -.0776705    .0903745
LogLive~2008 |  -.0841834   .0278401    -3.02   0.002     -.138749   -.0296178
LogProd~2008 |  -.0258899   .0321417    -0.81   0.421    -.0888864    .0371067
LogHous~2008 |  -.1807448   .0344211    -5.25   0.000     -.248209   -.1132807
LogDura~2008 |  -.0474628   .0248734    -1.91   0.056    -.0962139    .0012882
       _cons |   1.692322   .5340492     3.17   0.002     .6456045    2.739039
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%      .201644       .0788825
 5%     .4148341       .1098793
```

```
10%      .5440583       .1341702       Obs                 786
25%      .6784879        .144743       Sum of Wgt.         786
50%      .7945096                      Mean           .7639718
                         Largest       Std. Dev.      .1667751
75%      .8852982       .9946649
90%      .9547552       .9947964       Variance       .0278139
95%      .9746821       .9966163       Skewness      -1.142706
99%      .9938005       .9972389       Kurtosis       4.501351

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         6          2 |         8
        .2 |        18          8 |        26
        .4 |        36         33 |        69
        .6 |        89        213 |       302
        .8 |        36        346 |       382
-----------+----------------------+----------
     Total |       185        602 |       787

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.19490911, .99723895]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       695    .4456887    .1938325          0          1

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        179       22.95       22.95
          1 |        601       77.05      100.00
```

```
------------+-----------------------------------
      Total |        780      100.00


 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .3031981       .1949091
 5%     .4343217        .201644
10%     .5584872       .2029252       Obs                 780
25%     .6811821       .2453461       Sum of Wgt.         780

50%     .7958839                      Mean            .768773
                        Largest       Std. Dev.      .1580922
75%     .8871301       .9946649
90%      .955031       .9947964       Variance       .0249932
95%     .9749389       .9966163       Skewness      -.963351
99%     .9938005       .9972389       Kurtosis       3.812613

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(13 missing values generated)

 ****************************************************
 Backward search

(20 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  601

The number of treated which have been matched is
  601

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       601    .0023983    .0028914   1.62e-06   .0150649

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       551    .4467832    .1966166          0          1

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |     109  601.000002    .4534927   .1942359   .0434783   .8768116


ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors
```

```
---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      601         109      -0.007        0.029     -0.229
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 3a testing effect of PSNP on food security index for illness-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         71       28.29       28.29
          1 |        180       71.71      100.00
------------+-----------------------------------
      Total |        251      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -148.83803
Iteration 1:   log likelihood = -123.38991
Iteration 2:   log likelihood = -122.28683
Iteration 3:   log likelihood = -122.27803
Iteration 4:   log likelihood = -122.27803

Probit regression                                 Number of obs   =        249
                                                  LR chi2(12)     =      53.12
                                                  Prob > chi2     =     0.0000
Log likelihood = -122.27803                       Pseudo R2       =     0.1784

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |   .0683318   .0737675     0.93   0.354    -.0762498    .2129134
        Zone |  -.0868036   .0256962    -3.38   0.001    -.1371671   -.0364401
      Kebele |   .0559252   .0313741     1.78   0.075    -.0055669    .1174173
     SexHead |  -.2316897   .2525969    -0.92   0.359    -.7267705    .2633912
   EducLevel |  -.0183748   .0469214    -0.39   0.695    -.1103391    .0735895
     Age2008 |   .0085538   .0071242     1.20   0.230    -.0054093     .022517
 HHLaborUnit |  -.1302245   .1398009    -0.93   0.352    -.4042291    .1437802
HHDependRa~o |  -.2310422   .5379675    -0.43   0.668    -1.285439    .8233548
      HHSize |  -.0718506   .0733653    -0.98   0.327     -.215644    .0719427
diversif2008 |   .1905609   .0639325     2.98   0.003     .0652555    .3158663
LogAn_I~2008 |   .0150401   .0691109     0.22   0.828    -.1204147    .1504949
LogTotA~2008 |  -.1187237   .0718019    -1.65   0.098    -.2594529    .0220055
       _cons |   1.462036   1.107588     1.32   0.187    -.7087968    3.632869
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
```

```
 1%     .1487065       .0569843
 5%     .2895364       .1174579
10%     .4264695       .1487065       Obs                 249
25%     .5965689       .1666705       Sum of Wgt.         249
50%     .7462703                      Mean           .7129154
                        Largest       Std. Dev.      .2027869
75%      .872297       .9893206
90%     .9513983       .9910596       Variance       .0411225
95%     .9709522       .9916923       Skewness      -.8502337
99%     .9910596       .9956466       Kurtosis       3.332728

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         4          2 |         6
        .2 |        12          4 |        16
        .4 |        22         21 |        43
        .6 |        21         65 |        86
        .8 |        12         88 |       100
-----------+----------------------+----------
     Total |        71        180 |       251

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.2370217, .99564662]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       226    .4498204    .1865393          0          1

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
```

```
          0 |         62       25.83       25.83
          1 |        178       74.17      100.00
------------+-----------------------------------
      Total |        240      100.00
```

The distribution of the pscore is

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2615193       .2370217
 5%     .4103258       .2506389
10%     .4914243       .2615193       Obs                 240
25%     .6207474       .2895364       Sum of Wgt.         240

50%      .758298                      Mean           .7332049
                        Largest       Std. Dev.      .1764388
75%      .878041       .9893206
90%     .9515778       .9910596       Variance       .0311306
95%     .9710558       .9916923       Skewness      -.5669816
99%     .9910596       .9956466       Kurtosis       2.671203
```

The program is searching the nearest neighbor of each treated unit.
This operation may take a while.

```
****************************************************
 Forward search

(3 missing values generated)

****************************************************
 Backward search

(2 missing values generated)

****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************
```

The number of treated is
178

The number of treated which have been matched is
178

Average absolute pscore difference between treated and controls

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       178    .0054691    .0047871   .0000295    .028017
```

Average outcome of the matched treated

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       169    .4543993    .1866254          0          1
```

Average outcome of the matched controls

```
    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      43  178.000003    .4250279   .2052285    .076087   .8768116
```

ATT estimation with Nearest Neighbor Matching method

```
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      178          43       0.029        0.041      0.719
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 3b testing effect of PSNP on food security index for illness non-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        157       22.14       22.14
          1 |        552       77.86      100.00
------------+-----------------------------------
      Total |        709      100.00


Estimation of the propensity score

Iteration 0:   log likelihood = -374.86446
Iteration 1:   log likelihood = -324.59299
Iteration 2:   log likelihood = -322.22543
Iteration 3:   log likelihood = -322.19723
Iteration 4:   log likelihood = -322.19722

Probit regression                                 Number of obs   =        709
                                                  LR chi2(14)     =     105.33
                                                  Prob > chi2     =     0.0000
Log likelihood = -322.19722                       Pseudo R2       =     0.1405

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |  -.1718724   .0416074    -4.13   0.000    -.2534215   -.0903234
      Kebele |   .0094434   .0152122     0.62   0.535    -.0203719    .0392586
     SexHead |  -.4602114   .1628056    -2.83   0.005    -.7793045   -.1411182
   EducLevel |  -.0364278   .0292213    -1.25   0.213    -.0937004    .0208449
     Age2008 |    .008304   .0044591     1.86   0.063    -.0004356    .0170437
 HHLaborUnit |   .0029651   .0945557     0.03   0.975    -.1823606    .1882908
HHDependRa~o |  -.1677179   .2490183    -0.67   0.501    -.6557848    .3203491
      HHSize |   .0048165   .0507472     0.09   0.924    -.0946462    .1042793
diversif2008 |   .1421403   .0393343     3.61   0.000     .0650466     .219234
LogAn_I~2008 |   .0436657   .0499239     0.87   0.382    -.0541833    .1415147
LogLive~2008 |  -.0991545   .0321196    -3.09   0.002    -.1621078   -.0362012
LogProd~2008 |  -.0054506   .0347553    -0.16   0.875    -.0735698    .0626685
LogHous~2008 |  -.1776506   .0358897    -4.95   0.000    -.2479931   -.1073081
LogDura~2008 |  -.0604093   .0262247    -2.30   0.021    -.1118088   -.0090099
       _cons |    1.61792    .556782     2.91   0.004     .5266468    2.709192
------------------------------------------------------------------------------
```

```
Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%      .323752       .0419309
 5%      .463544       .0594961
10%     .5617165       .2088432       Obs                 709
25%     .6866211       .2585022       Sum of Wgt.         709

50%     .8043742                      Mean           .7775044
                        Largest       Std. Dev.      .1580072
75%     .8994696        .995498
90%     .9598089       .9956638       Variance       .0249663
95%     .9786425       .9959948       Skewness      -1.006422
99%     .9947227       .9975908       Kurtosis       4.215087

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 7

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks


**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         2          0 |         2
        .2 |        11          1 |        12
        .4 |        44         33 |        77
        .6 |        58        193 |       251
        .8 |        20         69 |        89
       .85 |         9         94 |       103
        .9 |        13        162 |       175
-----------+----------------------+----------
     Total |       157        552 |       709

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.20884325, .99759077]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
```

```
FoodIndexw~t |       617    .4429568    .1918753          0          1

 The treatment is PSNPLast12months

      PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        155       21.92       21.92
          1 |        552       78.08      100.00
------------+-----------------------------------
      Total |        707      100.00

 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%      .361447       .2088432
 5%     .4776476       .2585022
10%     .5647326       .2640865       Obs                 707
25%     .6887938       .2785993       Sum of Wgt.         707
50%     .8045064                      Mean           .7795604
                        Largest       Std. Dev.       .153415
75%     .8996282        .995498
90%     .9598089       .9956638       Variance       .0235362
95%     .9786425       .9959948       Skewness      -.8413408
99%     .9947227       .9975908       Kurtosis       3.370228


 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(17 missing values generated)

 ****************************************************
 Backward search

(17 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  552

The number of treated which have been matched is
  552

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       552    .0033922    .0057528   2.13e-06    .049659

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       498    .4491008    .1932419          0          1
```

