

# Targeting of aid in rural Ethiopia

## 1 Introduction

One of the core challenges to poverty reduction is to ensure that investments effectively reach their intended population. The credibility and effectiveness of development efforts is undermined when resources fail to reach those most in need. To address this, programs are increasingly being required to show their results, including whether poor communities and households actually benefit (World Bank, 2007). However, an important obstacle in reaching the people most in need is the high costs that can be involved in obtaining accurate information on their incomes and needs. Decentralisation of distribution of anti-poverty programmes through community-based targeting is one potential solution that has been suggested to cost-effectively and accurately identify and select beneficiaries. This is because local agents are likely to have better knowledge of the community and are able to identify households and community members that are poor, and these are less likely to successfully hide information about their welfare situation. Since indicators related to poverty and vulnerability might be different across different contexts, by allowing local agents to customise the criteria to identify the poor can additionally improve the targeting (Alderman, 2002; Yamauchi, 2010). Theoretical and empirical studies<sup>1</sup>, however, highlight the disadvantages too, mostly linked to the risks of capture, rent seeking behaviour and patronage from local leaders.

In Ethiopia, over the past decade, there has been growing policy momentum around social protection issues, motivated by a concern to move away from a cycle of dependency on emergency food aid. One of the key social protection instruments is the Productive Safety Net Programme (PSNP). The PSNP reaches over 8 million chronically food-insecure households

---

<sup>1</sup>See, e.g., Conning and Kevane (2002) and Alatas et al. (2012)

in rural areas and has a strong focus on addressing poverty by assuring food consumption and preventing asset depletion for food households in chronically food insecure *woredas* (districts), while stimulating markets, improving services and natural resources. The PSNP builds on previous aid interventions, in terms of structure, distribution, type of interventions. The main idea was to substitute the non-sustainable and non-effective emergency relief approach, which could only succeed in survival of people in need and not guarantee the asset depletion, with a development and long-term approach. The main intervention of the PSNP is public works, which replaces the previous food-for-work and the employment generation schemes<sup>2</sup>, from which it maintains the principle of supporting vulnerable households through the provision of work on community projects during the slack season, and the overall system, including the targeting methodology, which is community-based. Relief aid is still in place but only as an intervention during times of crisis, such as severe droughts. Prior to the introduction of the PSNP, emergency aid was provided to chronically poor households and villages, even in the absence of shocks; in contrast, it now only deals with emergencies.

Aid eligibility, for either food aid or for public works, is determined in different steps. Following its federal administrative structure, the central government first selects the *woredas* (districts) and assigns each an amount to be disbursed. Then, *kebeles*<sup>3</sup> committees comprised of local administrators and community leaders select beneficiary households. Political power in Ethiopia is in principle derived from "free and fair" elections although there is evidence of manipulation and threat. The leaderships of different levels (sub-regional, regional, and federal) are typically linked and the current local elite has been in charge for more than two decades. In order to avoid repression and exclusion from accessing benefits and local services, households tend to vote for the ruling party. Therefore households that receive food aid are likely to be politically connected to the local leadership.

A number of empirical studies have investigated the superiority of the two main targeting methodologies applied in developing countries, proxy means tests (PMTs) and community-

---

<sup>2</sup>Food-for-work and employment generation schemes were essentially very close, namely providing aid in exchange of work on projects to build public assets. The main difference between the two is that food-for-works were implemented on a relatively small scale with development purposes, whilst employment generation schemes had the same logic as food-for-work but were implemented in emergency contexts

<sup>3</sup>*Kebeles* are the lowest administrative level in Ethiopia and are comprised of a small number of villages.

based. Some find that communities may have additional information beyond the PMTs<sup>4</sup>, while others find no superiority of one method over the other<sup>5</sup> but targeting based on community knowledge results in higher satisfaction and greater legitimacy of the process by recipients. Relatively few studies have investigated the relationship between political economy of transfers and targeting performance, particularly in the context of changes in targeting performance over time. This paper fills in the gap by providing evidence on the relationship between targeting performance and a change in aid intervention. In particular, I exploit the panel nature of the Ethiopian Rural Household Survey (ERHS) by using the last two rounds (2004 and 2009) to compare if targeting performance has changed as a consequence of the effort put by the government into improving monitoring and transparency within the context of the PSNP. In order to explore the factors linked to targeting within villages, I only include in the analysis those villages that have received aid in a given year.

Previous studies have looked at the role of political connections in aid allocation within the Ethiopian context and found that they were a strong predictor for receiving aid, especially in the form of free food distributions, whilst for food-for-work affiliations to local leaders only mattered at the intensive margin (Caeyers and Dercon, 2012). Always within Ethiopia, biases have been found to exist against the poor in terms of demography, demographics, gender, or assets (Sharp, 1997; Clay et al., 1999; Jayne et al., 2002; Gilligan and Hoddinott, 2007). Clay et al. (1999), for instance, find primary beneficiaries of food aid programmes to be at the extremes of food availability distribution and a disproportionate number of female headed and aged headed households, irrespective of needs, to be targeted. Several studies report wide variations in criteria used to identify recipient households across regions (Jayne et al. 2001). Qualitative (Sharp, 1997) and quantitative research (Barret and Clay, 2003; Gebremedhin and Swinton, 2001) have also revealed food-for-work to be targeted through an improper self-targeting strategy which dramatically spilled into non-poor households.

My findings suggest there was an improvement in targeting for public works, both in the selection process and in the amount of aid received. By 2009 aid was more means-based and no longer dependent on political connections. Unfortunately the data do not allow to

---

<sup>4</sup>Alderman (2002) and Galasso and Ravallion (2005).

<sup>5</sup>Alatas et al. (2012) in a study on Indonesia find PMT to produce a lower error rate, although when focusing on the very poorest households within the poor category, community-based targeting slightly outperform PMT.

investigate the channels behind such improvement although the implementation of the PSNP and the related efforts to improve transparency of the selection process bring one to speculate that the PSNP did contribute to such improvement. My findings are broadly in line with the limited related literature. For instance, Ravallion (2000) reports within-province improvement after a set of rules on implementation and targeting was provided by the central government together with a larger budget. Targeting of food aid, on the contrary, does not seem to have improved in 2009 compared to 2004. Whilst political connections no longer determine food aid receipt, neither do need indicators. However, when the analysis is restricted to on villages that receive both public works and food aid, targeting in 2009 seems to be more strongly related to need than political connections.

The paper proceeds as follows. Section 2 offers an overview of aid in Ethiopia; Section 3 delineates the system used to distribute aid and the criteria used for targeting aid beneficiaries in Ethiopia. Section 4 summarises the literature on targeting, focusing on aid in Ethiopia. Section 5 provides a description of the data used for this study and presents summary statistics. Section 6 explains the models used to identify the difference in targeting across the two years. Section 7 presents and interprets the main results. Section 8 addresses some issues related to the main model. Finally, Section 9 summarises the conclusions of this study.

## 2 Aid in Ethiopia

Despite the importance of agriculture to its economy, food insecurity is remained a major issue in Ethiopia. Droughts and famines occur with alarming regularity in the country, which threaten the physical survival of millions of people in every instance. The well known 1984 alone caused the death of an estimated 1 million people. Since the beginning of the new millennium, major droughts happened in 2003, 2005, 2008, 2011 and 2015, affecting 12.6 million of people in 2003 and 6.4 in 2008 (the worst in this period). However, even in years with favorable rains, the number of people facing food insecurity remains dramatically high<sup>6</sup>.

The causes related to this level of vulnerability are traced among various factors, namely

---

<sup>6</sup>The World Bank (2005) reports 5.2 million of people, or 9% of the rural population, in need of food aid for six months in 2001/02, a year of of exceptionally good harvest.

dramatic variations in the climate<sup>7</sup>, health risk, high dependency on agriculture and rural livelihood, and diminishing landholdings. The latter is mainly due to the growing population and land ownership statutory, which foresees the state to own all land and to provide long-term leases to tenants. This discourages farmers from investing long-term on land and makes it challenging for them to make use of productive agricultural technologies. Food insecurity is further fostered by limited penetration of agricultural innovations, lack of agriculture product diversification and market integration, limited rural infrastructure, and few opportunities of off-farm employment. Faced with such fragility and risk, many households find it extremely difficult to accumulate savings of different forms to face bad seasons. For households like most rural Ethiopian ones that depend on agriculture and animal husbandry, crop and animal failures deriving from droughts can be devastating.

For over 20 years, food aid was the main response to ensure basic survival. The Ethiopian government had to launch international emergency appeals for assistance. This annual emergency assistance was channeled to meet the consumption needs of all food insecure households, independently of the type of insecurity they were facing, temporary and driven by a specific shock, or chronic living in extreme poverty conditions. Notwithstanding the consistent amount of food aid that Ethiopia had received (estimated at 700,000 metric tons per year between mid-1980s to early 2000s (Wiseman et al., 2010), corresponding to roughly between 25% and 20% of all food aid deliveries to Sub-Saharan Africa, depending on the period), it revealed major drawbacks, especially in its unpredictability and delays, which concurred in not being an effective mean for protecting livelihoods or preserve physical or human household assets.

Over the 1980s humanitarian aid was mostly in the form of emergency food aid as support to the crises. However, by the end of that decade, the rationale for the food assistance was gradually expanded from famine relief to 'rehabilitation'. In 1993 a new strategy was outlined in the National Policy and Disaster Prevention Management (NPDPM) in which the need to move from free food distributions towards providing relief food to able-bodied in exchange for labour on public or community development works (called Employment Generation Schemes (EGSs)) with only those unable to work entitled to free food (Sharp, 1998). In theory it was foreseen that only 20% of food aid was to be disbursed as free food distributions, while the

---

<sup>7</sup>Annual variability in rainfall across different areas in Ethiopia ranged from a low 15% up to 81%, among the highest in the world.

main bulk (the remaining 80%) was supposed to be delivered through EGSs. In practice, however, in most locations EGSs degenerated into free food distributions, due mainly to lack of non-food budgetary support to the local administrations to implement a workfare programme (World Bank, 2005).

If EGSs were conceived as a way to deal mainly to the worry of creating an aid dependency, food-for-work was introduced for post-famine rehabilitation or development, rather than relief or short-term prevention. However, until the beginning of 2000s emergency aid was the principal component of food aid. According to World Bank estimates (2005), free food distributions reached an average of 2-5 million of people during normal years, but could go up to 10 million in bad years. EGSs would reach an average of 200,000 people (therefore a much lower proportion of the planned 80%), while food-for-work would reach 357,000 beneficiaries per year.

