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ABSTRACT

Political Connections and Social Networks in Targeted Transfer Programs: Evidence from Rural Ethiopia

Despite increasingly large scale social protection programs in Africa, we have limited evidence on the local political economy of their allocation. We investigate community-based processes for food aid allocation and the role of political and social networks, using the case of Ethiopia in the aftermath of a serious drought in 2002. Local political authorities are in charge of food transfers, in terms of free food aid or food-for-work programs. We find that although targeting is clearly imperfect, free food aid is responsive to need, as well as targeted to households with less access to support from relatives or friends. We also find a strong correlation with political connections: households with close associates in official positions have more than 12 % higher probability of obtaining free food than households that are not well connected. This effect is large: someone without political connections has the same probability of getting food aid than someone more than twice as rich, but with these connections. The correlation with political connections is specifically strong in the immediate aftermath of the drought. Payment for food-for-work is also about a third higher for those with political connections. Although these programs appear to be responsive to need, in future it is crucial to look more closely at the local political economy of these programs.

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1. Introduction

Increasingly large transfer programs are in operation across the developing world, amid growing consensus that such programs can form a key part of poverty reduction strategies (World Bank, 2006). Targeting is a central feature of these programs, but concerns remain about the effectiveness of reaching the intended recipients. This paper investigates how targeted food transfers are allocated in Ethiopia, one of the poorest settings in the world.

Targeting errors in transfer programs are common across the world, as collecting information on eligibility is costly and self-selection by the needy is often neither technically nor politically feasible. Moreover, even in a world of perfect information targeting errors may occur, when actual allocations are based on criteria other than those based on objective need. There is considerable evidence on possible biases in food transfer delivery against the poor in Ethiopia, in terms of geography, demographics, gender or assets (Clay, Molla and Habtewold, 1999; Jayne et al., 2002; Coady, Grosh and Hoddinott, 2004; Gilligan and Hoddinott, 2007). Clay et al. (1999) for instance find that the primary beneficiaries of food aid programs are those at both extremes of the need distribution: those with the least *and* those with the most food available. Much less is known about how transfers are actually reaching the final recipients. Food aid delivery in Ethiopia has long taken two main forms: food-for-work (FFW) and free food distribution (FFD). Each has different targeting criteria, even though the underlying mechanism is similar. This paper studies the local political economy of transfers in Ethiopia using micro-level data, by focusing on the role of social networks and political connections in the delivery of food aid.

Food aid in Ethiopia is delivered using administrative targeting, with extensive decentralization. The amount of food to be allocated to each district (Wereda) is determined at the central government level. The actual beneficiary households for either free food or food-for-work are designated at the local community level, by the 'Kebele' committees. The Kebele is a locally elected administrative unit, with close links to local, district and national political processes. When only limited systematic information for targeting is available to central bureaucracies, decentralized community-based systems for transfer delivery may offer a mechanism to ensure that the poor are served, as local government officials may have superior access to information about households in their community. Alderman (2002) for instance finds that local officials of a decentralized social assistance program in Albania in 1997 indeed had access to information about households not available to centralized authorities, and that this additional information got effectively used to improve poverty targeting relative to centralized indicator targeting methods.

Nevertheless, it should not be assumed that using community-based institutions will deliver effective targeting (Conning and Kevane, 2002). Decentralizing the power to allocate free goods and services to local political organizations may offer voice to the poor, but it could also strengthen local elites and networks by offering scope for rent-seeking and patronage (Bardhan and Mookherjee, 2000; Conning and Kevane, 2002). Whether this decentralization better represents the needs of the local population is dependent on the heterogeneity of preferences in the local population (Besley and Coate, 2003). It offers opportunities for targeting to reflect local conceptions of need and deprivation, but these conceptions are not necessarily pro-poor (Conning and Kevane, 2002). The evidence available, not least from South Asia, points to the crucial role of the local political economy in service delivery and

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decentralization (Pande, 2007; Besley, Pande and Rao, 2005; Galasso and Ravallion 2005). The evidence from Africa is very limited.

Studying these processes in Africa, and not least in Ethiopia, is important. In the last ten years, Ethiopia has been the largest recipient of food aid just after North Korea (World Food Programme, 2006). Each account for around 10 per cent of total global food aid flows. Over this decade, typically about 5 to 14 million people were considered 'at risk' as part of international appeals and food aid was widely distributed via food-for-work and food aid programs. In 2002-3, a large drought struck the country, leading to about 12.6 million people seriously affected, almost a fifth of the population, making it the most serious natural disaster affecting Ethiopia in recent decades, well beyond the 1984-85 and 1973-74 famines in terms of people affected (data from EM-DAT, 2007). One of the largest recent relief operations is credited for avoiding widespread famine and crisis (WFP, 2006). In its aftermath, the Ethiopian government has started to roll out a massive safety net scheme, combining food-for-work, and food and cash transfers, as part of a program to rebuild assets of the poor, the Productive Safety Net Programme (PSNP), aiming to reach 8 million people across the country.

The current paper focuses on the targeting of food aid, through FFD and FFW, in the aftermath of the 2002-03 drought. Even though in some of the localities involved, the situation was more severe due to the drought, the transfer delivery system and local targeting was very similar to the system that has been in operation for many years, and indeed, to the local delivery system as part of the current PSNP. Furthermore, as many of the locations studied have been receiving food aid regularly before and after the period studied, the processes involved are not particularly linked to this particular drought episode. In order to

investigate whether social networks and/or political connections are of relatively greater significance in the period right after the drought when the need is acute, or sometime after the drought when the need is only felt by some very deprived people, the analysis will be disaggregated into two periods, with period 1 denoting the first 7 months right after the drought (September 2002 – March 2003) and period 2 denoting the 12 subsequent months (April 2003 – March 2004). Besides looking at the selection criteria, this paper also investigates whether social and political networks matter for the *level* of FFD and FFW rewards per recipient household, and for FFW, per day worked.