Average outcome of the matched controls

Variable	Obs	Weight	Mean	Std. Dev.	Min	Max
FoodIndexw~t	87	551.999992	.4223769	.1778147	.1086956	.8768116

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

n. treat.	n. contr.	ATT	Std. Err.	t
552	87	0.027	0.033	0.801

Note: the numbers of treated and controls refer to actual
nearest neighbour matches

****
End of the estimation with the nearest neighbor matching (random draw) method
****

Model 4a testing effect of PSNP on food security index for loss of crop -affected households

****
Algorithm to estimate the propensity score
****

The treatment is PSNPLast12months

PSNP recipients in the last 12 months	Freq.	Percent	Cum.
0	43	24.86	24.86
1	130	75.14	100.00
Total	173	100.00	

Estimation of the propensity score

```
Iteration 0:   log likelihood = -96.721645
Iteration 1:   log likelihood = -75.389539
Iteration 2:   log likelihood = -74.250107
Iteration 3:   log likelihood = -74.219855
Iteration 4:   log likelihood =  -74.21981

Probit regression                                 Number of obs   =        172
                                                  LR chi2(12)     =      45.00
                                                  Prob > chi2     =     0.0000
Log likelihood =  -74.21981                       Pseudo R2       =     0.2326
```

PSNPLast12~s	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Region	-.0340323	.0768892	-0.44	0.658	-.1847323	.1166677
Zone	-.0547674	.0322831	-1.70	0.090	-.1180411	.0085063
Kebele	.0337113	.0323358	1.04	0.297	-.0296658	.0970884
SexHead	-.4820314	.3413762	-1.41	0.158	-1.151116	.1870536
EducLevel	-.1375983	.0742571	-1.85	0.064	-.2831395	.0079429
Age2008	.0128166	.0087174	1.47	0.141	-.0042692	.0299025
HHLaborUnit	-.0713456	.1810579	-0.39	0.694	-.4262126	.2835214
HHDependRa~o	-.202326	.650797	-0.31	0.756	-1.477865	1.073213

```
      HHSize |  -.0698224   .0902799    -0.77   0.439    -.2467677    .1071229
diversif2008 |   .1845453   .0851171     2.17   0.030     .0177188    .3513717
LogAn_I~2008 |   .1765367   .1711253     1.03   0.302    -.1588628    .5119362
LogTotA~2008 |  -.1664221   .1304938    -1.28   0.202    -.4221852    .0893409
       _cons |   .5978645   1.620787     0.37   0.712    -2.578819    3.774548
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2099278       .1797776
 5%     .3360916       .2099278
10%      .415532       .2296022       Obs                 172
25%     .6074306       .2303386       Sum of Wgt.         172
50%     .8234609                      Mean           .7506783
                        Largest       Std. Dev.      .2172482
75%     .9329638       .9949946
90%     .9788058       .9951728       Variance       .0471968
95%     .9876422       .9959092       Skewness      -.8156671
99%     .9959092       .9971189       Kurtosis       2.576153

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 6

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         1          1 |         2
        .2 |        10          5 |        15
        .4 |        14         12 |        26
        .6 |         8         11 |        19
        .7 |         1         18 |        19
        .8 |         9         83 |        92
-----------+----------------------+----------
     Total |        43        130 |       173

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.20992781, .99711887]
```

The outcome is FoodIndexwithout

Variable	Obs	Mean	Std. Dev.	Min	Max
FoodIndexw~t	153	.4386189	.1740581	0	.7826087

The treatment is PSNPLast12months

PSNP recipients in the last 12 months	Freq.	Percent	Cum.
0	42	24.56	24.56
1	129	75.44	100.00
Total	171	100.00	

The distribution of the pscore is

Estimated propensity score

	Percentiles	Smallest		
1%	.2296022	.2099278		
5%	.3366373	.2296022		
10%	.4189403	.2303386	Obs	171
25%	.6141957	.2626626	Sum of Wgt.	171
50%	.8246304		Mean	.7540169
		Largest	Std. Dev.	.2134151
75%	.9336659	.9949946		
90%	.9788058	.9951728	Variance	.045546
95%	.9876422	.9959092	Skewness	-.7996252
99%	.9959092	.9971189	Kurtosis	2.528357

The program is searching the nearest neighbor of each treated unit.
This operation may take a while.

****
Forward search

(4 missing values generated)

****
Backward search

(3 missing values generated)

****
Choice between backward or forward match

****
Display of final results
****

The number of treated is
129

The number of treated which have been matched is
129

Average absolute pscore difference between treated and controls

Variable	Obs	Mean	Std. Dev.	Min	Max
PSDIF	129	.0201707	.0211617	.0002513	.0663614

Average outcome of the matched treated

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       116    .4678286    .1644389   .0724638   .7826087

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-------------------------------------------------------------------
FoodIndexw~t |      22  129.000003    .4118471   .1977757   .1086956   .7391304

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      129          22       0.056        0.075      0.749
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 4b testing effect of PSNP on food security index for loss of crop non-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        137       22.35       22.35
          1 |        476       77.65      100.00
------------+-----------------------------------
      Total |        613      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -325.42824
Iteration 1:   log likelihood = -277.01501
Iteration 2:   log likelihood = -275.35639
Iteration 3:   log likelihood = -275.34517
Iteration 4:   log likelihood = -275.34517

Probit regression                                 Number of obs   =        612
                                                  LR chi2(12)     =     100.17
                                                  Prob > chi2     =     0.0000
Log likelihood = -275.34517                       Pseudo R2       =     0.1539

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Kebele |   .0382291   .0134839     2.84   0.005     .0118011    .0646571
     SexHead |  -.5945222   .1651547    -3.60   0.000    -.9182195    -.270825
   EducLevel |  -.0396433    .029639    -1.34   0.181    -.0977347    .0184481
     Age2008 |    .009838   .0045159     2.18   0.029      .000987    .0186889
HHDependRa~o |  -.0254968   .1875692    -0.14   0.892    -.3931256    .3421319
      HHSize |   -.094161   .0245458    -3.84   0.000    -.1422698   -.0460522
```

```
diversif2008 |   .1768115   .0385586     4.59   0.000     .1012382    .2523849
LogAn_I~2008 |   .0218188   .0450478     0.48   0.628    -.0664733     .110111
LogLive~2008 |   -.037116   .0293626    -1.26   0.206    -.0946657    .0204337
LogProd~2008 |   .0153222   .0370302     0.41   0.679    -.0572557    .0879001
LogHous~2008 |  -.1365052   .0344328    -3.96   0.000    -.2039923   -.0690182
LogDura~2008 |  -.0406863   .0248663    -1.64   0.102    -.0894234    .0080508
       _cons |   .5013908   .4472344     1.12   0.262    -.3751725    1.377954
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2766524       .0835791
 5%     .4405983       .1890498
10%     .5310113       .1975619       Obs                 612
25%      .682133       .2010157       Sum of Wgt.         612

50%     .8110862                      Mean           .7745021
                        Largest       Std. Dev.      .1672574
75%     .9070088       .9918424
90%      .956984       .9930664       Variance        .027975
95%     .9726204        .993392       Skewness      -1.045303
99%     .9891241       .9947749       Kurtosis       3.848141

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         2          2 |         4
        .2 |        13          2 |        15
        .4 |        44         31 |        75
        .6 |        42        155 |       197
        .8 |        36        286 |       322
-----------+----------------------+----------
     Total |       137        476 |       613

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.19756195, .99477488]
```

```
 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       533    .4662629    .1942874          0          1


 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        135       22.13       22.13
          1 |        475       77.87      100.00
------------+-----------------------------------
      Total |        610      100.00

 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .3060373       .1975619
 5%     .4534008       .2010157
10%     .5331278       .2323786       Obs                 610
25%     .6855509       .2498209       Sum of Wgt.         610
50%     .8125829                      Mean           .7765945
                        Largest       Std. Dev.      .1634498
75%      .907063       .9918424
90%     .9572968       .9930664       Variance       .0267158
95%     .9726204        .993392       Skewness      -.9625404
99%     .9891241       .9947749       Kurtosis       3.485798

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(14 missing values generated)

 ****************************************************
 Backward search

(14 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  475

The number of treated which have been matched is
  475

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       475    .0030719    .0031532   2.59e-06   .0202652
```

Average outcome of the matched treated

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       432    .4700751    .1946553          0          1
```

Average outcome of the matched controls

```
    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+------------------------------------------------------------------
FoodIndexw~t |      66         475    .4315942   .2020652          0   .8768116
```