By 2000, it was increasingly clear that the emergency food aid system was unsustainable and of limited effectiveness. The crises of 1999-2000 and of 2002-2003, among the worst in recent years<sup>8</sup>, made clearer the need for reforming the food aid system. In 2003 the Government of Ethiopia started a consultation process with its main development partners aimed at creating a more effective solution able to address the immediate needs of food insecure households, conceived also with a sustainable and long-term vision in order to shift households out of the emergency relief system and to enable them to graduate to sustainable food security. As a result, the Food Security Programme (FSP) was outlined which consisted in three main pillars, namely developing a safety net for chronically food insecure households, supplying agricultural and financial services to food insecure households to promote their graduation out of food insecurity, and resettling households from unsustainable and environmentally degraded lands. Of these, donors embraced the safety net under which in 2005 the Productive Safety Net Programme (PSNP) was launched.

The objective of the PSNP is 'to assure food consumption and prevent asset depletion for food insecure households in chronically food insecure *woredas*, while stimulating markets, improving services and natural resources, and rehabilitating and enhancing the natural envi-

---

<sup>8</sup>Severe and widespread droughts in those years caused an enormous number of people in need of food assistance. 10 million and 14 million people respectively during the two crises.

ronment'. It focuses on chronically as well as transitory food insecure households. In addition to the safety net that the PSNP provides, other measures are also supplied through the Food Security Programme (FSP) and other investment services (PSNP PIM, 2010).

Reaching about 8 million of Ethiopians (11% of the total population) in 290 chronically food insecure *woredas* (over %40 of country's *woredas*), PSNP is the largest social transfer programme in Africa, excluding South Africa. The programme foresees two main components, public works and direct support. The former forms the main components in terms of breadth of outreach (96.6%) and pays 6 Birr per day (increased to 8 Birr in 2008 and to 10 Birr in 2010 in light of the hyperinflation experienced) on community infrastructure, labour-intensive projects during the months of non-farming activities. Direct support, instead, targets labour-scarce households. Payments are made in form of cash or food (or a mix) depending on the location and the timing of the year, though donors and government preference is towards cash payments.

Despite the focus on chronic food insecurity, transitory needs are also taken into account. First the annual retargeting was designed to correct for inclusion and exclusion errors in order to respond to changes in the relative positions of households. Secondly, a contingency budget of 20% is added to the programme budget to cover additional households that might become chronically food insecure during the course of the programme and to respond to transitory needs deriving from shocks. Lastly, the emergency response system continues to cover food-insecurity in non-PSNP *woredas*.

### **3 Targeting of aid in Ethiopia**

Aid eligibility, either for food aid or for public works, under the PSNP or outside the PSNP, is determined in three steps, following the federal administrative structure of the Ethiopian government. Starting with a geographical step, a mix of administrative guidelines and community knowledge is then used to actually identify beneficiaries. The mechanism established for the PSNP is built upon the preexisting system in use for relief assistance. First, the

government selects the chronically food insecure *woredas*<sup>9</sup> (districts) as recipients by using historical data. *Woredas*, in turn, allocate funds to the most in need *kebeles* (lowest level of elected local government composed of some villages) assigning 'PSNP quota'.

At local level, the main responsibility for targeting of the PSNP falls under specially-constituted Food Security Task Forces (FSTFs) at *woreda*, *kebele*, and community levels. The Woreda FSTC is responsible for adapting the national guidelines on beneficiary selection criteria to make them relevant to the local context<sup>10</sup> and for training the Kebele FSTF. The Kebele FSTF is responsible for establishing a Community FSTF in each village and training the the Community FSTF on targeting procedures. The Community FSTF is the ultimate body responsible for the actual screening of households for eligibility and for developing the list of beneficiaries. The Community FSTF is composed of representatives from the Kebele FSTF, a Development Agent, two or three elected female representatives, two or three elected male representatives, an elected youth representative, and an elected representative of the elder. According to PSNP guidelines, the proposed list of beneficiaries is to be displayed in public for at least a week; upon its endorsement by the general meeting of the village residents the list is finalised and passed it onto the Kebele FSTF for verification. Since 2007 grievance procedures have been separated from targeting process and addressed by the newly established Kebele Appeal Committees. It is worth stressing that these last two points were actually among the main differences included in the PSNP guidelines as a measure to improve fairness and transparency of targeting.

As stated in the Programme Implementation Manual (PIM), the eligibility for participating into the PSNP is restricted to the chronically food insecure households residing in PSNP *kebeles*. Chronically food insecure households are defined as: (a) households that have faced continuous food shortages (usually 3 months of food gap or more) in the last 3 years and received food assistance prior to PSNP implementation; (b) households that suddenly become more vulnerable as a result of a severe loss of assets and are unable to support themselves (last 1-2 years); (c) any household without family support and other means of social protection and support. Once met these preliminary criteria, households are examined by the

---

<sup>9</sup>A chronically food insecure *woreda* is defined as a *woreda* that has received food aid for the preceding three years or longer (PSNP Programme Implementation Manual (PIM), 2004).

<sup>10</sup>PSNP (or other food aid) targeting guidelines are, in fact, very general and foresee adaptation to local context by every *woreda*. This is in fact the essence of community-based targeting.



Community FSTF to refine the selection of beneficiaries on the basis of additional characteristics: household assets (landholdings, quality of land, food stocks on hand, etc.), income from non-agricultural activities, and support or remittances from relatives or other actors. Starting with a list of past aid beneficiaries, the Community FSTF updates the list based on the refined beneficiary selection criteria. The selection process is carried out on a yearly basis to update the list of most in need households. Depending on the presence of able-bodied members, households are assigned to either public works or to direct support. Several aspects of the PSNP targeting are very similar to the system of targeting for the emergency relief. From the institutional structure, to the key role of community representatives, to the division between public works and direct support according to their ability to work, to the criteria for households selection based on assets, income and livelihood. In the PSNP PIM it is recommended to build the FSTFs on the existing Disaster Prevention Committees, and the *woredas* included in the PSNP are by definition those which have previously received food aid.

Notwithstanding the number of advantages deriving from relying on a preexisting set up for the operationalisation of the PSNP, some of issues and weaknesses of the previous system were found in the first years of PSNP implementation. Among the various problems the major were the tendency to spread or dilute transfers among more households than those officially targeted; the variation in effectiveness of community targeting in different contexts and locations; the tendency in some locations to favour those with connections with the local administration.

An additional difference with public works carried out before PSNP concerns the dimension of self-selection targeting. In the past, in fact, it was found that in many instances public works were targeted through self-targeting mechanisms. However it proved not efficient as considerable errors of inclusion (especially among the better-off) were found. The government rate for public works was set at 3 kg per day although it was never calculated if that corresponded to a below-market wage, mainly due to the the difficulty in attributing a realistic value of a local wage rate in food insecure areas where work is not or scarcely available at the relevant time of the year. The daily payment PSNP is the same as that of pre-PSNP public works (3 kg of grain per day). The main difference with the past lies in the additional criteria that are

now set for the selection of beneficiaries.

Efforts were made over the years of implementation of the PSNP in order to improve transparency, therefore the policies on publication of the list of beneficiaries and endorsement by public meetings and *ad hoc* appeal committees to deal with grievance and disputes.

## 4 Literature review

Notwithstanding the massive amounts of aid that flew to Ethiopia, it was only towards the end of the 1990s that concerns about food aid dependency, coupled with a demand for greater accountability over its use, aroused the interest of researchers and policy makers around targeting. From this policy need a first stream of literature, concentrating on assessing targeting efficiency in terms of errors of inclusion and exclusion, was developed.

Most of the studies belonging to this first stream (Clay et al. (1999), Jayne et al. (2001), and Jayne et al. (2002)) analyse the targeting at two different levels, at the community and at the household. All these studies find large differences in food aid allocations across regions that cannot be explained by observable characteristics such as per capita income and rainfall, with Tigray region the mostly favoured by the government<sup>11</sup> (Clay et al. 1999). Despite some evidence of means-based targeting at national level, the main determinant of food aid allocations to regions was the past allocations of aid. Such rigidity in food aid distribution does not seem to be accounted for by time-invariant or time-varying unobserved needs, like chronic needs (Jayne et al., 2002). These findings seem to support the speculation that food aid was being used by the Ethiopian government to transfer resources to favoured regions and that allocation at the *woreda* level followed negotiations between the government and the local administrative staff on grounds other than effective needs (Jayne et al., 2001; Ferriere and Suwa-Eisenman, 2014). A similar pattern is found in relation to the amounts of per capita food aid allocated regionally, which did not seem to be related to *woredas* characteristics.

Within *woredas*, households were found to be targeted partly according to their levels of income, although more effective targeting was generally found for food aid compared to food

---

<sup>11</sup>The ruling party in Ethiopia is from Tigray region.

for work. Both types of aid were significantly explained by past allocation of aid, while a disproportionate number of female and aged heads were targeted for food aid (Clay et al., 1999).

Rules determining allocation of either type of aid programme did vary widely geographically. In relation to food for work specifically, no consistency in the selection methodology of beneficiaries were found. In some cases there were no eligibility rules set by local authorities based on the assumption that this programme would automatically select the poor via self-selecting those most in need (Jayne et al., 2001; Sharp, 1998), while in others local leaders would select households satisfying certain criteria, and in others rotating the beneficiaries lists. Households working on public works projects were found to be those at the extremes of the income distribution. These errors of inclusion were mostly due to the lack of employment opportunities which induced better-off households, often endowed with labour abundant supply, to participate into public works for additional income revenues. Furthermore, anecdotal evidence reports that public works were generally regarded as part-time work, which could be combined with farming and other local income strategies making. The additional feature rather than the alternative of public works to these activities make the conceptualisation of market-based self-targeting not fully relevant in this context.

More recently, Coll-Black et al. (2011) assess targeting effectiveness within the context of the first phase of the PSNP. Public works seem to be means-based targeted, while large differences across regions are still found, with some regions prioritising poverty over other characteristics and others focusing mainly on labour supply endowments and demographic characteristics. Direct support targeting appears to be based on guidelines, with demographic characteristics dominating the selection into the programme. Selected households for direct support are on average less labour endowed and are more likely to having experienced weather-related shocks. Fewer differences across regions are found in the context of direct support compared to public works.

The theoretical literature on targeting styles the advantages related to community-based targeting while warning on the drawbacks that may characterise it as well. On one hand, community-based targeting has allegedly better information<sup>12</sup>, and local definitions of depri-

---

<sup>12</sup>In general community-based targeting are opposed and compared to proxy-means tests (PMTs) in devel-

vation may be more adaptable to local conditions and culture. Furthermore, it is usually associated to lower costs of administration, and higher levels of satisfaction and accountability. All these elements are traded-off with the potential risks of elite capture and rent seeking behaviours (Alatas et al., 2012; Conning and Kevane, 2002).