The paper focuses exclusively on targeting issues. Other papers have addressed the analysis of the impact of the transfer programs involved (Yamano, Alderman and Christiaensen, 2005; Gilligan and Hoddinott, 2007). Using the same data as used in this paper, and based on a matched difference-in-difference estimator, Gilligan and Hoddinott (2007) found that both food-for-work and food aid programs raised consumption growth considerably. Unconditional food transfers appear to have been better targeted to the poorer groups than food-for-work, which benefited households more in the middle or upper tail of the consumption distribution. Many other studies have nevertheless highlighted considerable variation in the effectiveness of targeting (Sharp, 1997; Clay et al., 1999; Jayne et al., 2001; Asfaw, 2006).[1] These studies generally have to make conclusions on targeting based on a relatively small information set on household and community characteristics, such as related to demographics, assets, education and experiences with drought and other shocks. This paper augments this analysis by looking at the local social and political correlates of food aid access.

In its study of the role of social and political networks in access to food aid, the paper distinguishes between horizontal and vertical networks. The former refer to social contacts with similar degrees of power, while the latter refer to links between citizens and the political elite. Furthermore, the role of the informal social safety net (ISSN) is considered separately. The priors are that vertical networks in which a person is connected to the local political elite may well matter, given that the entire allocation process relies on the local Kebele committee making lists of eligible households. The role of horizontal networks may relate to being connected to others to obtain information, or even, as in the case of the informal insurance network, be able to share any transfers (as would be predicted by risk-sharing models, Attanasio and Rios-Rull, 2000; Dercon and Krishnan, 2003). Furthermore, the official targeting rules for food aid (and currently in operation for the PSNP) explicitly state that those households with family support or other means of social protection and support should not receive food aid (MoARD, 2004).

We find that especially political connections seem to matter in the free food allocation process, though only clearly in the period right after the drought. In this period, targeting based on need seems to be only weakly significant. Sometime after the drought, however, targeting moves very significantly to those in need, and social and political network variables are no longer significant. Vertical connections play the most important role, but also the informal social security network of a household seems to be influencing the FFD process. Horizontal social networks in general, however, do not seem to have a significant impact on how free food is allocated among the households.

As for access to FFW, we find that only labor supply characteristics such as ability to work significantly matter, whilst we do not find any evidence of selection based on economic need, neither in period 1 nor in period 2. Overall, social and political networks do not seem to

matter for participation selection or days worked. However, we do find evidence that households with local political connections get significantly better rewarded in terms of cash or food receipts per working day and in total than households without such connections.

The paper is organized as follows. In section 2, we discuss very briefly how food aid is targeted in Ethiopia. In section 3, we set up a conceptual framework in which we discuss the potential role of social and political networks in the free food distribution process and the food-for-work scheme. Section 4 offers a description of the data and some relevant summary statistics. Section 5 contains the empirical specifications, a discussion of the main problems potentially involved and the estimation results. Finally, a discussion of the results and some concluding remarks are provided in section 6.

2. Food aid targeting in Ethiopia

Food aid delivery in Ethiopia has historically taken two main forms: *food-for-work* (FFW) and *free food distribution* (FFD); only in the last few years, in the context of the PSNP, cash transfers, mainly via Cash-for-Work (CFW), have also begun to be used more systematically. There is a long-standing commitment by the government of Ethiopia to distribute the lion-share of food aid via food-for-work programs related to public works. As food-for-work is only effective for those able to work, it is recognized that free transfers will remain an important part of any safety net system, not least during crisis situations.

The drought of 2002-03 triggered such a potential crisis. A failure of the main rains in several crop-dependent areas resulted in food production estimates approximately 25 % below normal levels (FEWS NET 2002-03). Large amounts of food aid were pledged and delivered

– nearly 1.5 million tons and its distribution was managed via the Disaster Prevention and Preparedness Commission (DPPC). However, in the end, neither international partners nor the DPPC determine how food is distributed among households within the villages in Ethiopia. This fact is a direct consequence of the hierarchic nature of the food aid distribution process.

Free food allocations are typically made in three stages. First, the DPPC allocates food to each district (Wereda). Then, for rural distribution, Wereda committees assign allocations to individual Peasant Associations (PAs) within their Wereda. In rural areas, the PA is the local 'Kebele', the lowest level of political administration, usually consisting of a relatively small number of villages. Finally, the Kebele leaders prepare a list of beneficiary households and distribution is carried out by members of the PA. A critical element of this process is that while the amount of food to be allocated to each Wereda is determined at the Federal level, the actual beneficiary households are designated at the local community (PA) level (Jayne et al., 2001).

In principle, the Kebele leadership is elected using some official procedures for free and fair elections, although in practice, political manipulation and historical political control by those in power at the national or regional level may cast doubt on the extent of local political competition (Pausewang and Aalen, 2002). In particular, voters tend to perceive the ruling party as agents of the state, and would be reluctant to upset them, as they are dependent on them for receipt of many benefits, such as access to health cards (offering entitlements to health services) or modern inputs. Although their evidence gathering can be questioned on methodological grounds, Human Rights Watch (2010) argued that safety net and other allocations are increasingly used for political purposes. Lefort (2007) argued that this leads

the rural population to be first and foremost concerned to vote for the winning side, since to do otherwise carries intense risks to their welfare and even survival. Electoral competition only significantly increased by the 2005 elections. Its dramatic consequences led to serious repression afterwards. More recently, electoral competition has again been minimal. In the 2001 Kebele elections, no significant national electoral competition took place, and in rural areas, voters largely supported the ruling national coalition (the EPRDF).