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

```
---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      475          66       0.038        0.036      1.077
---------------------------------------------------------
```

Note: the numbers of treated and controls refer to actual
nearest neighbour matches

```
*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 5a testing effect of PSNP on food security index for high price-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************
```

The treatment is PSNPLast12months

```
       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         43       20.28       20.28
          1 |        169       79.72      100.00
------------+-----------------------------------
      Total |        212      100.00
```

Estimation of the propensity score

```
Iteration 0:   log likelihood = -106.45601
Iteration 1:   log likelihood = -91.090731
Iteration 2:   log likelihood = -89.801826
Iteration 3:   log likelihood = -89.722101
Iteration 4:   log likelihood = -89.721215
Iteration 5:   log likelihood = -89.721215

Probit regression                                 Number of obs   =        210
                                                  LR chi2(16)     =      33.47
                                                  Prob > chi2     =     0.0064
Log likelihood = -89.721215                       Pseudo R2       =     0.1572

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |  -.1092146   .0836266    -1.31   0.192    -.2731198    .0546905
```

```
        Zone |  -.0542842   .0417502    -1.30   0.194    -.1361131    .0275447
      Wereda |   1.049102   .6055418     1.73   0.083     -.137738    2.235942
      Kebele |  -.4525506   .3019626    -1.50   0.134    -1.044386    .1392853
     SexHead |  -.2322857    .333135    -0.70   0.486    -.8852183    .4206469
   EducLevel |  -.0934053   .0643927    -1.45   0.147    -.2196126     .032802
     Age2008 |   .0087158   .0082506     1.06   0.291    -.0074551    .0248866
 HHLaborUnit |   .1505669   .2163865     0.70   0.487    -.2735427    .5746766
HHDependRa~o |   .0899592   .9439734     0.10   0.924    -1.760195    1.940113
      HHSize |  -.0877467   .1090971    -0.80   0.421    -.3015731    .1260797
diversif2008 |   .2374566   .1022262     2.32   0.020     .0370969    .4378164
LogAn_I~2008 |   .0663819    .143509     0.46   0.644    -.2148906    .3476544
LogLive~2008 |  -.2060275    .099568    -2.07   0.039    -.4011771   -.0108778
LogProd~2008 |  -.1030553   .0921186    -1.12   0.263    -.2836044    .0774937
LogHous~2008 |  -.3459653   .1092112    -3.17   0.002    -.5600154   -.1319153
LogDura~2008 |   .0584912   .0585984     1.00   0.318    -.0563597     .173342
       _cons |    1.24588     1.7979     0.69   0.488    -2.277938    4.769699
------------------------------------------------------------------------------
```

Description of the estimated propensity score

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2564624       .1234619
 5%     .4974507       .2063554
10%     .6002655       .2564624       Obs                 210
25%     .6967263       .3517482       Sum of Wgt.         210

50%     .8218599                      Mean           .7946004
                        Largest       Std. Dev.      .1596268
75%     .9196702       .9988642
90%     .9743058        .999164       Variance       .0254807
95%     .9936179       .9995312       Skewness      -1.136676
99%      .999164        .999757       Kurtosis       4.877231
```

```
******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************
```

The final number of blocks is 5

This number of blocks ensures that the mean propensity score is not different for treated and controls in each blocks

```
**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************
```

The balancing property is satisfied

This table shows the inferior bound, the number of treated and the number of controls for each block

```
  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         1          2 |         3 
        .2 |         4          0 |         4 
        .4 |         6          9 |        15 
        .6 |        24         54 |        78 
        .8 |         8        104 |       112 
-----------+----------------------+----------
     Total |        43        169 |       212 
```

```
*******************************************
```

```
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.407584, .99975703]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       196    .4010278    .1640108          0   .7608696

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         38       18.54       18.54
          1 |        167       81.46      100.00
------------+-----------------------------------
      Total |        205      100.00

 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .4471899       .407584
 5%     .5617216      .4297463
10%     .6162611      .4471899       Obs                 205
25%     .7013468      .4824509       Sum of Wgt.         205

50%      .823496                     Mean           .8076502
                        Largest      Std. Dev.      .1368287
75%     .9198519      .9988642
90%     .9743346       .999164       Variance       .0187221
95%     .9936179      .9995312       Skewness      -.5432198
99%      .999164       .999757       Kurtosis       2.653953

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 *****************************************************
 Forward search

(3 missing values generated)

 *****************************************************
 Backward search

(5 missing values generated)

 *****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  167
```

```
The number of treated which have been matched is
  167

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       167    .0087331    .0097179   .0000432   .0442442

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       163    .4125989    .1624424          0   .7608696

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      27  166.999998    .4595148   .1766402    .076087   .6521739

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      167          27      -0.047        0.058     -0.815
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 5b testing effect of PSNP on food security index for high price non-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        185       24.73       24.73
          1 |        563       75.27      100.00
------------+-----------------------------------
      Total |        748      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -418.41517
Iteration 1:   log likelihood = -355.27044
Iteration 2:   log likelihood = -352.72598
Iteration 3:   log likelihood = -352.70247
Iteration 4:   log likelihood = -352.70247

Probit regression                                 Number of obs   =        748
                                                  LR chi2(15)     =     131.43
                                                  Prob > chi2     =     0.0000
```

Log likelihood = -352.70247 Pseudo R2 = 0.1571

PSNPLast12~s	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Region	-.1873263	.037461	-5.00	0.000	-.2607486	-.1139041
Wereda	.0721684	.2353371	0.31	0.759	-.3890837	.5334206
Kebele	-.0341381	.1171423	-0.29	0.771	-.2637328	.1954566
SexHead	-.45801	.1527765	-3.00	0.003	-.7574464	-.1585735
EducLevel	-.0096074	.0270093	-0.36	0.722	-.0625446	.0433298
Age2008	.0125639	.0043096	2.92	0.004	.0041171	.0210106
HHLaborUnit	-.0896714	.0869118	-1.03	0.302	-.2600155	.0806726
HHDependRa~o	-.2727614	.234241	-1.16	0.244	-.7318653	.1863425
HHSize	-.002326	.0477815	-0.05	0.961	-.095976	.091324
diversif2008	.1463267	.0364671	4.01	0.000	.0748526	.2178008
LogAn_I~2008	.0347005	.0430823	0.81	0.421	-.0497393	.1191403
LogLive~2008	-.0679224	.0274113	-2.48	0.013	-.1216475	-.0141973
LogProd~2008	-.0163806	.032801	-0.50	0.618	-.0806694	.0479081
LogHous~2008	-.1512029	.0330288	-4.58	0.000	-.2159381	-.0864677
LogDura~2008	-.0515557	.0244458	-2.11	0.035	-.0994686	-.0036428
_cons	1.660062	.526031	3.16	0.002	.6290603	2.691064

Description of the estimated propensity score

Estimated propensity score

	Percentiles	Smallest		
1%	.2460265	.0371264		
5%	.4141038	.0793711		
10%	.4872403	.0828046	Obs	748
25%	.6526002	.1650082	Sum of Wgt.	748
50%	.7853233		Mean	.7521747
		Largest	Std. Dev.	.1774452
75%	.888401	.9939293		
90%	.9563268	.994582	Variance	.0314868
95%	.9728026	.9958478	Skewness	-.9528757
99%	.9909214	.9969521	Kurtosis	3.704178

****
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
****

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

****
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
****

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

Inferior of block of pscore	PSNP recipients in the last 12 months 0	1	Total
0	4	1	5
.2	21	5	26
.4	53	51	104
.6	72	189	261

```
        .8 |        35        317 |       352
-----------+----------------------+----------
     Total |       185        563 |       748

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.0828046, .99695205]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       651    .4576126    .1955863          0          1

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        183       24.53       24.53
          1 |        563       75.47      100.00
------------+-----------------------------------
      Total |        746      100.00


 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2564929       .0828046
 5%     .4153708       .1650082
10%     .4907398       .1785988       Obs                 746
25%     .6536785       .2181545       Sum of Wgt.         746
50%      .785483                      Mean           .7540351
                        Largest       Std. Dev.      .1739941
75%     .8885151       .9939293
90%     .9563268        .994582       Variance       .0302739
95%     .9728026       .9958478       Skewness      -.8746356
99%     .9909214       .9969521       Kurtosis       3.370557

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(13 missing values generated)

 ****************************************************
 Backward search

(15 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
```

```
Display of final results
****************************************************

The number of treated is
  563

The number of treated which have been matched is
  563

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       563    .0033782     .006057   7.08e-07   .0822036

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       504    .4626826    .1985548          0          1

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |     108  562.999998    .4106648   .2068274          0   .8768116


ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      563         108       0.052        0.036      1.440
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 6a testing effect of PSNP on food security index for loss of livestock-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         56       29.02       29.02
          1 |        137       70.98      100.00
------------+-----------------------------------
      Total |        193      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -115.55243
Iteration 1:   log likelihood = -94.897646
```

```
Iteration 2:   log likelihood = -92.854079
Iteration 3:   log likelihood = -92.778877
Iteration 4:   log likelihood = -92.778748

Probit regression                                 Number of obs   =        191
                                                  LR chi2(16)     =      45.55
                                                  Prob > chi2     =     0.0001
Log likelihood = -92.778748                       Pseudo R2       =     0.1971