In the Ethiopian context, empirical evidence found political connections to play a particularly important role in allocation of aid. Broussard et al. (2014) focus on food aid allocation<sup>13</sup> to explore the linkages between political connections, self-reported measure of power<sup>14</sup> and the probability of receiving food aid. They find strong and positive relations, especially for the richer households. They also investigate whether households received more aid in years in which they needed the most. Some of the findings are in line with targeting criteria although it also emerges that on average households seem to receive more aid in less needy years.

Caeyers and Dercon (2012) further explore the allocation of both food aid and public works by extending the analysis to horizontal and vertical connections after the severe drought that hit Ethiopia in 2002/2003. They also find that political connections do play an important role in allocating food aid, while they do not for public works. They divide the analysis into two periods, right after the drought, at the pick of the crises, and the following year and they find that especially during the crises targeting was only slightly based on economics needs and mostly on political connections, while it seems to improve in the following period. The amount of food aid does not seem to be based on any observable characteristics, while for food-for-work the most important determinant is political connections.<sup>15</sup>

Few studies have instead concentrated on the impact of aid programmes in Ethiopia. Gilligan and Hoddinott (2007) analyse whether aid distributed after the 2002/2003 drought had a persistent effect on consumption, food security and asset holdings. For food-for-work beneficiaries positive impacts are found in consumption growth and in the reduction of perceived famine risk. Free food distribution recipients also positively benefited in terms of consumption

---

oping countries, the other main targeting approach for selecting beneficiaries of anti-poverty programme.

<sup>13</sup>They exclude food for work from the analysis.

<sup>14</sup>They use the first 6 rounds of the Ethiopian Rural Household Survey (ERHS). From round 3 (1995), they use questions on involvement of the household in the local administration and their membership in other local organisations. From round 6 (2004), they use self-reported perception sense of power in the village.

<sup>15</sup>The possibility of reverse causality between food aid receipt and political connections is extensively investigated and rejected.

although their perception of famine risk remains negative. In addition, by differentiating the analysis by household welfare distribution, food for work appeared to have a stronger impact on households belonging to higher levels of the welfare distribution, whereas free food distributions revealed to have a stronger impact on the poorer. Amare and Asfaw (2012) estimate the impact of the two aid programmes on poverty and inequality over the same period. They find that the food for work has had a positive and significant effect only on head count index, whereas the gap and severity indexes are not significantly affected. Free food distributions, instead, had a positive and significant impact on all three poverty measures. The analysis is then disaggregated by gender, finding female-headed households to significantly benefit only from free food distributions. Food for work seems instead to have a considerable impact only for the men-headed households.

The impact of PSNP has been also investigated. Gilligan, Hoddinott and Taffesse (2009) and Gilligan et al. (2009) assess the impact of the public works on household food security and welfare<sup>16</sup>, and the local economy effects<sup>17</sup>, investigating the investment and production channels and the disincentive effects after 18 months of its implementation. In light of the different amounts received by beneficiaries, they disaggregate their analysis by looking at heterogeneous effects, in particular estimating the dosage effects by grouping beneficiaries by amount and type of aid received<sup>18</sup>. Their findings reveal modest impacts on average, though positive on food security and growth in livestock holdings. Impacts are found higher for those receiving higher levels of transfers and for those accessing also to complementary agricultural services.

---

<sup>16</sup>They look at household food security by using shortfall in caloric availability, daily per capita caloric acquisition, change in months of food security 2004-2006, change in the square of the food gap 2004-2006, number of children's meals/day during the hungry season. Welfare is proxied by per capita consumption.

<sup>17</sup>The local economy effects are captured through the impact on credit use, use of improved agricultural technologies, own business activity, assets, labour market participation and transfer and remittances.

<sup>18</sup>The public work and direct support of PSNP are complemented by the Other Food Security Programme (OFSP), designed to improve agriculture productivity and food security, and facilitate asset accumulation. This included access to credit, assistance in obtaining livestock, seeds, and assistance with irrigation or water-harvesting schemes, soil conservation.

## 5 Data and descriptive statistics

The data used for this study is the Ethiopian Rural Household Survey (ERHS), a longitudinal household data set collected in collaboration among the International Food Policy Research Institute (IFPRI), Addis Ababa University, and the Centre for the Study of African Economies, Oxford. The data set was collected in seven rounds from 1994-2009 in 15 rural Ethiopian villages across different agro-ecological regions giving a sample of 1,477 households. For this analysis I use the last two rounds (2004 and 2009) as my aim is to compare targeting effectiveness before PSNP implementation and during it. Previous rounds of the survey are not used for comparability reasons. In rounds 1 - 4, in fact, questions on aid are asked with reference only to the previous four months whereas the last two rounds collect information on aid over all the previous twelve months making the calculation of received aid more reliable<sup>19</sup>. In addition, in the last two rounds collect households were asked the number of months during which they suffered food insecurity. I prefer this variable as a proxy for vulnerability instead of consumption for reasons that are further explained in Section 6.

The analysis considers only the villages that received public works or food aid. Over the years under analysis 9 villages received public works and 10 received food aid. However, since I look at intra-villages aid allocation, the sample is further restricted to include villages only in rounds in which they actually received aid. The public works sample includes 740 households and 1,121 household-round observations; the food aid sample includes 880 households giving a total of 1,363 household-round observations.

Table 1: Poverty headcount ratio (HCR) by villages

	Total		Public Works only		Food Aid only		Both types of aid		None	
	N	HCR	N	HCR	N	HCR	N	HCR	N	HCR
2004	15	0.39	1	0.45	0	-	8	0.42	6	0.34
2009	15	0.58	2	0.52	5	0.72	4	0.74	4	0.25

Poverty rates are calculated at household level using net-of-aid consumption.

As discussed in Section 3, there are two layers of targeting, the first from the federal government to *woredas*, and the second within selected villages to households. Despite the small number of villages would not allow to assess the effectiveness of targeting at the first layer, it is

<sup>19</sup>Broussard et al. (2014) use all first six rounds.

still possible to see if there is any difference across villages that received aid and those that did not. Table 1 reports the poverty head count ratio across villages type by year. Overall 39% of households consumption is below the poverty line in 2004. In 2009 the rate dramatically increases and reach 58%<sup>20</sup>. In both periods it seems that villages receiving aid were worse-off than those not receiving aid. In 2004 34% of households were living below the poverty line in villages that were not targeted for aid, while in villages that received aid, public works only or both types of aid, the proportion was significantly higher (45% and 42% respectively). The difference in poverty rates is even more striking in 2009. Villages that received both types of aid and villages that received food aid only registered poverty head count ratios as high as 74% and 72% respectively. In villages that received public works only instead 52% of households were living below the poverty line, still more than double than the 25% in villages that did not receive any type of aid. These figures seem to suggest sounded targeting from the federal government, and an improvement compared to findings carried out using national data for a decade earlier (Clay et al., 1999). However, given the limited number of villages these findings cannot be generalised to the overall country.

The measure of food aid is retrieved from the Section on Off-farm income of the questionnaires and is constructed by summing all gifts from the government or non-government organisations received by the households in the form of food aid or cash in the previous 12 months of the interview<sup>21</sup>. The public works variable is constructed by combining information from two sections of the questionnaire. One is a section entirely dedicated to PSNP and public works and the second is the Off-farm income from which I consider public works provided by government or NGOs.

---

<sup>20</sup>The rate of 2004 is in line with national figures for rural areas reported by the government. For 2009 there are no official statistics. The closest to 2009 available refers to 2010/2011 and reports 30% of households (MoFED, 2012). Although figures for 2009 are not available, it is highly unlikely that the figures for the ERHS reflect those at national level. As Dercon et al. (2011) show, the mean consumption growth in the ERHS villages does not track the real GDP per capita growth which is positive over this period. The authors attribute the possible reasons of this discrepancy to two main reasons. First, several villages in two regions (Tigray and SNNPR) experienced severe localised droughts that caused considerable income losses. Secondly, the collection of data in the 2009 round was carried out approximately six months after the 2008 harvest and in the aftermath of the rapid rise in food prices in 2008. The 2009 round may have taken place just at the point where food stocks had run out and households were entering the market. Since most of ERHS households are net food purchasers, during this period of high prices households might have been reducing quantities consumed.

<sup>21</sup>Among those households that reported receipt of food aid 29% claim having received direct support too. This figure does not seem to be reliable as according to official data, only 3% of PSNP beneficiaries received direct support. It might well be that households confused food aid with the direct support component of the PSNP. This should not be a major issue for this analysis as targeting criteria for food aid and direct support should be similar, especially along vulnerability lines.

Table 2: Type of beneficiary by years

	Public Works only	Food Aid only	Both types of aid	None
2004	0.29	0.20	0.25	0.26
2009	0.20	0.37	0.06	0.37

Figures includes only villages that received either public works or food aid.

The vulnerability of the villages under analysis contributes to explain the high proportion of aid beneficiaries in this sample, with 74% households receiving at least one type of aid in 2004 and 63% in 2009 (Table 2). The 2003 drought has been one of the most severe in the last decades with an estimated 12.6 million of people in need of food aid. 2008 and 2009 were similarly particularly unfortunate years. 2008 alone counted 6.4 million affected by the drought. The high proportion of aid beneficiaries in both years is also explained by the figures of humanitarian aid as 2003 and 2008 are the two years humanitarian aid peaked over the first decade of the new millennium, with US\$804 and US\$886 received respectively in 2003 and 2008<sup>22</sup>. The main difference between the two years is that the proportion of households receiving both types of aid drop dramatically (from 25% in 2004 to 6% in 2009). While the proportion of people benefiting from public works decreases from 2004 to 2009 (from 29% to 20%) the reverse dynamic is found for food aid (from 20% in 2004 up to 37% in 2009).

Table 3: Poverty and aid targeting by years and type of aid

	Poverty rate	Public Works			Food Aid		
		All	Poor	Non-poor	All	Poor	Non-poor
2004	0.43	0.54	0.54	0.55	0.49	0.50	0.48
2009	0.70	0.51	0.57	0.36	0.49	0.54	0.34
Total	0.58	0.53	0.56	0.50	0.49	0.53	0.43

Poverty rates are calculated at household level and include public works and free aid villages only. Villages are included only for the years in which they receive aid. Poverty rates are calculated by using net-of-aid consumption.