The official goal has long been that work-based allocation (as in Food-for-Work or Cash-for-Work) programs account for 80 % of all distributions (WFP, 1995). These programs are used to build community assets, such as dams and roads, whilst alleviating hunger. The selection of FFW participants in Ethiopia has followed widely different rules (Sharp, 1997). In some regions, the distribution process is similar as for FFD, where local community groups (e.g. PAs) choose households eligible for participation based on some underlying criteria such as land size, work ability and asset ownership. Programs in other areas have occasionally used self-targeting schemes, which do not make use of administrative restrictions on participation, and where households self-select into the program. In principle, self-selection programs are designed in such a way that the program is unattractive to any but the poorest. Commonly used self-selection mechanisms of FFW programs have been to give out relatively low quality of food, to require queuing to receive the transfers and to pay out low wages (cash or in-kind) relative to the prevailing market wages (Sharp, 1997). However, while some of the empirical evidence finds that FFW effectively reach the intended beneficiaries (Von Braun, Teklu and Webb, 1998; Gebremedhin and Swinton 2000), several studies have found evidence that also non-poor participate in FFW programs (Sharp, 1997; Clay et al. 1999; Gebremedhin and Swinton 2000; Jayne et al., 2002). Sharp (1997) concludes that "[…] a careful literature search produced no Ethiopian examples of self-targeting employment

schemes successfully selecting the poorest and excluding the better-off". Several explanations for this have been given in the literature. Barrett and Clay (2003) argue that imperfect or missing factor markets, such as labor, land and finance markets, lead to the poor opting out of FFW whilst the rich self-select into them. The most common explanation, however, is that FFW wages are set too high relative to the prevailing market wages, often on purpose, to attract enough labor and to make the program successful (Sharp, 1997). When wages are set too high, and given restrictions on funds, excess labor supply occurs, including labor from the non-needy group. FFW employers will then have to ration participation in some way, potentially based on criteria other than objective need. In any case, as FFW employers are typically linked to the local Kebele, similar processes as in FFD end up being used in practice.

3. The role of social and political networks in food transfers

The role of *social capital* in affecting the well-being of households and the development of societies has received much attention in research (Coleman, 1988; Putnam, Leonardi and Nanetti, 1993; Narayan and Pritchett, 1999; Grootaert, Van Bastelaer and Putnam, 2002; Durlauf and Fafchamps, 2008). Its meaning, however, remains highly imprecise. Durlauf and Fafchamps (2008) conclude that the most successful theoretical studies of social capital and development are those in which the focus is not on social capital per se, but where social capital is modeled as a specific form of *social network* structure that affects individual outcomes. This contrasts to most studies, in which social capital is defined as a set of social resources of a community, such as trust and control (Coleman, 1988; Putnam et al., 1993).

To investigate the importance of social contacts for households within each community in the last stage of the food distribution process (through either FFD or FFW), the analysis concentrates on social networks at the household level instead of aggregate social capital at the community level. In the remainder of this paper, the term *social networks* is used to refer to social networks at this level.[2] We will however go a step further by highlighting the nature of the network relations within the network, focusing on the degree of political connectedness of the network, as a means of accessing benefits.

The literature on social networks outlines various links between social networks and economic outcomes. Here, a distinction is made between the *horizontal* and *vertical* social network of a household. The former refers to social contacts with similar degrees of power, while the latter refers to links between the political elite (the PA leaders) and the household. Moreover, as part of either the horizontal social network and/or the vertical social network, we distinguish a subset denoted by *informal social safety net (ISSN)*. This only includes those households that the household can actually rely on in times of need. These distinctions matter for the discussion, since the roles of these networks in the food distribution process may differ.

Three main micro-level properties of networks are considered here: their joint value as informal social insurance, their ability to improve information flows and their function as a source of favoritism. Informal insurance networks refer to the group of associates (friends, family, neighbors or others) on which one could rely in times of need. There is a large literature documenting their relevance in poor settings (Townsend, 1995; Dercon, 2002). Given that in closely knit societies, such as the communities studied in this paper, information on the presence of these networks may be relatively high, it may also feature in

food aid targeting. In fact, one of the explicit targeting rules meant to be used for assessment at the community level is whether a person can rely on family support or other forms of social protection (MoARD, 2004). The Kebele leaders may therefore be less likely to offer food aid to those well connected in terms of informal insurance networks. However, the analysis will have to take into account that formal food aid targeting may well crowd out informal networks. Standard informal insurance models under enforcement constraints would directly predict this: food aid targeted to a particular person will change the outside options available and therefore increase incentives to leave the informal risk sharing groups (Cox and Jimenez, 1992; Attanasio and Rios-Rull, 2000; Cox, Hansen and Jimenez, 2004). In line with these models, there is some evidence from Ethiopia using earlier rounds of the data set used in this paper that the presence of food aid in the community crowds out informal insurance (Dercon and Krishnan, 2003). In contrast, Lentz and Barrett (2005) do not find any evidence of such effects in Ethiopian food aid targeting.

'Horizontal' social networks in the community may also affect targeting via their role in information transmission. In a world of imperfect information, social ties can provide an individual with useful information about opportunities and rights otherwise not available. This information advantage of social relations has typically been used to illustrate the importance of social networks in the job market (Granovetter, 1995). Its relevance for food aid targeting is obvious. Households that have a larger network have a higher probability of receiving information about potential food aid programs compared to more excluded households. Belonging to a larger network may also allow more effective lobbying for support.