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |   .1994051   .1443806     1.38   0.167    -.0835758    .4823859
        Zone |  -.1711851   .0488892    -3.50   0.000    -.2670061   -.0753641
      Wereda |   .9244267   .5786285     1.60   0.110    -.2096644    2.058518
      Kebele |  -.3377609   .2757186    -1.23   0.221    -.8781595    .2026376
     SexHead |   .0909804   .3625123     0.25   0.802    -.6195307    .8014915
   EducLevel |  -.0566333   .0597358    -0.95   0.343    -.1737133    .0604466
     Age2008 |   .0084791   .0088015     0.96   0.335    -.0087715    .0257298
 HHLaborUnit |   .0228363     .20429     0.11   0.911    -.3775647    .4232373
HHDependRa~o |  -.3687336   .6864159    -0.54   0.591    -1.714084    .9766169
      HHSize |  -.1300549   .1170467    -1.11   0.267    -.3594623    .0993525
diversif2008 |   .3604363   .0970603     3.71   0.000     .1702016    .5506709
LogAn_I~2008 |  -.1324614   .1074992    -1.23   0.218     -.343156    .0782332
LogLive~2008 |  -.1331146   .0871486    -1.53   0.127    -.3039227    .0376936
LogProd~2008 |  -.0894854   .0797624    -1.12   0.262    -.2458169    .0668461
LogHous~2008 |  -.2116885   .0986493    -2.15   0.032    -.4050375   -.0183394
LogDura~2008 |   .0427251   .0644829     0.66   0.508    -.0836592    .1691093
       _cons |   1.474072   1.684667     0.87   0.382    -1.827814    4.775958
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0197522       .0110718
 5%     .3001843       .0197522
10%     .4086895        .095534       Obs                 191
25%     .5680835       .1174594       Sum of Wgt.         191
50%     .7333332                      Mean           .7081456
                        Largest       Std. Dev.      .2138672
75%     .8733623        .999549
90%     .9670744       .9995882       Variance       .0457392
95%     .9886862        .999635       Skewness      -.9424095
99%      .999635       .9997643       Kurtosis       3.781068

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 6

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
```

```
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         6          4 |        10
        .2 |         7          2 |         9
        .4 |        16         16 |        32
        .6 |        21         53 |        74
        .8 |         5         23 |        28
        .9 |         1         39 |        40
-----------+----------------------+----------
     Total |        56        137 |       193

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.11745944, .9997643]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       176     .409585    .1717187   .0724638   .7608696

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         53       28.19       28.19
          1 |        135       71.81      100.00
------------+-----------------------------------
      Total |        188      100.00

 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .1484307       .1174594
 5%     .3498937       .1484307
10%     .4542968       .1511034       Obs                 188
25%     .6066669       .1760424       Sum of Wgt.         188

50%     .7364942                      Mean           .7187737
                        Largest       Std. Dev.      .1980401
75%     .8763796        .999549
90%     .9671865       .9995882       Variance       .0392199
95%     .9886862        .999635       Skewness      -.7498338
99%      .999635       .9997643       Kurtosis       3.267109

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(1 missing value generated)

 ****************************************************
 Backward search
```

```
(3 missing values generated)

 **************************************************
 Choice between backward or forward match

**************************************************
Display of final results
**************************************************
The number of treated is
  135

The number of treated which have been matched is
  135

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       135    .0163738    .0209076   .0000224   .0752344

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       126    .4123246    .1793481   .0724638   .7608696

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      31         135    .4258454   .1885284   .1268116   .7608696

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      135          31      -0.014        0.040     -0.337
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 6b testing effect of PSNP on food security index for loss of livestock non-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        172       22.43       22.43
          1 |        595       77.57      100.00
------------+-----------------------------------
      Total |        767      100.00
```

Estimation of the propensity score

```
Iteration 0:   log likelihood = -408.22429
Iteration 1:   log likelihood = -348.31176
Iteration 2:   log likelihood = -345.69664
Iteration 3:   log likelihood = -345.66843
Iteration 4:   log likelihood = -345.66843

Probit regression                                 Number of obs   =        767
                                                  LR chi2(14)     =     125.11
                                                  Prob > chi2     =     0.0000
Log likelihood = -345.66843                       Pseudo R2       =     0.1532

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        Zone |  -.0693206   .0132299    -5.24   0.000    -.0952508   -.0433904
      Wereda |   .0178721   .2299849     0.08   0.938    -.4328901    .4686342
      Kebele |   .0322175   .1152304     0.28   0.780    -.1936299    .2580649
     SexHead |  -.4616711   .1512871    -3.05   0.002    -.7581885   -.1651538
   EducLevel |  -.0345333   .0278269    -1.24   0.215     -.089073    .0200064
     Age2008 |   .0111188   .0041929     2.65   0.008     .0029009    .0193368
 HHLaborUnit |  -.0781066    .083971    -0.93   0.352    -.2426868    .0864735
HHDependRa~o |  -.1833552     .24368    -0.75   0.452    -.6609592    .2942489
      HHSize |  -.0420901   .0434942    -0.97   0.333    -.1273372     .043157
diversif2008 |   .1600119   .0359499     4.45   0.000     .0895514    .2304723
LogAn_I~2008 |   .0388219   .0441074     0.88   0.379    -.0476271    .1252709
LogLive~2008 |   -.063452   .0278084    -2.28   0.023    -.1179555   -.0089486
LogProd~2008 |  -.0370469   .0337119    -1.10   0.272    -.1031211    .0290272
LogHous~2008 |  -.1953685   .0328907    -5.94   0.000    -.2598331   -.1309038
       _cons |   1.231857   .4944075     2.49   0.013     .2628361    2.200878
------------------------------------------------------------------------------
```

Description of the estimated propensity score

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2378058       .0813542
 5%     .4337173       .1344359
10%     .5624985       .1556408       Obs                 767
25%      .676792       .1684833       Sum of Wgt.         767

50%      .800598                      Mean           .7749948
                        Largest       Std. Dev.      .1665472
75%     .9032497       .9964398
90%     .9619401       .9970534       Variance        .027738
95%     .9772408        .997325       Skewness      -1.107715
99%     .9941482       .9976898       Kurtosis       4.355447
```

```
******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************
```

The final number of blocks is 6

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

```
**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************
```

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

Inferior of block of pscore	PSNP recipients in the last 12 months 0	1	Total
0	6	1	7
.2	15	5	20
.4	42	36	78
.6	71	204	275
.8	23	162	185
.9	15	187	202
Total	172	595	767

****
End of the algorithm to estimate the pscore
****

****
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****

Note: the common support option has been selected
The region of common support is [.13443593, .99768981]

The outcome is FoodIndexwithout

Variable	Obs	Mean	Std. Dev.	Min	Max
FoodIndexw~t	673	.4537222	.1937495	0	1

The treatment is PSNPLast12months

PSNP recipients in the last 12 months	Freq.	Percent	Cum.
0	171	22.32	22.32
1	595	77.68	100.00
Total	766	100.00	

The distribution of the pscore is

Estimated propensity score

	Percentiles	Smallest		
1%	.2380266	.1344359		
5%	.4342417	.1556408		
10%	.5633891	.1684833	Obs	766
25%	.6770047	.1834107	Sum of Wgt.	766
50%	.8006075		Mean	.7759004
		Largest	Std. Dev.	.1647557
75%	.9032497	.9964398		
90%	.9619401	.9970534	Variance	.0271445
95%	.9772408	.997325	Skewness	-1.064626
99%	.9941482	.9976898	Kurtosis	4.165954

The program is searching the nearest neighbor of each treated unit.
This operation may take a while.

****
Forward search

```
(13 missing values generated)

 ****************************************************
 Backward search

(17 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  595

The number of treated which have been matched is
  595

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       595    .0030724    .0038718   1.21e-06   .0241485

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       541    .4593212    .1932546          0          1

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      91  594.999999    .4078527    .187248          0   .7391304

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      595          91       0.051        0.037      1.393
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 7a testing effect of PSNP on food security index for idiosyncratic shock-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
```

```
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         82       26.45       26.45
          1 |        228       73.55      100.00
------------+-----------------------------------
      Total |        310      100.00
```

Estimation of the propensity score

```
Iteration 0:   log likelihood = -178.47885
Iteration 1:   log likelihood = -148.32042
Iteration 2:   log likelihood = -147.04582
Iteration 3:   log likelihood = -147.03283
Iteration 4:   log likelihood = -147.03283

Probit regression                                 Number of obs   =        308
                                                  LR chi2(16)     =      62.89
                                                  Prob > chi2     =     0.0000
Log likelihood = -147.03283                       Pseudo R2       =     0.1762

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |    .096891   .0710692     1.36   0.173    -.0424021    .2361841
        Zone |   -.088101   .0248174    -3.55   0.000    -.1367422   -.0394598
      Wereda |   .0368192   .3597806     0.10   0.918    -.6683377    .7419762
      Kebele |    .034432   .1823781     0.19   0.850    -.3230226    .3918866
     SexHead |  -.4594122   .2346459    -1.96   0.050    -.9193098    .0004853
   EducLevel |    -.01249   .0444623    -0.28   0.779    -.0996345    .0746545
     Age2008 |   .0118562   .0064496     1.84   0.066    -.0007847    .0244972
 HHLaborUnit |  -.1749492   .1305051    -1.34   0.180    -.4307344    .0808361
HHDependRa~o |  -.1914565   .4886573    -0.39   0.695    -1.149207    .7662941
      HHSize |  -.0528486   .0679691    -0.78   0.437    -.1860656    .0803683
diversif2008 |   .1691625   .0606495     2.79   0.005     .0502917    .2880333
LogAn_I~2008 |   .0083716    .063338     0.13   0.895    -.1157686    .1325117
LogLive~2008 |  -.0433868   .0425869    -1.02   0.308    -.1268556    .0400821
LogProd~2008 |    .033566   .0589647     0.57   0.569    -.0820026    .1491347
LogHous~2008 |  -.2113965   .0587881    -3.60   0.000     -.326619    -.096174
LogDura~2008 |     .03106   .0387611     0.80   0.423    -.0449103    .1070304
       _cons |   .9064296   .8938227     1.01   0.311    -.8454307     2.65829
------------------------------------------------------------------------------
```