Table 3 reports beneficiary status by poverty. In the villages targeted by either public works or food aid, poverty rates dramatically increased from a headcount ratio of 43% in 2004 up to 70% in 2009. Two main remarks come out from these figures. First, the fraction of non-poor households receiving aid is quite high, pointing at targeting errors. For instance, among non-poor households 55% and 36% received public works in 2004 and 2009 respectively. The second

<sup>22</sup>Humanitarian financing to Ethiopia, 2000-2010



point regards the difference in targeting between 2004 and 2009. If in 2004 the proportion of poor and non-poor households were very close among beneficiaries for both public works and food aid, in 2009 the proportion of beneficiaries among non-poor households is much lower suggesting an improvement in targeting. A caveat however must be considered in looking at these first figures about intra-villages targeting of aid. Poverty rates are based on net-of-aid consumption which is not an accurate counterfactual for household consumption in the absence of aid as it ignores the behavioural response to aid, therefore these should be only considered as indicative differences between beneficiary and non-beneficiary households<sup>23</sup>.

Figure 1: Public Works and Food Aid targeting by year and by consumption net of aid



Consumption is real consumption per capita in logs net of aid. Reported lines represents locally weighted scatterplot smoothing, obtained with bandwidth of 0.3. Graphs for public works include only public works recipients villages; graphs for food aid include only food aid recipients villages. Bottom panels include only aid beneficiaries.

A similar trend can be seen in Figure 1 where in the left-side panels the probability of receiving public works (top) and the amount of aid received (bottom) by percentiles of pre-

<sup>23</sup>Similarly, poverty rates in Table 2 should be seen only as indicative of the conditions in the surveyed villages.

aid consumption per capita are reported; the right-side panels show the same for food aid. In terms of accessing the programmes, both top graphs show an improvement for public works and food aid. In 2004, targeting seems to be independent of need as the line for both types of aid is almost horizontal. This is in line with previous studies on targeting in Ethiopia.

However, as alluded earlier, consumption is not an ideal measure of need. Not only it is based on a very limited period of recall time (one week) but in cases of aid given to better-off households (as shown to be the case in the previous studies), the pre-aid consumption might provide a distorted picture of initial welfare conditions. A preferred measure is assets, here represented by per capita livestock holdings for which there is information of amount held 12 months before the interview thus reflecting wealth holdings before receiving aid. Figure 2 shows the probability of accessing aid (top panels) and the amount of aid received (bottom panels) by livestock percentiles. For both public works and food aid there seems to be an improvement in targeting, with the 2009 lines outperforming the 2004 ones.

Table 4 shows selected statistics for the characteristics of the households in the sample receiving public works and food aid for beneficiaries and non-beneficiaries averaged over the two rounds. Information on the criteria used to select beneficiary households by village leaders for 2004 is available from a part of the community survey in each village. These criteria, ranked from the most to less frequently reported, are: people unable to work, old people, poor people, landless families, large families, people with limited livestock, and female-headed households.

The 2009 questionnaire did not include a similar section on criteria used by village leaders. However, Coll-Black et al. (2011) report the results of a survey conducted in 2006 within PSNP *woredas* directed at local officials with knowledge of the PSNP in which they were asked to report the selection criteria used in their localities to select beneficiaries for public works and direct support. In the selection of public works poverty is the most important criterion reported by officials. Somehow against official guidelines food insecurity is not often reported, although this may be due to the difficulty in ascertaining degrees of household food insecurity. Other characteristics that were reported as important in targeting households for public works are low asset holdings (livestock and land), large households, households with many elderly or orphaned members, or those affected by drought. In targeting households for direct support, instead, higher priority is indicated at households with limited labour

Figure 2: Public Works and Food Aid targeting by year and by livestock holdings



Livestock is the value of lagged per capita livestock expressed in real terms and in logs. Reported lines represents locally weighted scatterplot smoothing, obtained with bandwidth of 0.4. Graphs for public works include only public works recipient villages; graphs for food aid include only food aid recipient villages. Bottom panels use only aid beneficiaries.

endowments, especially households with elderly, disabled or sick members as household head or primary income earners. Poverty was also reported but less consistently than demographics. Although information on criteria used in 2004 was directed to food aid and the one in 2009 to PSNP specifically, the criteria seem in general to be similar across the two rounds and consistent with the general guidelines, which generally state that food aid should be given to those facing serious food shortages (defined as deficiencies in food availability for 3 months or more), those who experienced a serious loss of assets without means of support themselves, or those without family support or other means of protection (MoARD 2004).

In addition to targeting criteria, I also focus on political connections. The measure of household political influence is a dummy indicator for households that have relatives or friends

holding an official position in the *kebele* or elsewhere. This indicator was only asked in 2004, therefore, as other papers have done, I assume staticity over time in political elections and connections.

Table 4: Characteristics of Public Works and Food Aid beneficiary/non-beneficiary households

	<b>Public Works</b>			<b>Food Aid</b>		
	Non targeted	Targeted	Diff.	Non targeted	Targeted	Diff.
Head primary education	0.15	0.14	-0.01	0.19	0.17	-0.02
Female head	0.37	0.35	-0.02	0.33	0.33	-0.00
Age head	52.50	48.82	-3.68***	49.66	53.42	3.77***
Inability score	1.46	1.25	-0.20***	1.29	1.44	0.15***
Household size	5.44	5.87	0.43***	5.98	5.59	-0.39***
Share of elders	0.11	0.04	-0.07***	0.05	0.11	0.06***
Livestock pc	324.68	309.33	-15.35	318.59	259.62	-58.98**
Food insecurity	3.11	3.96	0.85***	3.24	3.84	0.60***
Political connections	0.32	0.41	0.09***	0.39	0.44	0.05*

Variables are averaged over the two rounds. Figures includes only villages that received either public works or food aid.

The main differences between public works beneficiaries and non-beneficiaries are found among labour supply characteristics, food security and political connections. Targeted households for public works are on average statistically larger, with a lower share of elders, and with household heads younger and with a lower work inability score compared to non-targeted households. The work inability score is an average score based on five different questions concerning the households head's ability to do daily activities<sup>24</sup>. Each question has four possible answers from performing the task easily (value 1) to not able at all to perform the task (value 4). The average score across the five questions provide an index of inability to work, ranging from one to four, one being able and four not at all. They also reported a statistically higher number of months of food insecurity and on average a higher share of beneficiaries reported to have political connections. Livestock holdings are lower among the targeted households although the difference is not significant.

The differences among food aid beneficiary and non-beneficiary households' characteristics are found in similar characteristics as for public works but with opposite sign for labour supply variables. Household heads are statistically older in targeted households than in non-targeted households, and have higher inability scores. Households are larger and with higher share of

<sup>24</sup>The questions were: "Can this person (1) Stand up after sitting down? (2) Sweep the floor? (3) Walk for 5 km? (4) Carry 20 liters of water for 20m? (5) Hoe a field for a morning?"

elders among food aid beneficiary households than in non-beneficiary households. In relation to wealth, beneficiary households have on average faced more months of food insecurity but, unlike for public works, have also a statistically lower level of livestock holdings. As for political connections, a statistically higher share of households with political connections are found among beneficiary households.

Table 5: Differences in beneficiary/non-beneficiary households by year and type of aid

	<b>Public Works</b>		<b>Food Aid</b>	
	2004 Diff.	2009 Diff.	2004 Diff.	2009 Diff.
Head primary education	-0.00	-0.03	-0.01	-0.03
Female head	-0.08**	0.09**	-0.00	-0.00
Age head	-3.29***	-4.06***	2.48**	4.87***
Inability score	-0.19***	-0.23***	0.17***	0.13**
Household size	0.53**	0.25	-0.47**	-0.31
Share of elders	-0.06***	-0.08***	0.05***	0.08***
Livestock pc	55.03*	-133.20***	50.95*	-152.67***
Food insecurity	0.72***	1.13***	0.38**	0.79***
Political connections	0.13***	0.01	0.08**	0.02

Figures includes only villages that received either public works or food aid.

However, these differences in characteristics were averaged over the two rounds under analysis. Table 5 reports the differences for public works and food aid beneficiary and non-beneficiary households separately for the two rounds. The most striking differences among the two rounds for the beneficiary/non-beneficiary groups are found in livestock and political connections. The difference in livestock holdings between beneficiary and non-beneficiary households in 2004 is statistically significant and positive while in 2009 the difference is negative, meaning that on average in 2004 targeted households held higher levels of livestock than non-targeted households while in 2009 the opposite is found. Political connections instead show to be statistically different in 2004 but not in 2009. These differences in livestock and political connections have a similar pattern for public works and for food aid targeting. These first figures tend to suggest an improvement in targeting of the two aid programmes along some lines. However, these are only descriptive statistics that can only provide first hints into targeting patterns over time. Section 6 will provide a multivariate analysis for a more accurate picture.

## 6 Empirical strategy and model specification

Same estimation equations and covariates are used for modeling public works and food aid. For each of them I estimate two sets of outcomes, the probability of accessing the program and the amounts of aid received, as a function of observable household characteristics which are indicated in the official guidelines, those that represent their interpretation by village officials and other variables that are expected to play a role in the aid distribution process. I estimate the following equation for household  $i$  in village  $j$  at time  $t$ :

$$Y_{ijt} = f(X_{ijt}, Z_{ijt}, v_{jt}) \quad (1)$$

Where  $X_{ijt}$  is a vector of household characteristics selected as reported in the guidelines or their interpretation by village officials (households assets and demographics),  $Z_{ijt}$  includes variables that represents household's political connections, and  $v_{jt}$  controls for unobservable time-varying village fixed effects.

Demographics included in the model are household size (log), proportion of elderly, a dummy variable for whether the household head is female or not. Clay et al. (1999) found that in the past 'a disproportionate number of female and aged heads of households received food aid, irrespective of their food needs'. A variable to capture the human capital of the household head, proxied by a dummy variable which takes value 1 if the household head has completed primary school is included. In this context this variable might proxy for wealth or income earning potential, although it might capture also the ability to enforce access to food aid. Asset is proxied by the lagged livestock value per capita (log), the most important asset in the rural context of Ethiopia. In the model I include the lagged value of livestock as it better reflects the economic situation of households before aid distribution therefore providing a better picture of the wealth situation before targeting had taken place. It might well be that it does depend on past aid but this should not affect the results as selection of beneficiaries happens on a yearly basis.

As a measure of 'need' and vulnerability, unlike other studies on targeting in Ethiopia (Brousard et al., 2014; Jayne et al., 2002; Strauss and Yamano, 2001), I use a direct indicator of

food insecurity instead of consumption (or income) net of aid. The reasons are that, not only consumption does ignore the behavioural response of the household to aid but it may also be an untruthful/distort indicator of initial level of consumption. This may well be the case if households that are not particularly in need receive high amounts of aid. The consumption net of aid in these cases may wrongly picture such households as particularly in need. In addition, since I am interested in the amount of aid distributed to households, this indicator might conceal the real pattern of distribution of aid, especially if more aid is given to relatively better off households, as it had been shown in the literature (Broussard et al., 2014; Clay et al., 1999). The indicator that I use instead to proxy for vulnerability is the number of months during which a household has had problems in satisfying the food needs in the previous 12 months. As already discussed in Section 5, political connections is captured by a dummy variable for whether the household head has close associates holding official positions.