Vertical connections, i.e. connections to those in power, amplify considerably the potential of these networks to acquire goods and services, as it provides more ready access to information on rights to support and availability of food aid. Moreover, vertical connections also improve upward information flows, in terms of signaling of need. This is likely to matter as the official allocation criteria remain vague, and Kebele leaders are likely to need to supplement observable household characteristics with other criteria. An improved information flow linked to 'vertical' connection cannot easily be distinguished from another intuitive link: political connections as a source of *favoritism*. It may well be that the PA leaders use their political power to manipulate actions in favor of households that they are vertically connected to, irrespective of whether these households need the food aid or not.[3]

This raises the potential for a whole series of other linked behaviors, documented elsewhere in rural settings, from vote buying by local leaders to repression (Pande, 2007; Robinson and Baland, 2008). Political processes at the Peasant Association (and any other) level in Ethiopia are definitely not transparent, lacking clear checks and balances. The dependence of rural households on the Kebele committees for different benefits and services, such as health services and access to modern inputs and credit, implies that not just voting for the winning side, but also connectivity to those in power may well be crucial.

A priori, there are several reasons why the effects of social and political networks may be relatively more important during crisis times and this will be formally tested further below. First, PA leaders may need time to properly assess objective need-based eligibility of all households. As long as such information is not yet available, the PA leaders will have to rely on information that is more readily available. Households that are politically connected will be able to signal their need more quickly. Second, it may take time for information on FFD

and FFW to reach all needy households in the PA. Households with political connections will have more direct access to such information, and hence have comparative informational advantage to those households that are not vertically connected. Third, during crisis time, relatively more people are likely to be in need of food aid, and the demand for FFW opportunities is likely to be relatively high. Under such circumstances, local officials will have to ration participation in some way, using criteria different than objective need, such as social and political networks. PA leaders may argue that a needy household that can rely on other households through an informal social safety net needs public food aid less more urgently than a needy household without such social networks. Moreover, if it is required to choose between two equally needy households, local officials may prefer to give food aid to a household they are socially connected to.

4. Data source and descriptive statistics

Our analysis uses data from the Ethiopian Rural Household Survey (ERHS), a longitudinal household data set collected as part of a collaboration between the International Food Policy Research Institute, Addis Ababa University, and the Centre for the Study of African Economies, Oxford. The data set has been collected in seven rounds from 1994 to 2009 in 15 rural Ethiopian villages. In 9 of these villages, free food was distributed and food-for-work programs were organized during the drought crisis in September 2002 – March 2004. As we focus on this drought episode, we use the data of these 9 villages and obtain a sample of 602 households in total. Round 5 and 6 were collected in 1999 and 2004 respectively, and contain detailed information on the households' pre-drought characteristics useful for targeting analysis, and their participation in the food aid programs during and after the 2002 drought. They form the basis for the analysis. Across these villages, about 60 % of

households received free food between September 2002 and March 2004. About 62 % of households participated in food-for-work programs during this period. About 39 % benefited from both programs. Splitting up this period into two, 42 % received free food aid during the 6 month period immediately after the drought, 44 % during the subsequent one year period. The share of households participating in FFW programs amounts to 57 % in both period 1 and period 2. About 25 % received free food in both periods and about 53 % of the households participated in FFW in both periods, implying a bigger change in allocation of free food aid between the two periods than in FFW, which seems to have been largely to the same target group.

Table 1 shows selected summary statistics for the characteristics of the households in the sample, distinguishing between those that received free food in 2002-2004, and those that did not, as well as those that participated in food-for-work programs and those that did not. As part of the community survey in each village, PA leaders were asked to nominate the criteria they used to allocate food aid in their community. We obtain 7 different criteria, which are ranked from most to less frequently listed by the different PA leaders: people unable to work, old people, poor people, landless people, large families, people with limited livestock and female headed households. Broadly speaking, they could be viewed as consistent with the 'official' guidelines, which state that food aid should be given to those that are facing serious food shortages (defined as deficiencies in food availability for three months or more), those that experienced a serious loss of assets without means to support themselves or those without family support or other means of protection (MoARD, 2004). Ethiopian food aid policy states that only persons that are unable to work are eligible for free food (DPPC, 2000). Needy persons that are able to work are required to participate in FFW in order to obtain food aid.

Most of the significant differences in characteristics between the beneficiaries and non-beneficiaries of FFD and FFW relate to differences in labor supply characteristics (table 1). Except for land ownership, there are no significant differences between any of the characteristics related to economic vulnerability (consumption and livestock ownership). For land size, the difference is only significant for FFW, and the difference is in the opposite direction than we would expect, with FFW participants having on average more land than non FFW participants.

The most significant difference in characteristics between beneficiary and non-beneficiary groups is found in the average work ability score of the household head. This measure is an average score based on five different questions concerning the household head's ability to do daily activities. Each question has four possible answers from not being able to perform the task at all (value 1) to being able to do it easily (the value 4).[4] The average score across the five questions offers an index of ability to work, ranging from one to four, where one is interpreted as not being able to work at all and four is interpreted as perfectly able to work. The results show that this score is on average significantly lower for free-food-receiving households than for non-free-food-receiving households, and significantly higher for food-for-work-participants households than for non-FFW-participants. This criterion seems to be the most important criterion for food aid targeting among the criteria provided by the PA leaders. This result is not surprising, given that disability is also the most emphasized criterion for free food distribution by the DPPC (DPPC, 2000).

Free-food-receiving households have on average a smaller household size than non-free-food-receiving households, whilst FFW-participating households have on average more

members than non-FFW-participating households. A priori, the expected household size effect is ambiguous, as larger households have more mouths to feed, but at the same time they are likely to have more able bodied members. Similar results are obtained for the average proportion of elderly in the household, with FFD and FFW participating households having on average respectively a higher and lower proportion of elderly. Finally, FFW participating households have on average a significantly lower share of female headed households than non-participating households. This difference is not significant for FFD, however.