Description of the estimated propensity score

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .1776546       .0989793
 5%      .317286       .1494028
10%     .4811779       .1616736       Obs                 308
25%     .6187514       .1776546       Sum of Wgt.         308

50%     .7596959                      Mean           .7323877
                        Largest       Std. Dev.      .1942435
75%     .8891552       .9904685
90%     .9578736       .9906288       Variance       .0377306
95%     .9772097        .994138       Skewness      -.9274821
99%     .9904685       .9958103       Kurtosis       3.553646
```

```
******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************
```

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

```
**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         5          3 |         8
        .2 |        12          3 |        15
        .4 |        21         20 |        41
        .6 |        31         80 |       111
        .8 |        13        122 |       135
-----------+----------------------+----------
     Total |        82        228 |       310

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.14940283, .99581035]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       283    .4554719    .1826099          0          1


 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         81       26.38       26.38
          1 |        226       73.62      100.00
------------+-----------------------------------
      Total |        307      100.00


 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .1806427       .1494028
 5%     .3201149       .1616736
10%      .484283       .1776546       Obs                 307
25%         .621       .1806427       Sum of Wgt.         307
50%     .7596988                      Mean            .734451
                        Largest       Std. Dev.      .1911503
75%     .8895138       .9904685
90%     .9578736       .9906288       Variance       .0365385
95%     .9772097        .994138       Skewness      -.8897607
```

```
99%     .9904685       .9958103       Kurtosis       3.444207

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(2 missing values generated)

 ****************************************************
 Backward search

(1 missing value generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  226

The number of treated which have been matched is
  226

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       226    .0056831    .0059133   4.50e-07   .0413809


Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       209    .4616531    .1822215          0          1

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      50         226    .4424122   .1988428          0   .8768116

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      226          50       0.019        0.042      0.455
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches


*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 7b testing effect of PSNP on food security index for idiosyncratic shock non-affected households

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        146       22.46       22.46
          1 |        504       77.54      100.00
------------+-----------------------------------
      Total |        650      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -346.24703
Iteration 1:   log likelihood = -305.81575
Iteration 2:   log likelihood = -304.57801
Iteration 3:   log likelihood = -304.57231
Iteration 4:   log likelihood = -304.57231

Probit regression                                 Number of obs   =        650
                                                  LR chi2(14)     =      83.35
                                                  Prob > chi2     =     0.0000
Log likelihood = -304.57231                       Pseudo R2       =     0.1204

------------------------------------------------------------------------------
PSNPLast12~s |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Wereda |   .3394913   .2479484     1.37   0.171    -.1464786    .8254612
      Kebele |  -.1307581   .1223492    -1.07   0.285    -.3705581    .1090419
     SexHead |  -.3848122   .1694153    -2.27   0.023    -.7168602   -.0527643
   EducLevel |  -.0481498   .0298691    -1.61   0.107    -.1066922    .0103927
     Age2008 |   .0089768   .0045545     1.97   0.049     .0000502    .0179034
 HHLaborUnit |   .0109587   .0965468     0.11   0.910    -.1782696     .200187
HHDependRa~o |  -.1751662   .2472581    -0.71   0.479    -.6597832    .3094507
      HHSize |   -.046927   .0518389    -0.91   0.365    -.1485294    .0546754
diversif2008 |   .2147769    .040047     5.36   0.000     .1362862    .2932677
LogAn_I~2008 |    .008013   .0531114     0.15   0.880    -.0960835    .1121095
LogLive~2008 |  -.0884842   .0324524    -2.73   0.006    -.1520897   -.0248786
LogProd~2008 |  -.0159159   .0357482    -0.45   0.656     -.085981    .0541492
LogHous~2008 |  -.1368292   .0360138    -3.80   0.000    -.2074149   -.0662435
LogDura~2008 |   -.032078   .0257665    -1.24   0.213    -.0825795    .0184234
       _cons |   .5907315   .5351339     1.10   0.270    -.4581116    1.639575
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .3276017       .1030902
 5%     .5016802       .1845939
10%     .5787493       .1866339       Obs                 650
25%     .6941525       .1974597       Sum of Wgt.         650
50%      .791578                      Mean           .7740204
                        Largest       Std. Dev.      .1465618
75%     .8839632       .9903349
90%     .9451244       .9921147       Variance       .0214804
95%     .9628529       .9933873       Skewness      -1.017051
99%      .987295         .99475       Kurtosis       4.464871

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
```

```
******************************************************

The final number of blocks is 6

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |  PSNP recipients in
  of block |  the last 12 months
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         3          1 |         4
        .2 |         7          2 |         9
        .4 |        38         25 |        63
        .6 |        30         68 |        98
        .7 |        31        135 |       166
        .8 |        37        273 |       310
-----------+----------------------+----------
     Total |       146        504 |       650

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.18459386, .99475001]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       567    .4388084    .1936984          0          1

 The treatment is PSNPLast12months

       PSNP |
 recipients |
in the last |
  12 months |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        145       22.34       22.34
          1 |        504       77.66      100.00
------------+-----------------------------------
      Total |        649      100.00

 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .3482626       .1845939
 5%     .5066655       .1866339
10%     .5794388       .1974597       Obs                 649
```

```
25%     .6943064       .2874277       Sum of Wgt.         649
50%     .7917602                      Mean           .7750542
                        Largest       Std. Dev.      .1442836
75%     .8839632       .9903349
90%     .9452398       .9921147       Variance       .0208178
95%     .9628529       .9933873       Skewness      -.9338613
99%      .987295         .99475       Kurtosis       4.064773

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(16 missing values generated)
 ****************************************************
 Backward search

(13 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  504

The number of treated which have been matched is
  504

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       504    .0020305    .0021479   1.25e-06   .0156415

Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       458    .4453278    .1955142          0          1

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      80  504.000006    .3852245   .1985876   .0434783   .8768116

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      504          80       0.060        0.029      2.082
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Appendix 3. Full results of the PSM tests on the impact of shocks (treatment) on household food security index for PSNP recipients –cf. Fig. 4.3.

Results of the similar series of models estimated for the wellbeing index are available from the authors

Model 8 testing effect of drought on food security index for PSNP recipients

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is Drought_Shock

  impact of |
 drought on |
     inc or |
  assets OR |
       food |
   sceurity |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        318       43.44       43.44
          1 |        414       56.56      100.00
------------+-----------------------------------
      Total |        732      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -499.92855
Iteration 1:   log likelihood = -479.43632
Iteration 2:   log likelihood = -479.40186
Iteration 3:   log likelihood = -479.40186

Probit regression                                 Number of obs   =        730
                                                  LR chi2(10)     =      41.05
                                                  Prob > chi2     =     0.0000
Log likelihood = -479.40186                       Pseudo R2       =     0.0411

------------------------------------------------------------------------------
Drought_Sh~k |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Wereda |   -.004167   .1916932    -0.02   0.983    -.3798788    .3715447
      Kebele |  -.0101516   .0953748    -0.11   0.915    -.1970828    .1767796
     SexHead |   .2783211   .1147928     2.42   0.015     .0533314    .5033108
   EducLevel |  -.0389237   .0266403    -1.46   0.144    -.0911377    .0132904
     Age2008 |  -.0019296   .0033194    -0.58   0.561    -.0084356    .0045763
 HHLaborUnit |  -.0588839   .0786558    -0.75   0.454    -.2130464    .0952785
HHDependRa~o |   -.132346   .1773758    -0.75   0.456    -.4799963    .2153042
      HHSize |   .1113828   .0428752     2.60   0.009     .0273489    .1954167
LogAn_I~2008 |  -.1064296   .0352883    -3.02   0.003    -.1755934   -.0372658
LogTotA~2008 |    .042354   .0307136     1.38   0.168    -.0178436    .1025516
       _cons |   .4468445   .3823885     1.17   0.243    -.3026233    1.196312
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2713789       .1937162
 5%     .3478593       .2342919
10%     .4026207       .2360497       Obs                 730
25%     .4849624       .2505629       Sum of Wgt.         730
50%     .5856066                      Mean           .5645606
                        Largest       Std. Dev.      .1164552
75%     .6494404       .8090641
90%      .699813       .8194021       Variance       .0135618
95%     .7220783       .8359752       Skewness      -.4594236
```