Although the official guidelines directly mention households that experienced a serious loss of assets as a consequence of shocks as households to be targeted, in my main model I do not include any shock indicator. I do run several specifications in which I include a number of idiosyncratic shocks (death of household head, illness of household head or other members, shocks related to livestock or crops and harvest, etc.) but none of them appear to be correlated to aid receipt. Similarly, in the set of results reported, I do not include the size of the *iddir*<sup>25</sup> the household belong to, nor the number of people the household could rely on in times of need.

As the interest of this study is to assess targeting effectiveness and to compare 2004 with 2009 targeting, I first run a pooled model<sup>26</sup> by appending the two rounds including only villages for years that received aid. I then run a full interacted model between all the covariates and the 2009 time dummy to see if critical differences in implementation of targeting are actually found. I therefore estimate the latter model as the following specification:

$$Y_{ijt} = \beta_0 + \beta_1 X_{ijt} + \beta_2 Z_{ijt} + \beta_3 (X_{ijt} * t_1) + \beta_4 (Z_{ijt} * t_1) + v_{jt} + \varepsilon_{ijt} \quad (2)$$

---

<sup>25</sup>The *iddir* is a funeral society. Members pay a regular contribution, and its benefits are that the the group pays for the costs of a funeral of a member and any of its close relatives.

<sup>26</sup>Since the political connection variable is, in this data set, time-invariant, pooled models are the best option.

OLS estimation of parameters of this model is straightforward, but inference needs to control for likely correlation of the error  $\varepsilon_{ijt}$  over time for a given individual. For short panels, it is possible to obtain cluster-robust standard errors that cluster on the individual under the assumptions that errors are independent across individuals and that  $N \rightarrow \infty$ . I estimate equation 2 through Probit separately for public works and for food aid.

Besides modeling the selection criteria, I further investigate aid by focusing on the determinants of amounts of aid received. The specifications are the same as those described for the probability of accessing aid, but now the dependent variable represents aid amounts. For public works I consider three different dimensions of aid levels, the value of the quantity of food and cash received in the previous 12 months in Birr, the number of days worked on public works, and the daily wage. For food aid only aid payments (cash and food) received in the previous 12 months in Birr are available. This second set of equations is estimated with a Tobit modeling to account for selection into aid programmes. A number of critics are attributed to the Tobit model, mostly for the restrictions imposed on the relationship being modeled (the signs of the covariates are constrained to be the same as those from the Probit), and for the normality assumption. The former issue is formally tested and<sup>27</sup>. For the latter issue, amounts are transformed into natural logarithms in order to satisfy the normality assumption. In Section 8 the robustness of this approach will be further discussed. There a number of potential issues with the estimation of these equations, especially in relation to the variables that represent a household influence within a village. One concern may arise in particular for the potential endogeneity of these variables. For instance from simultaneity of political affiliation and aid distribution processes. The robustness of results to concerns about endogeneity are addressed later.

---

<sup>27</sup>Report here results of test



## 7 Results

### 7.1 Public works

Table 6 reports the estimation results for equation 2 for public works. Column 1 gives the marginal effects of covariates of interest on the probability of being targeted for public works in 2004 and 2009 (pooled model). Column 2 reports the marginal effects for the full interacted model, from which it is possible to assess if there has been any difference in targeting public works between 2004 and 2009. The coefficients of non-interacted variables in fact show the probability of accessing public works in 2004, while once interacted with the 2009 time dummy, the coefficients reflect the difference of the variable on the probability of accessing public works compared to 2004. To get the net effect of how targeting was made in 2009 the coefficients of the non-interacted and the interacted variables must be summed up<sup>28</sup>. The net effect of 2009 is reported in Column 3.

Overall the results from the pooled model seem to suggest that targeting happened on the basis of labour supply characteristics, wealth, vulnerability and political connections. The major factors upon which participation is determined seem to be mostly related to labour supply characteristics, as indicated by the negative and significant coefficients of share of elders and of the work inability score of household head. The coefficient of wealth, proxied by livestock, is negative and statistically significant, suggesting that increases in wealth are negatively correlated to the probability of accessing public works. Food insecurity is positively correlated to the probability of accessing public work. All results in line with official guidelines and indicating means-based targeting. However, the political connection variable is also statistically significant and positive, suggesting that having relatives or friends holding official positions in the local administration increases the probability of accessing public works.

The interest of this study is, however, to assess if targeting in 2009 was performed more in line with guidelines and less dependent on political affiliations. Columns 2 and 3 can help in answering this question. With reference to variables that capture economic need, there is no clear pattern of improvement. If on one hand there is an improvement related to the

---

<sup>28</sup> $[b_0/(se_0)^2] + [b_1/(se_1)^2]$

Table 6: Public Works

	Participation			Amount		
	(Pooled)	(Interacted)	(Net)	(Pooled)	(Interacted)	(Net)
Log household size	0.082 (0.050)	0.103* (0.055)		0.332** (0.141)	0.302** (0.142)	
Share of elders	-0.762*** (0.133)	-0.618*** (0.150)		-2.389*** (0.500)	-1.794*** (0.440)	
Female head (d)	-0.030 (0.039)	-0.081* (0.044)		-0.080 (0.097)	-0.246*** (0.095)	
Head primary education (d)	-0.065 (0.048)	-0.076 (0.055)		-0.113 (0.124)	-0.152 (0.119)	
Work inability score of head	-0.070** (0.031)	-0.064* (0.034)		-0.180* (0.095)	-0.132 (0.092)	
Log lagged pc livestock value	-0.024*** (0.009)	-0.008 (0.009)		-0.060** (0.024)	-0.008 (0.023)	
Food insecurity	0.020*** (0.007)	0.032*** (0.010)		0.056*** (0.020)	0.075*** (0.021)	
Political connections (d)	0.061* (0.037)	0.081** (0.039)		0.156 (0.098)	0.173* (0.099)	
Year 2009 (d)	-0.169* (0.089)	0.242 (0.215)		-0.281 (0.298)	0.542 (0.652)	
$t_1$ * Log household size		-0.065 (0.079)	0.037 (0.097)		0.027 (0.351)	0.327 (0.343)
$t_1$ * Share of elders		-0.119 (0.194)	-0.739*** (0.248)		-1.032 (0.951)	-2.711*** (0.959)
$t_1$ * Female head (d)		0.099* (0.058)	0.019 (0.075)		0.520* (0.287)	0.217 (0.242)
$t_1$ * Head education (d)		0.049 (0.076)	-0.026 (0.096)		0.218 (0.374)	0.042 (0.335)
$t_1$ * Inability score		0.001 (0.043)	-0.062 (0.056)		-0.120 (0.216)	-0.239 (0.213)
$t_1$ * Log pc livestock		-0.032** (0.014)	-0.040** (0.017)		-0.183*** (0.062)	-0.170*** (0.061)
$t_1$ * Food insecurity		-0.024** (0.011)	0.007 (0.015)		-0.068 (0.048)	0.015 (0.049)
$t_1$ * Political connections (d)		-0.063 (0.054)	0.017 (0.067)		-0.114 (0.242)	0.072 (0.241)
Pseudo R <sup>2</sup>	0.181	0.194		0.111	0.117	
Observations	1104	1104		1104	1104	
LL	-624.383	-615.648		-1660.587	-1650.312	

Significance levels \* 10% \*\* 5% \*\*\* 1%. Participation is estimated through Probit model; amount is estimated through Tobit model. Reported coefficients refer to marginal effects for both models. Standard errors are clustered at the household level.

ownership of assets, on the other hand food insecurity appears to be no longer statistically relevant in 2009. In 2009 per capita value of livestock is negatively related to the probability of accessing public works, while in the previous period livestock did not seem to be as important. This is in line with the findings of other studies that analyse targeting of public works in

preceding periods to 2009 (Caeyers and Dercon, 2012). Evaluated at the mean value of all other characteristics, households at the 25th, 75th, and 95th percentile of lagged livestock value in 2009 have, respectively, 58%, 52%, and 50% probability of being targeted for public works. Notwithstanding the improvement compared to 2004, however, it is worth noting that the richest households still have 50% probability of accessing public works while a significant proportion of worse-off households were left out of the programme. On the other hand, food insecurity had a significant effect on the probability of accessing public works in 2004 but not in 2009. Keeping all other variables constant, in 2004 an additional month of food insecurity on average increases the probability of accessing public works by 3.2 percentage points. On the contrary, food insecurity in 2009 is significantly less important than in 2004.

The results suggest that political affiliations, while playing an important role in allocation of public works in 2004, do not matter any more in 2009. This might be the result of the new PSNP procedures foreseen for promoting transparency and fairness in the allocation of aid. In 2004 households that have friends or relatives holding official position within the local administration had 8.1 percentage points higher probability of being selected for public works compared to households that do not have such affiliations. The magnitude of this effect might seem not particularly big but when compared to other significant variables in determining targeting it becomes clearer the importance. For instance, an increase of 1 month in the period of food insecurity faced by a household has an increase in the probability of accessing public works of 3.2 percentage points. This implies that, *ceteris paribus*, a household with political connections has the same probability of accessing public works as one with 250% more of months of food insecurity and with no political connections. The coefficient on the interacted variable is not statistically significant, nor is the net effect of political connections in 2009.

Variables that capture labour supply characteristics also reflect a different pattern between 2004 and 2009 in a direction of fairer targeting in the latter period. While in 2004 female headed households were negatively correlated to the probability of accessing public works, in 2009 the coefficient is no significant any more. The coefficient of the interacted variable is, instead, significant and positive, suggesting that in 2009, compared to 2004, female headed households were more likely to be targeted. This, again, is in line with the guidelines of the

PSNP, which foresee a number of gender-specific arrangements to try be make the PSNP as inclusive as possible. In 2004 female headed households had 8.1% lower probability of accessing public works compared to non-female headed households. In 2009 the net effect of female headed households is no significant any more.

The work inability of the household head is negatively correlated to accessing public works in 2004, and no difference is found in 2009 (the coefficient is close to zero and not significant). The net effect of the variable in 2009 is not statistically significant but same in size and sign as in 2004. The effect was found only marginally significant even in 2004 anyway.