Table 2 shows other characteristics of the households in the survey sample, again distinguishing between beneficiary and non-beneficiary households, but this time based on different ways of conceptualizing social networks and political connections. We use three different measures, each capturing different types of networks, with different predictions on their role in food transfer allocation. First, we use a self-reported measure of the size of the informal social safety network (ISSN). In round 6 of the survey, we asked how many other households or individuals the household could rely on in times of need. This provides a direct measure of the informal insurance network. Because it focuses on potential support, it is superior to measures based on who actually received transfers from others, as required in most risk-sharing analysis within networks investigating whether consumption is smooth because of transfers (Fafchamps and Lund, 2003). Controlling for household resources, it is also likely to be a relevant indicator that the Kebele committee may have to look at in view of the official targeting rules (i.e. food aid should not be given to those able to rely on other sources of support).[5]

Column 1 in table 2 suggests that this may indeed be the case for FFD, as free-food-receiving households claim on average to have significantly more people to rely on than non-free-food receiving households. On average, a non-free-food receiver claims to have 10 persons to rely on, while a free-food-receiver claims to only have 7 persons to rely on. Of course, other evidence on risk-sharing networks has shown that wealthier households may have larger networks (with the causality possibly going in either direction (De Weerdt, 2004; Fafchamps and Gubert, 2007). Hence, we have to be careful in interpreting these correlations from this bivariate analysis. For FFW, however, there does not seem to be any significant difference between participating and non-participating households in terms of the number of people the household can rely on in times of need.

To measure the broader horizontal social network of the households, we use the size of the largest iddir the household belonged to prior to the drought. The iddir is a funeral society. Members pay a contribution, in many cases monthly, and its benefits are that the group pays for the costs of a funeral of a member and any of its close relatives. Virtually all people in the sample are members of such a group, although in each Peasant Association many different groups exist. Dercon et al. (2006) discuss details of their functioning as a funeral group. Hoddinott, Dercon and Krishnan (2005) and Krishnan and Sciubba (2009) document how members of iddirs also typically are linked in other ways, such as in the form of labor-sharing groups (to do particular agricultural tasks together). It is the most ubiquitous and a relatively egalitarian social institution in Ethiopia (Dercon et al., 2006). As virtually everybody is a member of at least one iddir, we use the size of the largest iddir a person belongs to as our proxy for the network strength.[6] Table 2 shows that the average size of the iddir the household belonged to prior to the drought was 83 for the non-free-food-receiving group, and 95 for the free-food-receiving group. However, the differences are not significant. Similarly,

the differences in terms of network strength are not significant between FFW participating households and non-participating households.

Finally, we explore a measure of political (vertical) connectivity. The most direct measure collected for our purposes was the simple question 'Do any of your close associates (relatives (not parents), friends, patrons) hold an official position in this kebele?'. Note that all positions in the Kebele are effectively 'political', based on appointments by the political leadership.[7] Table 2 suggests that vertical social networks indeed matter in the food allocation process, both in FFD and FFW. Differences between beneficiaries and non-beneficiaries in terms of political connections are strongly significant, with about 30 % of the non-beneficiary households being politically connected, and about 45 % of the beneficiary households.

In Table 1 and 2 we compared the average characteristics of FFD beneficiaries and FFW participants to the characteristics of FFD non-beneficiaries and FFW non-participants respectively. Pooling the FFD and FFW beneficiaries together, we do not find any significant differences between the average beneficiary (either FFD and/or FFW) and the average non-beneficiary (neither FFD nor FFW) in terms of table 1 characteristics (not reported). This is not surprising, given that most of the characteristics for which we found significant differences in table 1 relate to labor supply characteristics, for which the official targeting rules are symmetric for FFD and FFW. Hence, when taking the average the difference cancels out. However, significant differences similar to those found in table 2 apply when we compare the average food aid beneficiary to the average non-beneficiary.

5. Empirical analysis

5.1. Model specification

Although we will model and discuss FFD and FFW participation separately, we will use similar estimation equations for both of them. First, we explore the probability of obtaining free food (FFD) or participating in food-for-work programs (FFW) as a function of household characteristics based on the PA criteria, social and political networks and other exogenous attributes that we believe to be important. In particular, we will estimate the following equation:

$$F_{ij} = f(PAC_{ij}, HSN_{ij}, VSN_{ij}, ISSN_{ij}, X_{ij}, Z_j) \qquad (1)$$

We estimate a number of versions of this model, each with a different dependent variable and time period. In particular, F_{ij} is a dummy equal to one if household i in PA j received free food (for the FFD model) or participated in public works (for the FFW model). We first consider the probability of obtaining aid in the total period of 18 months after Ethiopia got struck by the drought in 2002, i.e. period September 2002 – March 2004. In order to analyze whether the effect of social and political networks differs between the period right after the drought, when the need is more acute, and the period some-time after the drought, when only the most seriously affected households are likely to be most needy, we also split this period in two periods: the probability of obtaining food aid in the 7 months right after the drought struck Ethiopia (September 2002 – March 2003) and the probability of obtaining food aid in the 12 subsequent months (April 2003 – March 2004).

Vector PAC_{ij} contains household characteristics based on the PA criteria discussed in section 4; HSN_{ij}, VSN_{ij} and $ISSN_{ij}$ represent the measures of the household endowment of respectively horizontal social networks (the iddir), vertical social networks (political connectivity) and the informal social safety network; X_{ij} is a vector of other household characteristics; and Z_j is a vector of community characteristics. We will control for all these community-wide effects using Peasant Association fixed effects, capturing any between-village variation in food aid allocation, and identifying all targeting effects via within-village variation. As the dependent variable is binary, the model is estimated using a probit model.