```
99%     .7941638       .8972845       Kurtosis       2.790175

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

           | impact of drought on
  Inferior | inc or assets OR food
  of block |       sceurity
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |         1          2 |         3
        .2 |        44         24 |        68
        .4 |       172        170 |       342
        .6 |        99        214 |       313
        .8 |         2          4 |         6
-----------+----------------------+----------
     Total |       318        414 |       732


*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.23429186, .89728453]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       666      .45063    .1915451          0          1


 The treatment is Drought_Shock

  impact of |
 drought on |
     inc or |
  assets OR |
       food |
   sceurity |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        317       43.48       43.48
          1 |        412       56.52      100.00
------------+-----------------------------------
      Total |        729      100.00
```

```
 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .2729168       .2342919
 5%     .3482357       .2360497
10%     .4026589       .2505629       Obs                 729
25%     .4852795       .2532109       Sum of Wgt.         729

50%     .5856353                      Mean           .5650693
                        Largest       Std. Dev.      .1157207
75%     .6494404       .8090641
90%     .6998513       .8194021       Variance       .0133913
95%     .7220783       .8359752       Skewness      -.4368296
99%     .7941638       .8972845       Kurtosis       2.728126


 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(19 missing values generated)

 ****************************************************
 Backward search

(15 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  412

The number of treated which have been matched is
  412

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       412    .0011924    .0042066   5.07e-07   .0778824


Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       398    .4158929    .1888114          0   .8260869


Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |     149  411.999996    .5003294   .1792318   .0724638          1

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors
```

n. treat.	n. contr.	ATT	Std. Err.	t
412	149	-0.084	0.020	-4.216

Note: the numbers of treated and controls refer to actual nearest neighbour matches

****
End of the estimation with the nearest neighbor matching (random draw) method
****

Model 9 testing effect of flood on food security index for PSNP recipients

****
Algorithm to estimate the propensity score
****

The treatment is Flood_Shock

impact of flood on inc or assets OR food sceurity	Freq.	Percent	Cum.
0	602	82.24	82.24
1	130	17.76	100.00
Total	732	100.00	

Estimation of the propensity score

```
Iteration 0:   log likelihood = -340.45115
Iteration 1:   log likelihood = -321.38122
Iteration 2:   log likelihood =  -320.5116
Iteration 3:   log likelihood =  -320.4968
Iteration 4:   log likelihood = -320.49679
```

```
Probit regression                                 Number of obs   =        730
                                                  LR chi2(10)     =      39.91
                                                  Prob > chi2     =     0.0000
Log likelihood = -320.49679                       Pseudo R2       =     0.0586
```

Flood_Shock	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Region	.009201	.0340191	0.27	0.787	-.0574752	.0758772
Kebele	.016031	.014086	1.14	0.255	-.011577	.0436389
SexHead	-.300919	.1366539	-2.20	0.028	-.5687557	-.0330824
EducLevel	-.0391116	.0351631	-1.11	0.266	-.10803	.0298068
Age2008	.0103385	.0039143	2.64	0.008	.0026667	.0180103
HHLaborUnit	-.0206624	.0944128	-0.22	0.827	-.2057081	.1643833
HHDependRa~o	-.0982577	.2168517	-0.45	0.650	-.5232791	.3267637
HHSize	-.0457914	.0534147	-0.86	0.391	-.1504822	.0588994
LogAn_I~2008	.2521114	.060606	4.16	0.000	.1333259	.370897
LogTotA~2008	-.020649	.0383293	-0.54	0.590	-.095773	.0544749
_cons	-2.670848	.5987978	-4.46	0.000	-3.84447	-1.497226

Description of the estimated propensity score

Estimated propensity score

```
------------------------------------------------------------
      Percentiles      Smallest
 1%     .0071815       .0015165
 5%     .0528579       .0020028
10%      .083154       .0024196       Obs                 730
25%     .1213549       .0045787       Sum of Wgt.         730
50%     .1648822                      Mean           .1769435
                        Largest       Std. Dev.      .0868231
75%     .2209171       .4511569
90%     .2887813        .470622       Variance       .0075383
95%     .3544576       .4739038       Skewness       .7699554
99%     .4266564       .5468262       Kurtosis       4.010997

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 3

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

           |  impact of flood on
  Inferior | inc or assets OR food
  of block |       sceurity
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |       436         57 |       493
        .2 |       157         66 |       223
        .4 |         9          7 |        16
-----------+----------------------+----------
     Total |       602        130 |       732

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.0226774, .54682617]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       642    .4523906    .1892869          0          1

 The treatment is Flood_Shock

  impact of |
   flood on |
     inc or |
  assets OR |
```

```
       food |
   sceurity |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        576       81.70       81.70
          1 |        129       18.30      100.00
------------+-----------------------------------
      Total |        705      100.00
```

The distribution of the pscore is

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0443827       .0226774
 5%     .0767317        .025045
10%     .0915075       .0266327       Obs                 705
25%     .1253036        .028047       Sum of Wgt.         705

50%     .1671342                      Mean           .1828166
                        Largest       Std. Dev.      .0824383
75%     .2246246       .4511569
90%     .2909171        .470622       Variance       .0067961
95%     .3548429       .4739038       Skewness       1.006466
99%     .4266564       .5468262       Kurtosis       4.209051
```

The program is searching the nearest neighbor of each treated unit.
This operation may take a while.

****
Forward search

(3 missing values generated)

****
Backward search

(7 missing values generated)

****
Choice between backward or forward match

****
Display of final results
****

The number of treated is
129

The number of treated which have been matched is
129

Average absolute pscore difference between treated and controls

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       129    .0016749    .0067328   4.56e-07   .0729224
```

Average outcome of the matched treated

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       116    .4678286    .1644389   .0724638   .7826087
```

Average outcome of the matched controls

```
    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
```

```
FoodIndexw~t |      93  128.999999    .4343868   .2011006   .0724638          1
```

```
ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      129          93       0.033        0.026      1.288
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 10 testing effect of illness on food security index for PSNP recipients

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is Illness_Shock

Illness_Sho |
         ck |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        552       75.41       75.41
          1 |        180       24.59      100.00
------------+-----------------------------------
      Total |        732      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -405.48652
Iteration 1:   log likelihood = -375.69421
Iteration 2:   log likelihood = -375.38699
Iteration 3:   log likelihood = -375.38677

Probit regression                                 Number of obs   =        730
                                                  LR chi2(12)     =      60.20
                                                  Prob > chi2     =     0.0000
Log likelihood = -375.38677                       Pseudo R2       =     0.0742

------------------------------------------------------------------------------
Illness_Sh~k |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |   .0981296   .0434811     2.26   0.024     .0129081    .1833511
        Zone |   .0321709   .0174111     1.85   0.065    -.0019543     .066296
      Kebele |  -.0397253    .014366    -2.77   0.006    -.0678822   -.0115685
     SexHead |  -.0432502   .1295662    -0.33   0.739    -.2971953    .2106949
   EducLevel |   .0291549   .0292238     1.00   0.318    -.0281228    .0864326
     Age2008 |  -.0007675   .0037543    -0.20   0.838    -.0081259    .0065908
 HHLaborUnit |  -.0403004   .0880719    -0.46   0.647    -.2129182    .1323173
HHDependRa~o |  -.0538109   .2033875    -0.26   0.791     -.452443    .3448212
      HHSize |   .0149843   .0487505     0.31   0.759    -.0805649    .1105335
diversif2008 |   .0236125   .0342271     0.69   0.490    -.0434714    .0906963
LogAn_I~2008 |    .008246   .0420422     0.20   0.845    -.0741552    .0906471
LogTotA~2008 |  -.0391202   .0345102    -1.13   0.257     -.106759    .0285186
       _cons |  -.6830704   .4853654    -1.41   0.159    -1.634369    .2682284
------------------------------------------------------------------------------

Description of the estimated propensity score
```

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0653743        .051221
 5%     .0820999       .0542846
10%     .0915517       .0611962       Obs                 730
25%     .1264038       .0626302       Sum of Wgt.         730
50%     .2474383                      Mean           .2442354
                        Largest       Std. Dev.      .1226776
75%     .2954312       .5901026
90%     .3748951       .6163408       Variance       .0150498
95%     .5251155       .6391926       Skewness       .7987708
99%      .581825       .6393151       Kurtosis       3.678013

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************


The final number of blocks is 4

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |
  of block |     Illness_Shock
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |       199         27 |       226
        .2 |       327        113 |       440
        .4 |        25         38 |        63
        .6 |         1          2 |         3
-----------+----------------------+----------
     Total |       552        180 |       732



*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.06263024, .63919262]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       663    .4505541    .1917426          0          1
```

```
 The treatment is Illness_Shock

Illness_Sho |
         ck |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        548       75.48       75.48
          1 |        178       24.52      100.00
------------+-----------------------------------
      Total |        726      100.00

 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0698013       .0626302
 5%     .0828239        .063247
10%     .0921258        .063787       Obs                 726
25%     .1280794       .0644404       Sum of Wgt.         726
50%     .2478774                      Mean           .2444708
                        Largest       Std. Dev.      .1215323
75%     .2954312       .5847413
90%     .3725252       .5901026       Variance       .0147701
95%     .5251045       .6163408       Skewness       .7883827
99%     .5796116       .6391926       Kurtosis       3.655195


 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(5 missing values generated)

 ****************************************************
 Backward search

(3 missing values generated)