Household size is positively correlated to the probability of accessing public works in 2004 but not anymore in 2009. This seems also an improvement since the past. As previous studies showed (Clay et al., 1999), in fact, in the past it was found that public works were assigned on the basis of labour supply surplus, independently of the need of the household. In 2009, the coefficient is not significant, implying that public works do not seem to be assigned on the mere basis of labour supply characteristics. Share of elders is significant in both periods. An increase in the proportion of elders in the household is associated with a decrease in the probability of accessing public works, in line with the guidelines which foresee an age limit to work on public works.

In addition to assessing the probability of accessing public works, I also investigate the amount of aid received from public works by looking at the monthly aid receipts, the number of days assigned on public works, and the rate of daily wage<sup>29</sup>. The results are reported in the last three columns of Table 6 (yearly payment) and in Table 7 (number of days and daily wage rate). The amount of aid received is expected to be subject to even more bias than the participation as quantities would be more difficult to monitor. The results reflect those shown for participation, for all three outcomes.

---

<sup>29</sup>All variables are expressed in logs.

Table 7: Public Works

	No. of Days			Daily Wage Rate		
	(Pooled)	(Interacted)	(Net)	(Pooled)	(Interacted)	(Net)
Log household size	0.344*	0.374*		0.083	0.072	
	(0.181)	(0.205)		(0.063)	(0.083)	
Share of elders	-3.108***	-2.389***		-1.045***	-1.004***	
	(0.671)	(0.603)		(0.238)	(0.268)	
Female head (d)	-0.130	-0.356***		-0.014	-0.110*	
	(0.126)	(0.136)		(0.046)	(0.059)	
Head primary education (d)	-0.191	-0.262		-0.073	-0.099	
	(0.158)	(0.169)		(0.056)	(0.071)	
Work inability score of head	-0.240*	-0.225*		-0.095**	-0.104*	
	(0.126)	(0.132)		(0.044)	(0.054)	
Log lagged pc livestock value	-0.083**	-0.024		-0.029**	-0.005	
	(0.033)	(0.033)		(0.011)	(0.013)	
Food insecurity	0.069***	0.099***		0.021**	0.039***	
	(0.026)	(0.031)		(0.009)	(0.012)	
Political connections (d)	0.162	0.239*		0.096**	0.146**	
	(0.124)	(0.141)		(0.047)	(0.061)	
Year 2009 (d)	-0.417	0.707		-0.245**	0.066	
	(0.365)	(0.910)		(0.116)	(0.349)	
$t_1$ * Log household size		-0.078	0.295		0.083	0.156
		(0.449)	(0.494)		(0.162)	(0.182)
$t_1$ * Share of elders		-1.920	-4.309***		-0.319	-1.323***
		(1.212)	(1.355)		(0.434)	(0.510)
$t_1$ * Female head (d)		0.631*	0.275		0.236*	0.126
		(0.366)	(0.390)		(0.134)	(0.147)
$t_1$ * Head education (d)		0.288	0.260		0.071	-0.028
		(0.466)	(0.496)		(0.167)	(0.182)
$t_1$ * Inability score		-0.057	-0.282		-0.005	-0.109
		(0.265)	(0.297)		(0.101)	(0.115)
$t_1$ * Log pc livestock		-0.210***	-0.234***		-0.086***	-0.091***
		(0.078)	(0.085)		(0.028)	(0.031)
$t_1$ * Food insecurity		-0.082	0.017		-0.036*	0.003
		(0.061)	(0.068)		(0.021)	(0.025)
$t_1$ * Political connections (d)		-0.275	-0.035		-0.137	0.008
		(0.293)	(0.325)		(0.109)	(0.125)
Pseudo R <sup>2</sup>	0.075	0.081		0.143	0.150	
Observations	1086	1086		1086	1086	
LL	-1804.074	-1793.559		-1243.550	-1233.247	

Significance levels \* 10% \*\* 5% \*\*\* 1%. The models are estimated through Tobit model. Reported coefficients refer to marginal effects. Standard errors are clustered at the household level.

## 7.2 Food aid

Table 8 reports the results of the probability of receiving food aid and the determinants of amounts of aid received. The pooled model shows that food aid is fairly means-based targeted

although political connections also play a role. Households with less work-abled members, namely households with higher proportions of elders and with higher work inability of the head, are more likely to receive food aid. Levels of livestock are instead associated to a lower probability of accessing food aid.

Splitting the analysis into 2004 and 2009 gives similar results to the pooled model, with food aid targeted mostly towards labour-constrained households in 2004 but, at the same time, towards households with political connections. A one-point increase in the work inability score (that ranges from 1 to 4) increases the probability of receiving food aid by 6 percentage points. Similarly to what found for public works, having political connections increases the probability of receiving food aid by 7 percentage points. None of the coefficients of the interacted variables with the 2009 time dummy are significant, suggesting that no major difference in targeting procedures were applied in 2009 compared to 2004, but also that targeting in 2009 is not based on any of the variables included in the model. However, when estimated through linear probability model or bivariate probit (Table 11), significant results for targeting in 2009 are found, with allocations being based on work endowments of the households. The probability of receiving food aid is increasing in the share of elders and in the work inability of the head and is more than double than in 2004. Political affiliations, instead, are no longer significant in the process of aid allocation in 2009.

The results on the amount of aid are fairly encouraging as it seems that work endowments are the main determinants of amounts. Both in 2004 and in 2009 higher levels are given to households with higher proportions of elders and to households with higher work inability scores, with 2009 showing an increment in the role played by these variables. As for public works, political connections do not seem to play a role in the amount of aid distributed.

Table 8: Food Aid

	Participation			Amount		
	(Pooled)	(Interacted)	(Net)	(Pooled)	(Interacted)	(Net)
Log household size	-0.021 (0.043)	-0.029 (0.061)		0.018 (0.107)	0.016 (0.140)	
Share of elders	0.373*** (0.106)	0.325** (0.161)		0.684*** (0.207)	0.566* (0.304)	
Female head (d)	-0.013 (0.036)	-0.033 (0.047)		-0.030 (0.087)	-0.056 (0.107)	
Head primary education (d)	0.010 (0.042)	0.011 (0.060)		0.009 (0.102)	-0.017 (0.142)	
Work inability score of head	0.078*** (0.024)	0.060* (0.035)		0.221*** (0.055)	0.158** (0.072)	
Log lagged pc livestock value	-0.013* (0.008)	-0.012 (0.010)		-0.035* (0.018)	-0.021 (0.023)	
Food insecurity	0.002 (0.007)	0.005 (0.010)		0.003 (0.017)	0.013 (0.023)	
Political connections (d)	0.078** (0.030)	0.069* (0.042)		0.149* (0.078)	0.161 (0.101)	
Year 2009 (d)	0.108 (0.075)	0.043 (0.208)		0.444** (0.225)	0.131 (0.707)	
$t_1$ * Log household size		0.014 (0.068)	-0.015 (0.091)		-0.068 (0.155)	-0.052 (0.201)
$t_1$ * Share of elders		0.042 (0.184)	0.366 (0.244)		0.367 (0.286)	0.933** (0.417)
$t_1$ * Female head (d)		0.032 (0.056)	-0.001 (0.074)		0.095 (0.120)	0.039 (0.161)
$t_1$ * Head education (d)		0.003 (0.061)	0.015 (0.086)		-0.124 (0.144)	-0.142 (0.202)
$t_1$ * Inability score		0.023 (0.041)	0.083 (0.054)		0.168** (0.078)	0.326*** (0.106)
$t_1$ * Log pc livestock		-0.002 (0.012)	-0.014 (0.016)		0.018 (0.024)	-0.003 (0.033)
$t_1$ * Food insecurity		-0.003 (0.010)	0.001 (0.014)		0.001 (0.020)	0.014 (0.030)
$t_1$ * Political connections (d)		0.009 (0.047)	0.078 (0.063)		-0.053 (0.098)	0.109 (0.141)
Pseudo R <sup>2</sup>	0.176	0.177		0.087	0.132	
Observations	1346	1346		1346	1346	
LL	-768.215	-767.595		-1763.278	-1239.227	

Significance levels \* 10% \*\* 5% \*\*\* 1%. Participation is estimated through Probit model; amount is estimated through Tobit model. Reported coefficients refer to marginal effects for both models. Standard errors are clustered at the household level.

## 8 Robustness tests

It could be the case that political connections are influenced by the food aid distribution process. In particular, it might be that people that had received aid in the past had become to

know local administrators just for the reason of being targeted. If this was the case, political connections and aid might be simultaneously determined or even reflect reverse causality. Table 9 shows the results of selection into public works and food aid where I added a variable that captures the receipt of aid in the past<sup>30</sup>. The inclusion of the past aid variable does not modify the coefficients in neither of the models. The only variable that seems to slightly change is the political connection in the full interacted model for food aid where the coefficient is no longer significant, although the difference with the model without the inclusion of the past aid variable is quite small as the level of significance was already low and with past aid only slightly decreases. These results overall reassure over the validity of the model.

Past aid seems also to be an important determinant in the receipt of aid. This is not surprising as official targeting rules state that past aid should be used to determine eligibility. As reported also in other studies (Jayne et al., 2002; Caeyers and Dercon, 2012), this result is in line with the *inertia* hypothesis which contributes to explain the high degree of inclusion errors in targeting both among villages as well as households. On the other hand the significance of past aid might be related to unobserved omitted variables in which case it may improve the power of the model. Past aid seems to be even more important in 2009, the coefficients are larger than for 2004<sup>31</sup>. For public works, in particular, there is a big difference compared to 2004, when it seems it was not playing an important role in determining eligibility.

As shown in Section 5 in both years there are households that receive both types of aid. This might raise concerns about the reported estimates if the participation (amount) in one programme influence the participation (amount) in the other too. To explore this possibility I run a Seemingly Unrelated Regression (SUR) Linear Probability model and a Bivariate Probit model for both participation and amount of aid received<sup>32</sup>. When errors are correlated across equations for a given individual but uncorrelated across individuals, a system of linear equations exploits the cross-correlation of the errors to improve estimator efficiency. Tables 10 and 11 report the determinants of the probability of receiving public works and food aid

---

<sup>30</sup>The past aid variables are dummy variables constructed as whether households received public works in the past in the public work participation model and as whether households received food aid in the past in the food aid participation model. I also try with a broader definition of past aid by considering the receipt of any kind of aid in the past and the results still hold.

<sup>31</sup>The net coefficients are not reported in Table 9. For past aid they are 0.169 and 0.143 for public works and food aid respectively, both significant at 5% level.

<sup>32</sup>The bivariate probit is run only for the participation model.