Based on our earlier discussion, the vector PAC_{ij} in the model consists of the following characteristics of the household: its work ability (proxied by the average work ability score of the household head); its proportion of elderly, its income level (proxied by its real consumption per capita); its land ownership (measured by hectare owned land per capita, including crops, grazing and garden); log of the household size; and a dummy for whether the household is female headed or not.[8]

The vector X_{ij} consists of other household characteristics that have not been mentioned by the PA leaders, but that we expect to play a role in the food distribution process. While consumption measured in 1999 has value as a proxy for pre-crisis poverty, it may not capture immediate needs during the crisis of 2002-2004. We therefore also add some measures of idiosyncratic shocks including a dummy whether the household was affected by the drought in 2002-2003. Other broader measures of 'need' may include the proportion of children and elderly in the household. Furthermore, a dummy for whether the household head is literate (which could capture wealth or income earning potential, although also the ability to enforce

access to food aid) and a dummy for whether the household belongs to the majority religion group of its Peasant Association (offering a further measure of horizontal networks). A further control relates to inertia in food aid distribution, in the form of a dummy for whether the household received food aid in the past (at any time between 1982 and 1999). Jayne et al. (2002) found that in the mid-1990s, food aid displayed substantial inertia: Weredas and households receiving food aid in the past tend to receive food aid again, controlling for a wide variety of characteristics and shocks. To some extent, this should not come to a surprise: one of the official guidelines for food aid delivery uses as a criterion to target households that have faced continuous food shortages *and* received food assistance. In short, inertia is part of policy, for rather benevolent reasons: to avoid the need to repeated assessment (so needy can get support when required without delay), although it can of course perpetuate any bias in allocation. Similarly, a Wereda is currently selected for the PSNP if it is chronically food insecure and has been a recipient of food aid for a significant period in the past (Sharp, Brown and Teshome, 2006).

All of the control variables, except for the average score of ability to work of the household head[9], are evaluated in 1999. This avoids potential simultaneity problems, since we are interested in food allocation between 2002 and 2004, a time period after 1999. One could rightly point out that assets in 1999 could still be endogenous, since both food aid receipts in 2002-2004 and assets in 1999 are likely to be correlated with past food aid. However, since we include a dummy for past food aid in the regression (related to 1999), we can credibly avoid this problem.

As has already been discussed in section 4, *HSN*, *VSN* and *ISSN* will be measured respectively by the size of the largest iddir the household was member of prior to the drought,

a dummy for whether the household has close associates holding official positions, and the number of persons the household can actually rely on in times of need. As argued before, political connections may influence the food allocation process through different paths. On the one hand they may improve information flows: vertical connections may provide households with direct access to information about beneficial services and may give signals to local officials about the household's need. On the other hand, political connections can be a source of favoritism. Distinguishing between these explanations is not self-evident. One plausible hypothesis could be that if connections matter for information, then they are likely to be more important in larger communities, where information flows may be harder. In order to explore this, we will consider a further specification, where we add an interaction term between our political connection variable and the size of the community (PA) where the household lives. Note that PA size as a level effect is captured by the community fixed effects. If we do not find a significant positive effect of the interaction term, the information argument would seem less convincing relative to the favoritism argument.

Besides modeling the selection criteria through a probit model, we also investigate whether social networks affect the *amount* of food aid received through FDD and FFW. We use the same specification as in (1), but now considering as dependent variable the value (in Birr) of the quantity of food and cash received in the 2nd period (April 2003 – March 2004). Due to data limitations, we cannot model quantities received during the first 7 months right after the drought. We use an OLS model for those receiving aid in either form. One alternative would be to use a Tobit model for the entire sample, but it imposes strong restrictions on the role of explanatory variables, and it requires strong distributional assumptions on the errors for consistency. An alternative would be a Heckman selection model, but as there is no obvious source of identification of the first stage, identification occurs via non-linearities in the

model, which again is not ideal. In any case, using a Tobit or Heckman selection model does not affect the findings.

For FFW, we also investigate whether differences in the value of food/cash received through FFW are driven by differences in the total number of days worked in FFW programs, or by differences in the daily wage (cash/food) received. We explore this further, with the same specification, using OLS regressions, limited to those households that participated in FFW in this second period.

There are a number of potential problems with our estimation equations, especially in terms of identifying the impact of the network variables on access to food aid. A key issue is the potential endogeneity of these measures. For example, there may be simultaneity problems: networks and political connections may be affected by the process of food aid delivery. The robustness of the results to objections related to endogeneity will be discussed later.

5.2 Free-food-distribution targeting results

Table 3 gives the results concerning the determinants of FFD. Column (1) gives the marginal effects of various variables on the probability of obtaining food aid at any time between September 2002 and March 2004. Over this aggregated period, there is evidence of means based targeting within villages. Evaluated at the mean of all other variables, households at the 25th percentile of log per capita consumption have an average probability of 65 percent of receiving free food. The probability declines to 58 percent and 52 percent at the 75th and 95th percentile, respectively. Note, however, that the 'richest' households still have more than 50 percent probability of obtaining food despite substantial numbers, including some of the poorest, not getting any aid. While free food distribution seems to be correlated with poverty

measures such as consumption in 1999, it does not seem to be correlated with measures reflecting immediate post-famine needs, such as whether the household was affected by the drought. Another significant determinant is the average work ability score of the household head. A one point increase of this score (score ranges from 1 to 4) decreases the probability of obtaining free food by 12 percentage points. Other strongly significant determinants are land ownership and log of household size, both having a large negative effect on the probability of obtaining free food. The negative effect of household size may be explained by the fact that for households with a given proportion of children and elderly, the absolute number of active members increases with household size, and therefore decreases the probability of obtaining free food. In short, food aid allocation is correlated with official targeting rules related to underlying poverty, as well as the relative exclusion of able bodied workers. Still, the marginal effects show that even with higher levels of consumption, one could still obtain food aid in this period.