 ****************************************************
 Choice between backward or forward match



****************************************************
Display of final results
****************************************************

The number of treated is
  178

The number of treated which have been matched is
  178

Average absolute pscore difference between treated and controls

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       178    .0016107    .0050199   6.47e-07     .04909


Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       169    .4543993    .1866254          0          1
```

```
Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |     124  177.999993    .5098437   .1783414   .0362319   .8260869


ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      178         124      -0.055        0.023     -2.393
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 11 testing effect of loss of crop on food security index for PSNP recipients

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is LossCrop_Shock

LossCrop_Sh |
        ock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        476       65.03       65.03
          1 |        256       34.97      100.00
------------+-----------------------------------
      Total |        732      100.00



Estimation of the propensity score

Iteration 0:   log likelihood = -472.32577
Iteration 1:   log likelihood = -433.64704
Iteration 2:   log likelihood = -433.25724
Iteration 3:   log likelihood = -433.25707

Probit regression                                 Number of obs   =        730
                                                  LR chi2(11)     =      78.14
                                                  Prob > chi2     =     0.0000
Log likelihood = -433.25707                       Pseudo R2       =     0.0827

------------------------------------------------------------------------------
LossCrop_S~k |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Wereda |  -.4987156   .2032511    -2.45   0.014    -.8970805   -.1003508
      Kebele |   .2852768   .1016668     2.81   0.005     .0860134    .4845401
     SexHead |   .3361258   .1228774     2.74   0.006     .0952905    .5769611
   EducLevel |  -.0486089   .0285969    -1.70   0.089    -.1046579    .0074401
     Age2008 |  -.0068709   .0034963    -1.97   0.049    -.0137235   -.0000183
 HHLaborUnit |  -.1117718   .0819424    -1.36   0.173     -.272376    .0488323
HHDependRa~o |  -.0956226   .2011193    -0.48   0.634    -.4898093    .2985641
      HHSize |   .0766779   .0441371     1.74   0.082    -.0098292    .1631851
diversif2008 |  -.1653969   .0298676    -5.54   0.000    -.2239363   -.1068574
LogAn_I~2008 |   .1163533   .0435457     2.67   0.008     .0310053    .2017013
```

```
LogTotA~2008 |    .029616   .0334753     0.88   0.376    -.0359945    .0952265
       _cons |  -.6642514   .4405128    -1.51   0.132    -1.527641    .1991379
------------------------------------------------------------------------------


Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0618266       .0151464
 5%     .1089023       .0498603
10%     .1460701       .0520208       Obs                 730
25%     .2341131        .053933       Sum of Wgt.         730
50%     .3438511                      Mean           .3506326
                        Largest       Std. Dev.      .1501759
75%      .464715       .6876603
90%     .5508935       .6971212       Variance       .0225528
95%     .6073726       .7046723       Skewness       .0839483
99%     .6615247       .7070264       Kurtosis       2.231916

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************


The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |
  of block |    LossCrop_Shock
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |       113         24 |       137
        .2 |       111         29 |       140
        .3 |       114         65 |       179
        .4 |       132        105 |       237
        .6 |         6         33 |        39
-----------+----------------------+----------
     Total |       476        256 |       732

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.05393303, .70702645]

 The outcome is FoodIndexwithout
```

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       664    .4498592    .1913791          0          1
```

The treatment is LossCrop_Shock

```
LossCrop_Sh |
        ock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        472       64.92       64.92
          1 |        255       35.08      100.00
------------+-----------------------------------
      Total |        727      100.00
```

The distribution of the pscore is

```
                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0690476        .053933
 5%     .1126073       .0565238
10%     .1495162       .0596082       Obs                 727
25%     .2344379       .0602779       Sum of Wgt.         727

50%     .3451703                      Mean           .3519185
                        Largest       Std. Dev.      .1491371
75%     .4647476       .6876603
90%     .5514476       .6971212       Variance       .0222419
95%     .6073726       .7046723       Skewness       .0982441
99%     .6615247       .7070264       Kurtosis       2.220104
```

The program is searching the nearest neighbor of each treated unit.
This operation may take a while.

****
Forward search

(8 missing values generated)

****
Backward search

(11 missing values generated)

****
Choice between backward or forward match

****
Display of final results
****

The number of treated is
255

The number of treated which have been matched is
255

Average absolute pscore difference between treated and controls

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
```

```
-------------+--------------------------------------------------------
       PSDIF |       255    .0018645    .0045074   1.24e-06    .027434


Average outcome of the matched treated

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       235     .414354    .1803435          0   .7826087

Average outcome of the matched controls

    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |     143  254.999993    .4548446   .1907162   .0108696          1


ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      255         143      -0.040        0.025     -1.610
---------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 12 testing effect of high price shock on food security index for PSNP recipients

```
****************************************************
Algorithm to estimate the propensity score
****************************************************

The treatment is HighPrices_Shock

HighPrices_ |
      Shock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        563       76.91       76.91
          1 |        169       23.09      100.00
------------+-----------------------------------
      Total |        732      100.00

Estimation of the propensity score

Iteration 0:   log likelihood = -392.58111
Iteration 1:   log likelihood = -346.48188
Iteration 2:   log likelihood = -345.21898
Iteration 3:   log likelihood =  -345.2136
Iteration 4:   log likelihood =  -345.2136

Probit regression                                 Number of obs   =        730
                                                  LR chi2(12)     =      94.74
                                                  Prob > chi2     =     0.0000
Log likelihood =  -345.2136                       Pseudo R2       =     0.1207

------------------------------------------------------------------------------
HighPrices~k |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |   .1595896     .03534     4.52   0.000     .0903246    .2288547
     SexHead |  -.0837271   .1360269    -0.62   0.538     -.350335    .1828808
```

EducLevel	-.0575136	.034701	-1.66	0.097	-.1255263	.0104991
Age2008	-.0015506	.0038099	-0.41	0.684	-.0090179	.0059167
HHDependRa~o	.1207087	.1689102	0.71	0.475	-.2103492	.4517666
HHSize	.0031122	.0256688	0.12	0.903	-.0471976	.0534221
diversif2008	-.1653915	.0412602	-4.01	0.000	-.2462601	-.0845229
LogAn_I~2008	.1493067	.0497912	3.00	0.003	.0517178	.2468956
LogLive~2008	.0665384	.0277175	2.40	0.016	.0122131	.1208637
LogProd~2008	-.0081637	.0336659	-0.24	0.808	-.0741477	.0578203
LogHous~2008	-.0250879	.0425801	-0.59	0.556	-.1085434	.0583676
LogDura~2008	.0431568	.0265238	1.63	0.104	-.0088289	.0951425
_cons	-2.170617	.4818932	-4.50	0.000	-3.11511	-1.226123

Description of the estimated propensity score

Estimated propensity score

	Percentiles	Smallest		
1%	.0159609	.0053266		
5%	.0369624	.0055244		
10%	.0536336	.0112496	Obs	730
25%	.1065342	.0117436	Sum of Wgt.	730
50%	.2029103		Mean	.2283717
		Largest	Std. Dev.	.1483138
75%	.3301562	.6327239		
90%	.4435703	.6488897	Variance	.021997
95%	.5109336	.6492021	Skewness	.6165868
99%	.5914164	.6560139	Kurtosis	2.540201

****
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
****

The final number of blocks is 4

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

****
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
****

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

Inferior of block of pscore	HighPrices_Shock 0	1	Total
0	327	35	362
.2	185	81	266
.4	46	52	98
.6	5	1	6
Total	563	169	732

****
End of the algorithm to estimate the pscore
****

****
Estimation of the ATT with the nearest neighbor matching method

```
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.0242456, .65601391]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       655    .4487554    .1909917          0          1

 The treatment is HighPrices_Shock

HighPrices_ |
      Shock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        551       76.74       76.74
          1 |        167       23.26      100.00
------------+-----------------------------------
      Total |        718      100.00


 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0270214       .0242456
 5%     .0411944       .0246633
10%     .0576134       .0246666       Obs                 718
25%     .1102016       .0248817       Sum of Wgt.         718
50%     .2051322                      Mean           .2319352
                        Largest       Std. Dev.      .1469386
75%      .331879       .6327239
90%     .4442884       .6488897       Variance        .021591
95%      .516975       .6492021       Skewness       .6231591
99%     .5914164       .6560139       Kurtosis       2.542132


 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(7 missing values generated)

 ****************************************************
 Backward search

(2 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  167

The number of treated which have been matched is
  167

Average absolute pscore difference between treated and controls
```

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       167    .0008943    .0012405   3.27e-06    .008082
```

Average outcome of the matched treated

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       163    .4125989    .1624424          0   .7608696
```

Average outcome of the matched controls

```
    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |     112  166.999998     .445721   .1898167          0   .7826087
```

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

```
---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
---------------------------------------------------------
      167         112      -0.033        0.025     -1.317
---------------------------------------------------------
```

Note: the numbers of treated and controls refer to actual
nearest neighbour matches

```
*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 13 testing effect of loss of livestock on food security index for PSNP recipients

```
****************************************************
Algorithm to estimate the propensity score
****************************************************
```

The treatment is LossLivest_Shock

```
LossLivest_ |
      Shock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        595       81.28       81.28
          1 |        137       18.72      100.00
------------+-----------------------------------
      Total |        732      100.00
```

Estimation of the propensity score