Table 9: Public Works and Food Aid and Past Aid

	Public Works		Food Aid	
	(Pooled)	(Interacted)	(Pooled)	(Interacted)
Log household size	0.076 (0.049)	0.100* (0.055)	-0.017 (0.043)	-0.029 (0.061)
Share of elders	-0.748*** (0.131)	-0.614*** (0.151)	0.363*** (0.107)	0.319** (0.160)
Female head (d)	-0.025 (0.038)	-0.079* (0.045)	-0.015 (0.036)	-0.033 (0.048)
Head primary education (d)	-0.060 (0.047)	-0.073 (0.056)	0.013 (0.042)	0.013 (0.060)
Work inability score of head	-0.068** (0.030)	-0.064* (0.034)	0.080*** (0.024)	0.056 (0.035)
Log lagged pc livestock value	-0.024*** (0.009)	-0.007 (0.009)	-0.013 (0.008)	-0.011 (0.010)
Food insecurity	0.021*** (0.007)	0.032*** (0.010)	-0.000 (0.007)	0.004 (0.010)
Political connections (d)	0.058 (0.036)	0.080** (0.039)	0.070** (0.031)	0.064 (0.042)
Year 2009 (d)	-0.184** (0.089)	0.111 (0.226)	0.077 (0.081)	0.006 (0.216)
Past Aid	0.105** (0.045)	0.046 (0.051)	0.149*** (0.045)	0.139** (0.056)
$t_1$ * Log household size		-0.062 (0.083)		0.018 (0.067)
$t_1$ * Share of elders		-0.106 (0.203)		0.029 (0.178)
$t_1$ * Female head (d)		0.107* (0.063)		0.028 (0.055)
$t_1$ * Head education (d)		0.046 (0.080)		0.005 (0.061)
$t_1$ * Inability score		0.012 (0.046)		0.029 (0.039)
$t_1$ * Log pc livestock		-0.035** (0.015)		-0.002 (0.011)
$t_1$ * Food insecurity		-0.025** (0.011)		-0.006 (0.010)
$t_1$ * Political connections (d)		-0.071 (0.057)		0.003 (0.046)
$t_1$ * Past aid		0.119* (0.071)		0.007 (0.064)
Pseudo R <sup>2</sup>	0.186	0.199	0.183	0.184
Observations	1104	1104	1346	1346
LL	-621.535	-611.269	-762.169	-761.388

Significance levels \* 10% \*\* 5% \*\*\* 1%. Participation is estimated through Probit model. Reported coefficients refer to marginal effects. Standard errors are clustered at the household level.

respectively. The two aid programmes are negatively correlated (-0.062) although only at 10% of significance, a first indication that it might be needed to model the two outcomes

jointly. When testing whether  $\rho$  is equal to zero, the null hypothesis is rejected<sup>33</sup> suggesting that the Bivariate Probit might be a superior model.

The results for public works do not differ from those obtained through the Probit estimation, the coefficients of the covariates are very similar with same level of statistical significance. For food aid, instead, the estimates through the Bivariate Probit and the Sur linear probability model present differences. These are found in the interacted variables and in the 2009 results. In particular, the magnitude and the sign of most variable change, with two variables now being highly statistically significant. In 2009 the share of elders and the work inability score are positively associated to the probability of accessing food aid. This may seem at first suggesting an improvement in targeting of food aid in 2009 compared to 2004.

However, both the Sur linear probability model and the Bivariate Probit need to include only villages that received in a given year both public works and food aid. The inclusion of villages that did not receive the other programme might bias the results as households that were not beneficiaries in a village that did not receive aid are different from households that were not targeted in a village that did receive aid. The two significant variables were found to be significant even in 2004 though in 2009 there is a significant improvement as there a positive and significant difference from 2004 and the net effect in 2009 is stronger as the coefficients are significantly larger than in 2004. The same results are found when the Probit model is restricted on the same villages, namely on those that in a given year did receive both types of aid. The difference between the regression run by including all villages that received food aid and restricting to those that received food aid and public works may suggest that an improvement in targeting was found only in those villages that were part of the PSNP and that received public works. This could be because of the setting created by the PSNP, from the system in place for managing targeting to the monitoring system in place. Unfortunately these are only speculations. There is no data that could help us further investigating if this was the case or the channels that led the improvement in targeting.

All these results, as already specified in Section 5, are not nationally representative, but only indicative of the different farming systems in the country. Furthermore, as other studies

---

<sup>33</sup>The likelihood-ratio test gives a  $\chi^2$  equal to 14.935 and 15.603 respectively for equation without interactions and for equation fully interacted, with a corresponding p-value of 0.000 in both cases.

(qualitative as well as quantitative) have shown, there is a great heterogeneity in the processes of selection of beneficiaries. However, the small size of the sample does not allow to investigate this.

## 9 Conclusions

Ethiopia continues to rely on aid transfers for the subsistence of a large part of its population. Targeting of food aid, whether in form of relief food aid or public works, is community-based with guidelines provided by the federal government on how to select beneficiaries, which only generally refer to poverty and food insecurity. The lack of clear indication on which criteria to use in the selection and the poor monitoring on how targeting was carried out has often raised concerns about the efficiency of such strategy to reach the most in need.

Most of the empirical evidence, almost exclusively concentrated on pre-PSNP programmes, found selection of beneficiaries fairly based on observable characteristics reflecting vulnerability, although still imperfect and improvable. In particular, if food-for-work programmes used to select on the basis of labour-supply availability characteristics, free food distributions mostly selected beneficiaries according to old age and disability (Jayne et al., 2001; Gilligan and Hoddinott, 2007). The lack of clear criteria left room for elite capture and rent seeking behaviours as in practice it is *kebele* leaders and local officials that have power over food aid distribution. Few empirical studies have confirmed this anecdotal evidence, corroborating the importance of political connections in aid distribution in the Ethiopian context.

In the last 10 years, Ethiopia has put a lot of effort in restructuring its aid system by focusing on a safety net programme as opposed to the previous emergency aid. In 2005 the Productive Safety Net Programme (PSNP) was implemented, a large social protection programme that would build on the previous system in place of emergency aid for its distribution and implementation. A number of measures were undertaken in order to improve targeting and its transparency. At the same time, emergency aid still continues to exist but on a smaller scale.

In this paper I investigate whether targeting of the two main aid interventions has improved

compared to the past. Using the last two rounds of the ERHS, one just before the implementation of the PSNP (2004) and the other after a few years of its implementation (2009), I directly compare the differences in targeting across the two years for food aid and for public works. My attention is on three main variables that capture food insecurity, poverty and political connections. The results for 2004 are fairly consistent with previous studies (Gilligan and Hoddinott, 2007, Caeyers and Dercon, 2012) which found political connections to be particularly important in selection of beneficiaries for both public works and food aid. The results suggest an overall improvement in targeting, especially for public works, the main component of PSNP. In particular, wealth in 2009 is a strong predictor of targeting while political connections do not seem to play a key role anymore.

Food aid results seem to suggest that in 2009 no observable characteristics were related to the probability of accessing aid. While in 2004 share of elders, work inability of the household head and political connections were all linked to higher probabilities of being targeted, in 2009 none of these is significant anymore. However, when I run a Sur linear probability model and a bivariate model, which constrain the analysis on villages receiving both public works and food aid, the results for 2009 show that targeting seems to be based on being old and on work inability of the household head. Political connections, instead, are no longer significant. These results are similar to those for 2004 (and those from other studies) with the only difference being the lack of importance of political connections in determining food access in 2009. These findings might bring one to speculate that public works have had some externalities on targeting of food aid. It might be that the improvement in the selection of beneficiaries brought by the PSNP affected the overall aid distribution system in a given village.

Concerns about the potential reverse causality between receipt of aid in the past and political connections is investigated and rejected. The inclusion of past aid does not change the regression results. Past aid appears to be a strong predictor of current receipt of aid, not surprising as it is one of the criteria indicated by the federal guidelines to identify beneficiaries.

To summarise, it seems that targeting of public works, with the implementation of the PSNP, has improved in 2009, now being more means-based compared to the pre-PSNP round. Food aid, instead, remains allocated on the basis of inability to work of household members, al-

though political connections at least are not significantly associated to aid receipt.

## **10 Annex**

Table 10: Participation into Public Works

	LPM		Sur LPM		Bivariate Probit		
	(Pooled)	(Inter)	(Pooled)	(Inter)	(Pooled)	(Inter)	(Net)
Log household size	0.066 (0.043)	0.094* (0.054)	0.073 (0.046)	0.076 (0.054)	0.096* (0.058)	0.086 (0.059)	
Share of elders	-0.569*** (0.083)	-0.533*** (0.109)	-0.581*** (0.093)	-0.560*** (0.117)	-0.789*** (0.140)	-0.640*** (0.149)	
Female head (d)	-0.023 (0.033)	-0.074* (0.041)	-0.012 (0.035)	-0.075* (0.042)	-0.015 (0.044)	-0.079* (0.046)	
Head primary education (d)	-0.052 (0.042)	-0.068 (0.054)	-0.043 (0.047)	-0.082 (0.057)	-0.061 (0.057)	-0.097* (0.059)	
Work inability score of head	-0.065** (0.026)	-0.065** (0.033)	-0.063** (0.029)	-0.063* (0.033)	-0.069** (0.035)	-0.062* (0.034)	
Log lagged pc livestock value	-0.021*** (0.008)	-0.007 (0.009)	-0.025*** (0.008)	-0.014 (0.009)	-0.031*** (0.010)	-0.015 (0.010)	
Food insecurity	0.017*** (0.006)	0.028*** (0.008)	0.017*** (0.007)	0.027*** (0.009)	0.022** (0.009)	0.030*** (0.010)	
Political connections (d)	0.049 (0.030)	0.070* (0.037)	0.081** (0.033)	0.092** (0.037)	0.105*** (0.041)	0.107*** (0.040)	
Year 2009 (d)	-0.152* (0.087)	0.222 (0.215)	-0.098 (0.069)	0.105 (0.253)	-0.200* (0.103)	0.023 (0.263)	
$t_1$ * Log household size		-0.072 (0.088)		-0.008 (0.104)		-0.004 (0.098)	0.082 (0.101)
$t_1$ * Share of elders		-0.082 (0.166)		-0.041 (0.196)		-0.093 (0.222)	-0.718*** (0.238)
$t_1$ * Female head (d)		0.111* (0.063)		0.161** (0.067)		0.157** (0.066)	0.052 (0.073)
$t_1$ * Head education (d)		0.051 (0.085)		0.134 (0.109)		0.132 (0.092)	0.012 (0.098)
$t_1$ * Inability score		-0.006 (0.047)		-0.070 (0.057)		0.004 (0.051)	-0.059 (0.054)
$t_1$ * Log pc livestock		-0.036** (0.015)		-0.030* (0.017)		-0.028 (0.018)	-0.039** (0.018)
$t_1$ * Food insecurity		-0.023* (0.012)		-0.021 (0.014)		-0.026* (0.015)	0.009 (0.016)
$t_1$ * Political connections (d)		-0.059 (0.059)		-0.039 (0.064)		-0.051 (0.067)	0.064 (0.068)
Adjusted/Pseudo R <sup>2</sup>	0.208	0.215	0.239	0.251	0.239	0.239	0.239
Observations	1104	1104	923	923	923	923	923
LL					-1033.418		-1011.993

Significance levels \* 10% \*\* 5% \*\*\* 1%. Standard errors are clustered at the household level.