Another significant determinant is whether the household received free food at any time in the past between 1982 and 1999. Households that did receive free food in the past had 14 percentage points higher probability of receiving free food between 2002 and 2004. Again, this is consistent with official targeting rules that suggest taking into account earlier food aid receipts to determine eligibility, even if it reflects inertia, and the potential for serious targeting errors (Jayne et al., 2002). Jayne et al. found inertia at the community level – and our results show that this finding carries through to the household level. This finding may also be influenced by unobserved omitted variables: for example, these households may have a time-invariant, but to the researcher unobserved need for continuous food aid, while it may be observable for the Kebele administration.

The results suggest that social networks in general are related to the food distribution process in September 2002 – March 2004. The Wald-statistic for joint significance of the social network variables is 11.89, which is equivalent to a p-value of 0.01. But the results also show that not all types of social networks matter equally. Households with political connections (vertical networks) had more than 12 percentage point higher probability of obtaining food aid in 2002-2004 than households that did not have associates holding official positions. The magnitude of this effect may seem small at first, but the practical importance of this effect becomes clear if you compare it to the effect of the other significant determinants of food aid targeting. Compare this effect to the effect of consumption, for instance. A one percent increase in consumption per capita is associated with a decrease in the probability of obtaining food aid of 0.08 percentage points. This implies that, ceteris paribus, someone can be 150 % richer but have political connections and still get food aid with equal probability than someone else with no political connections.

The number of people the household can rely on in times of need is significantly negatively related to food aid. For each additional person the household could rely on in times of need, the probability of obtaining food aid in 2002-2004 decreased with 0.7 percentage points. The significance level does not decrease if included separately in the regression (not reported). This result implies that households with for instance 20 people to rely on have, ceteris paribus, 14 % less probability of obtaining food aid. Given that the number of people to rely on ranges from 0 to 205 in our sample, with an overall average of 7.8 and more than 14 % of the sample having more than 15 persons to rely on, the magnitude of this effect can become quite significant for those persons with a large ISSN. The third social network type, horizontal connections measured by the size of the largest iddir the household belonged to prior to the drought, does not seem to be related to the food distribution process.

In order to explore the hypothesis that the effects of social networks are relatively more important in the period right after the drought, and become less important some time after the drought, estimation in column (2) and (3) disaggregate the analysis into two different time periods: Period 1 denotes the period including the first 7 months right after the drought (September 2002 – March 2003) and period 2 denotes the subsequent 12 months (April 2003 – March 2004). The results are strikingly consistent with our predictions outlined in section 3. In period 1, means-based targeting seems to be very weak, with the consumption effect being insignificant and land ownership and work ability of the household only being weakly significant. Evaluated at the mean value of all other characteristics, households at the 25th, 75th and 95th percentile of consumption levels have respectively 42 %, 39 % and 37% probability of obtaining free food. As predicted, targeting in period 1 seems to rather be based on information more readily available, such as whether the household experienced a drought and whether a HH member died in the period preceding the drought. Moreover, social and political networks seem to play a significant role in period 1. As expected, in period 2 the targeting pattern seems to change in favor of the most vulnerable households. Social and political network effects are no longer significant. Poorer households have a significantly higher probability of obtaining public food aid than non-vulnerable households in period 2, irrespective of their political connections and their informal social safety net. Again evaluated at the mean values of all other characteristics, households at the 25th, 75th and 95th consumption percentile have respectively 46%, 35% and 28% probability of obtaining free aid. [10]

We also explored the same specification for the probability of obtaining food aid at any time between September 2002 and March 2004, but this time adding an interaction term of our

dummy for political connections with the size of the PA in terms of the number of households it contains (not reported). While all other effects remain very similar, we find that the political connection effect *decreases* with the size of the PA: the larger the PA, the smaller the positive effect of political connections on the probability of obtaining food aid. A priori, if informational advantages were central, we could have expected that this effect had been *positive*, as connections become more important in large communities – in any case, it makes the favoritism interpretation harder to dismiss.

So far we only looked at the probability of being selected for free food aid receipts, without considering potential differences in the amount of food aid received. Column (4) shows the OLS results from the second part of the two-part model, explaining the amount of food aid received in period 2 for those actually receiving food aid. Unfortunately we do not have data available on the amount of food aid received in period 1, exactly the period where social network effects turned out to be highly significant as shown in column (2). For period 2, we find that allocation of the level of aid is just noisy around the mean, or at least we find that the amount of food aid is unrelated to social networks and economic needs, with the exception that female headed households are receiving about quarter less than the mean payment.

5.3. Food-For-Work targeting results

Table 4 shows the estimation results of the same probit models as in table 3 but now with the probability of participating in FFW as the dependent variable. The targeting mechanism used in food-for-work programs seems to be rather different from the one used in FFD. For FFW, there does not seem to be any significant difference between period 1 and period 2 targeting patterns (as the discussion of the descriptive statistics already alluded to: most people that

receive FFW receive FFW in both periods). Participation seems to be exclusively based on labor supply characteristics, such as work ability, household size and health of male household members. For FFW we find no evidence whatsoever of targeting based on economic need. This is consistent with the findings of other studies that analyze the targeting outcomes of FFW programs in Ethiopia (Gebremedhin and Swinton, 2000). None of the social networks seem to have any significant effect on the probability of participating in FFW. This is rather surprising, given that we would expect, in line of Granovetter's early findings (Granovetter, 1995), networks to be generally connected with job acquisitions. Overall, these results are consistent with a view of the operation of FFW in which self-selection on the basis of labor supply characteristics is central, but at wages that are likely to be too high for any meaningful self-selection on the basis of need. The higher visibility of FFW, compared to FFD (with people having to work to gain rations) may make selection based on political and social patronage harder to sustain.