```
Iteration 0:   log likelihood = -349.51638
Iteration 1:   log likelihood =  -319.5576
Iteration 2:   log likelihood = -318.81388
Iteration 3:   log likelihood = -318.80961
Iteration 4:   log likelihood = -318.80961

Probit regression                                 Number of obs   =        730
                                                  LR chi2(12)     =      61.41
                                                  Prob > chi2     =     0.0000
Log likelihood = -318.80961                       Pseudo R2       =     0.0879

------------------------------------------------------------------------------
LossLivest~k |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |   -.081093   .0418918    -1.94   0.053    -.1631995    .0010134
        Zone |   .0796898   .0189164     4.21   0.000     .0426143    .1167653
```

```
     SexHead |   .0952324   .1476706     0.64   0.519    -.1941967    .3846615
   EducLevel |   .0253289   .0319625     0.79   0.428    -.0373165    .0879742
     Age2008 |   .0037135   .0039758     0.93   0.350    -.0040789    .0115059
HHDependRa~o |   .1268171   .1770458     0.72   0.474    -.2201864    .4738205
      HHSize |   .0383502   .0271834     1.41   0.158    -.0149284    .0916288
LogAn_I~2008 |   .0423561   .0512349     0.83   0.408    -.0580624    .1427747
LogLive~2008 |   .0945823   .0322892     2.93   0.003     .0312967    .1578679
LogProd~2008 |  -.0534773   .0327718    -1.63   0.103    -.1177089    .0107543
LogHous~2008 |  -.0433063   .0437109    -0.99   0.322    -.1289781    .0423655
LogDura~2008 |  -.0107541    .027143    -0.40   0.692    -.0639535    .0424453
       _cons |  -2.511021    .526762    -4.77   0.000    -3.543455   -1.478586
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0195306       .0118891
 5%     .0362652       .0130537
10%     .0588384       .0131117       Obs                 730
25%     .1007937       .0134083       Sum of Wgt.         730

50%     .1596698                      Mean           .1847757
                        Largest       Std. Dev.       .113059
75%     .2514824       .4679836
90%     .3682718       .4794129       Variance       .0127823
95%     .4168293       .4894334       Skewness       .7653953
99%     .4652013       .5120078       Kurtosis       2.766095


******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 4

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |
  of block |   LossLivest_Shock
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |       169         13 |       182
        .1 |       256         44 |       300
        .2 |       141         61 |       202
        .4 |        29         19 |        48
-----------+----------------------+----------
     Total |       595        137 |       732

*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
```

```
****************************************************************


 Note: the common support option has been selected
 The region of common support is [.03770027, .46798357]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       626    .4506702     .191189          0          1

 The treatment is LossLivest_Shock

LossLivest_ |
      Shock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        553       80.38       80.38
          1 |        135       19.62      100.00
------------+-----------------------------------
      Total |        688      100.00


 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0401368       .0377003
 5%     .0597076       .0379829
10%       .07381       .0381843       Obs                 688
25%     .1108988       .0386476       Sum of Wgt.         688
50%     .1664859                      Mean            .192465
                        Largest       Std. Dev.      .1078988
75%     .2559934       .4662138
90%     .3699595       .4665761       Variance       .0116422
95%     .4164631       .4667472       Skewness       .8012024
99%     .4564505       .4679836       Kurtosis       2.708666


 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(3 missing values generated)

 ****************************************************
 Backward search

(5 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  135

The number of treated which have been matched is
  135

Average absolute pscore difference between treated and controls
```

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |       135    .0005804    .0006991   3.20e-06   .0038402
```

Average outcome of the matched treated

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       126    .4123246    .1793481   .0724638   .7608696
```

Average outcome of the matched controls

```
    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
FoodIndexw~t |      98         135     .421558   .1921869          0   .7391304
```

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

```
---------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.         t
---------------------------------------------------------
      135          98      -0.009        0.026     -0.358
---------------------------------------------------------
```

Note: the numbers of treated and controls refer to actual
nearest neighbour matches

```
*****************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
*****************************************************************************
```

Model 14 testing effect of idiosyncratic shock on food security index for PSNP recipients

```
****************************************************
Algorithm to estimate the propensity score
****************************************************
```

The treatment is Idiosynch_Shock

```
Idiosynch_S |
       hock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        504       68.85       68.85
          1 |        228       31.15      100.00
------------+-----------------------------------
      Total |        732      100.00
```

Estimation of the propensity score

```
Iteration 0:   log likelihood = -451.70316
Iteration 1:   log likelihood = -414.28321
Iteration 2:   log likelihood = -414.02584
Iteration 3:   log likelihood = -414.02579

Probit regression                                 Number of obs   =        730
                                                  LR chi2(13)     =      75.35
                                                  Prob > chi2     =     0.0000
Log likelihood = -414.02579                       Pseudo R2       =     0.0834

------------------------------------------------------------------------------
Idiosynch_~k |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      Region |   .1639371   .0366398     4.47   0.000     .0921244    .2357498
        Zone |   .0334885    .016253     2.06   0.039     .0016333    .0653437
     SexHead |  -.1536594   .1250102    -1.23   0.219    -.3986749    .0913561
```

```
   EducLevel |   .0017103   .0288342     0.06   0.953    -.0548038    .0582244
     Age2008 |  -.0043834   .0035386    -1.24   0.215    -.0113189     .002552
HHDependRa~o |  -.0509834   .1493012    -0.34   0.733    -.3436083    .2416415
      HHSize |  -.0262832   .0243611    -1.08   0.281    -.0740301    .0214636
diversif2008 |  -.0066909   .0350806    -0.19   0.849    -.0754477    .0620659
LogAn_I~2008 |  -.0645653   .0399131    -1.62   0.106    -.1427935    .0136629
LogLive~2008 |  -.0331338   .0234901    -1.41   0.158    -.0791737     .012906
LogProd~2008 |   .0883876    .031518     2.80   0.005     .0266134    .1501617
LogHous~2008 |   .0061285   .0357899     0.17   0.864    -.0640183    .0762754
LogDura~2008 |   .0455067    .023287     1.95   0.051     -.000135    .0911483
       _cons |  -.4909049   .4015676    -1.22   0.222    -1.277963    .2961531
------------------------------------------------------------------------------

Description of the estimated propensity score

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .1062507       .0757438
 5%     .1447188       .0787175
10%     .1635594       .0790101       Obs                 730
25%     .2010442       .0864167       Sum of Wgt.         730

50%     .2709413                      Mean           .3097588
                        Largest       Std. Dev.      .1512049
75%     .3751798       .7994982
90%      .518027       .8491702       Variance       .0228629
95%     .6633326       .8652084       Skewness       1.334246
99%     .7601902       .8748417       Kurtosis       4.582358

******************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
******************************************************

The final number of blocks is 5

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

**********************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
**********************************************************

The balancing property is satisfied

This table shows the inferior bound, the number of treated
and the number of controls for each block

  Inferior |
  of block |    Idiosynch_Shock
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |       157         26 |       183
        .2 |       280        117 |       397
        .4 |        52         47 |        99
        .6 |        15         35 |        50
        .8 |         0          3 |         3
-----------+----------------------+----------
     Total |       504        228 |       732


*******************************************
End of the algorithm to estimate the pscore
*******************************************

****************************************************************
Estimation of the ATT with the nearest neighbor matching method
```

```
Random draw version
****************************************************************

 Note: the common support option has been selected
 The region of common support is [.12371885, .87484168]

 The outcome is FoodIndexwithout

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
FoodIndexw~t |       648    .4512044    .1919538          0          1


 The treatment is Idiosynch_Shock

Idiosynch_S |
       hock |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        484       68.17       68.17
          1 |        226       31.83      100.00
------------+-----------------------------------
      Total |        710      100.00


 The distribution of the pscore is

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .1371498       .1237189
 5%     .1548956        .126096
10%     .1703075       .1282282       Obs                 710
25%     .2034551       .1310889       Sum of Wgt.         710
50%     .2741355                      Mean           .3155526
                        Largest       Std. Dev.      .1492464
75%     .3775296       .7994982
90%     .5322837       .8491702       Variance       .0222745
95%     .6722176       .8652084       Skewness       1.385125
99%     .7601902       .8748417       Kurtosis       4.634461


 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ****************************************************
 Forward search

(5 missing values generated)

 ****************************************************
 Backward search

(4 missing values generated)

 ****************************************************
 Choice between backward or forward match

****************************************************
Display of final results
****************************************************

The number of treated is
  226

The number of treated which have been matched is
  226

Average absolute pscore difference between treated and controls
```

Variable	Obs	Mean	Std. Dev.	Min	Max
PSDIF	226	.0031374	.0124112	1.07e-06	.1152858

Average outcome of the matched treated

Variable	Obs	Mean	Std. Dev.	Min	Max
FoodIndexw~t	209	.4616531	.1822215	0	1

Average outcome of the matched controls

Variable	Obs	Weight	Mean	Std. Dev.	Min	Max
FoodIndexw~t	141	226.000008	.4944567	.208046	0	1

ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors

n. treat.	n. contr.	ATT	Std. Err.	t
226	141	-0.033	0.023	-1.402

Note: the numbers of treated and controls refer to actual nearest neighbour matches

****
End of the estimation with the nearest neighbor matching (random draw) method
****

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