Table 11: Participation into Food Aid

	LPM		Sur LPM		Bivariate Probit		
	(Pooled)	(Inter)	(Pooled)	(Inter)	(Pooled)	(Inter)	(Net)
Log household size	-0.017 (0.037)	-0.030 (0.061)	-0.041 (0.048)	-0.030 (0.064)	-0.015 (0.020)	-0.029 (0.061)	
Share of elders	0.288*** (0.080)	0.309*** (0.142)	0.413*** (0.102)	0.309*** (0.144)	0.199*** (0.092)	0.328*** (0.163)	
Female head (d)	-0.011 (0.030)	-0.031 (0.046)	-0.011 (0.034)	-0.031 (0.046)	-0.004 (0.015)	-0.034 (0.047)	
Head primary education (d)	0.016 (0.035)	0.010 (0.060)	-0.017 (0.045)	0.010 (0.059)	-0.009 (0.018)	0.011 (0.060)	
Work inability score of head	0.070*** (0.020)	0.058* (0.033)	0.096*** (0.025)	0.058* (0.031)	0.042** (0.018)	0.060* (0.035)	
Log lagged pc livestock value	-0.012* (0.007)	-0.012 (0.010)	-0.010 (0.009)	-0.012 (0.011)	-0.004 (0.004)	-0.012 (0.010)	
Food insecurity	0.002 (0.006)	0.004 (0.009)	-0.001 (0.007)	0.004 (0.009)	-0.001 (0.003)	0.005 (0.010)	
Political connections (d)	0.066** (0.026)	0.070* (0.041)	0.068** (0.032)	0.070* (0.042)	0.028 (0.018)	0.070* (0.042)	
Year 2009 (d)	0.110 (0.075)	0.047 (0.192)	-0.633*** (0.074)	-0.772*** (0.246)	-0.282*** (0.072)	-1.048*** (0.325)	
$t_1$ * Log household size		0.024 (0.078)	-0.006 (0.098)	-0.033 (0.104)		-0.028 (0.091)	-0.056 (0.107)
$t_1$ * Share of elders		-0.035 (0.189)	-0.274 (0.237)	0.209 (0.202)		0.497* (0.258)	0.813** (0.323)
$t_1$ * Female head (d)		0.038 (0.063)	0.007 (0.078)	0.062 (0.076)		0.083 (0.073)	0.047 (0.085)
$t_1$ * Head education (d)		0.012 (0.070)	0.023 (0.092)	-0.083 (0.078)		-0.102 (0.081)	-0.089 (0.100)
$t_1$ * Inability score		0.022 (0.047)	0.080 (0.057)	0.114** (0.049)		0.123** (0.048)	0.180*** (0.059)
$t_1$ * Log pc livestock		-0.001 (0.013)	-0.012 (0.017)	0.014 (0.016)		0.014 (0.015)	0.002 (0.018)
$t_1$ * Food insecurity		-0.004 (0.012)	0.001 (0.015)	-0.012 (0.014)		-0.008 (0.012)	-0.004 (0.014)
$t_1$ * Political connections (d)		-0.008 (0.052)	0.062 (0.067)	-0.017 (0.065)		-0.006 (0.077)	0.064 (0.072)
Adjusted/Pseudo R <sup>2</sup>	0.202		0.201	0.214	0.201		
Observations	1346	1346	923	923	923	923	923
LL			-1033.418	-1011.993			

Significance levels \* 10% \*\* 5% \*\*\* 1%. Standard errors are clustered at the household level.

Table 12: Amount of aid received: Public Works

	Two-Part OLS			Sur Two-Part OLS		
	(Pooled)	(Interacted)	(Net)	(Pooled)	(Interacted)	(Net)
Log household size	0.524*** (0.083)	0.287** (0.112)		0.833*** (0.151)	0.473*** (0.154)	
Share of elders	-0.439 (0.384)	-0.245 (0.499)		-1.706*** (0.305)	-1.344*** (0.367)	
Female head (d)	-0.001 (0.060)	-0.046 (0.079)		-0.066 (0.113)	-0.249* (0.128)	
Head primary education (d)	0.162* (0.090)	0.147 (0.126)		0.205 (0.143)	0.029 (0.145)	
Work inability score of head	-0.018 (0.061)	0.047 (0.080)		-0.265*** (0.094)	-0.159 (0.100)	
Log lagged pc livestock value	0.007 (0.018)	0.006 (0.022)		-0.019 (0.027)	0.003 (0.030)	
Food insecurity	0.016 (0.013)	0.014 (0.018)		0.053** (0.023)	0.066** (0.028)	
Political connections (d)	0.119* (0.064)	0.104 (0.081)		0.129 (0.110)	0.113 (0.110)	
Year 2009 (d)	1.159*** (0.266)	0.084 (0.486)		0.736*** (0.242)	-0.528 (0.925)	
$t_1$ * Log household size		0.697*** (0.179)	0.984*** (0.211)		1.065*** (0.379)	1.538*** (0.409)
$t_1$ * Share of elders		-0.560 (0.716)	-0.805 (0.872)		-0.441 (0.628)	-1.785** (0.727)
$t_1$ * Female head (d)		0.106 (0.121)	0.059 (0.145)		0.502** (0.241)	0.253 (0.273)
$t_1$ * Head education (d)		-0.010 (0.160)	0.137 (0.204)		0.535* (0.320)	0.565 (0.351)
$t_1$ * Inability score		-0.172* (0.104)	-0.125 (0.131)		-0.345* (0.192)	-0.504** (0.217)
$t_1$ * Log pc livestock		-0.003 (0.029)	0.002 (0.037)		-0.081 (0.054)	-0.078 (0.062)
$t_1$ * Food insecurity		0.013 (0.026)	0.027 (0.032)		-0.022 (0.054)	0.045 (0.060)
$t_1$ * Political connections (d)		0.068 (0.130)	0.172 (0.153)		0.084 (0.238)	0.197 (0.262)
Constant	1.119*** (0.334)	1.514*** (0.385)		-0.328 (0.345)	0.115 (0.362)	
Adjusted R <sup>2</sup>	0.749	0.754		0.502	0.527	
Observations	584	584		717	717	

Significance levels \* 10% \*\* 5% \*\*\* 1%. Standard errors are clustered at the household level.



Table 13: Amount of aid received: Food Aid

	Two-Part OLS			Sur Two-Part OLS		
	(Pooled)	(Interacted)	(Net)	(Pooled)	(Interacted)	(Net)
Log household size	0.185** (0.080)	0.351*** (0.106)		0.121 (0.129)	0.238 (0.161)	
Share of elders	0.015 (0.141)	-0.259 (0.198)		1.081*** (0.257)	0.934*** (0.328)	
Female head (d)	0.009 (0.060)	-0.035 (0.082)		0.024 (0.100)	0.001 (0.127)	
Head primary education (d)	-0.043 (0.082)	-0.077 (0.117)		0.062 (0.134)	0.231 (0.181)	
Work inability score of head	0.019 (0.035)	0.040 (0.055)		0.315*** (0.062)	0.251*** (0.079)	
Log lagged pc livestock value	0.000 (0.012)	0.008 (0.014)		0.005 (0.021)	-0.009 (0.026)	
Food insecurity	0.009 (0.011)	0.011 (0.019)		-0.022 (0.021)	-0.019 (0.027)	
Political connections (d)	-0.070 (0.054)	-0.035 (0.078)		0.134 (0.088)	0.142 (0.112)	
Year 2009 (d)	0.417*** (0.156)	0.983*** (0.364)		-1.675*** (0.224)	-1.491** (0.673)	
$t_1$ * Log household size		-0.283* (0.159)	0.068 (0.191)		-0.364 (0.299)	0.0257 (0.379)
$t_1$ * Share of elders		0.418 (0.292)	0.158 (0.353)		0.156 (0.545)	-0.126 (0.340)
$t_1$ * Female head (d)		0.091 (0.122)	0.056 (0.147)		0.052 (0.214)	1.090* (0.636)
$t_1$ * Head education (d)		0.090 (0.162)	0.013 (0.200)		-0.511* (0.275)	0.053 (0.249)
$t_1$ * Inability score		-0.040 (0.082)	-0.0001 (0.099)		0.199 (0.139)	-0.280 (0.329)
$t_1$ * Log pc livestock		-0.016 (0.023)	-0.007 (0.027)		0.061 (0.043)	0.450*** (0.159)
$t_1$ * Food insecurity		-0.003 (0.024)	0.008 (0.030)		-0.010 (0.044)	0.052 (0.050)
$t_1$ * Political connections (d)		-0.063 (0.109)	-0.098 (0.134)		-0.062 (0.205)	-0.028 (0.052)
Constant	1.014*** (0.192)	0.670*** (0.240)		0.336 (0.312)	0.238 (0.369)	
Adjusted R <sup>2</sup>	0.421	0.427		0.198	0.212	
Observations	657	657		717	717	

Significance levels \* 10% \*\* 5% \*\*\* 1%. Standard errors are clustered at the household level.

Table 14: Correlates of political connections

	<b>Political connections (0,1)</b>	
	2004	2009
Log consumption pc net of aid	0.040* (0.022)	0.016 (0.026)
Head primary education (d)	0.107** (0.042)	0.099** (0.045)
Female head (d)	-0.129*** (0.024)	-0.088*** (0.024)
Age head	0.000 (0.001)	0.001 (0.001)
Log household size	0.040 (0.055)	0.052 (0.058)
Share of elders	-0.045 (0.095)	0.082 (0.088)
Share of children	0.093 (0.096)	0.218** (0.083)
Log lagged pc livestock value	0.017** (0.007)	0.019** (0.009)
Log land per capita	0.074 (0.069)	0.051 (0.079)
Constant	0.080 (0.119)	-0.005 (0.125)
Village FE	Yes	Yes
Adjusted R <sup>2</sup>	0.092	0.085
Observations	1262	1263

Significance levels \* 10% \*\* 5% \*\*\* 1%. Linear Probability Model. Standard errors are clustered at the village level.