The results in table 4 are restricted to explaining the probability of participating in FFW. They do not tell us anything about the total number of days worked in FFW, nor about the amount of food or cash received as rewards under the FFW scheme. Table 5 allows us to investigate this further. The OLS estimation results of the second part of the two-part model using the total value of payment for FFW of those that actually participated in the program suggest that political connections have a significantly positive effect on the total value of food/cash received in period 2, with households being politically connected having received on average 96 birr (or about a quarter of a standard deviation, and 28% of the mean) more than non-politically connected households. This effect may be driven by two different sources: either did households that are politically connected work at the same daily wage rate as the households that are not politically connected, but with the former group working

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relatively more in terms of number of days worked. Or maybe did households that are politically connected work the same number of days as the households that are not politically connected, but with the former group working at a daily wage rate that was higher than the one paid out to the latter group. Or maybe both effects occurred simultaneously.

Exploring this further, columns (2) and (3) suggest that the latter effect dominated in period 2. Households with at least one close associate holding official position received on average one birr (or about a third of both the mean and the standard deviation) more per day worked on FFW than households that did not have such connections. We do not find evidence that politically connected households worked significantly more in FFW than households without such connections.

5.4 Robustness Tests

It is plausible that social networks and political connections are affected by the food aid distribution process, making a causal interpretation of the results above problematic. For example, political leaders may use food aid distribution to forge connections and for different forms of vote-buying. This is additionally complicated in the data as the data on political connections were collected in 2004, after the food aid distribution under consideration here had taken place. This is actually much less of a problem than it may seem at first. The political leadership was in fact elected in 2001, they were simply in power throughout this period, and the subsequent election only took place in 2005. As a result, we can be certain that the connections refer to the same leadership as during the 2002 drought and its aftermath.

Still, it could be the case that the leadership forged additional connections during and after the 2002-2003 drought by using food aid (for example to build up a support base in view of later elections). In itself, this is still a sign that the local political economy matters for food distribution, even though the effects in table 3 can then not be simply interpreted as meaning that households with better political connections are managing to get food transfers, but possibly evidence of attempted vote-buying. In other words, it refers to the interpretation of the observed correlation – and it may be a sign of reverse causality. A first step to explore the relevance of such reverse causality in the form of food aid distribution affecting political connections (and more generally, all network variables) exploits the information on past food-aid (pre-2000). In particular, note that if there were reverse causality, we would expect not only *current* food aid programs but also *past* food aid programs to have influenced social networks in 2004. More specifically, we would expect the conditional correlation between social networks and past (pre-2000) food aid also to be significantly positive. As we found a positive conditional correlation between past food aid and the receiving food aid in table 3, the hypothesis of reverse causality would imply that omitting past food aid from the regression equation would introduce an upward bias in the coefficient estimates of the social network variables. When running a regression similar to (1) in table 3 but now omitting past food aid (1982-1999), we find that the coefficient estimates for all variables remain close to identical (not reported). In particular, the network coefficients are identical. Against this, one could argue that past food aid programs since 1982 are less relevant for current vertical connections than recent food aid programs[11]. But even if we restrict the analysis to past food aid programs between 1997 and 1999, we obtain similar results (not reported). Given that past free food distribution does not seem to be linked to current FFW participation (as shown in table 4), we do not expect running a model for FFW without past food aid to alter the results. Running the regression shows indeed that this is not the case (not reported).

However, this does not show that other sources of unobserved heterogeneity do not affect our inference on the impact of social network and political connections variables. It might be that social networks, being the result of behavioral decisions, are correlated with unobservable household characteristics which in turn are correlated with the probability of obtaining food aid. For example, if wealth is correlated with political connections, and the current observable wealth variables imperfectly capture wealth, then the correlation between political connections and food aid access may be a reflection of unobserved heterogeneity in wealth.

Given the recent political history, this is not necessarily what one would expect, with two relatively total reversals of economic and political power in rural Ethiopia since the 1970s. First, after the revolution in 1974, a total land reform saw the government taking full control of all land. The vast redistribution of land meant that rich and powerful families lost most of their land, and political power came in the hands of a new group of cadres. However, in 1991, the government was defeated by rebel forces, and across the country, political power came into the hands of a new political leadership and many of the previous political leadership across the country lost dramatically also in economic terms. While the leadership may be in an (economically) advantaged position, local political affiliation (in the form of being connected to the leadership) is not simply translated in wealth, not least since power has changed repeatedly in recent times.

Whether the link between political connections and access to food aid is largely via political processes in the community, rather than simply via unobservables, can be explored further. In particular, acknowledging that there may be a problem of unobserved heterogeneity, we use an instrumental variable approach to estimate the relationship in equation (1) to get at the

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relationship between political connections and food aid. We use a dummy whether any parent of the household head has held official position in the kebele or elsewhere. Since this variable relates to *past* political connections, it is unlikely to impact on the probability of obtaining food aid other than through current political connections inherited from the parents.

Note that both our dependent variable (whether food aid is received) and our endogenous variable (whether HH has political connections) are binary variables. In case of binary regressor(s), standard IV probit estimation leads to inconsistent estimates for reasons associated with 'forbidden regressions' (Wooldridge, 2002). There exist two common approaches to estimating causal effects in such models, each with their own potential drawbacks (Angrist, 2001; Bhattacharya, Goldman and McCaffrey, 2006; World Bank, 2011): 2SLS estimation disregards the binary structure of the variables and presents linear instrumental variables (IV) estimates. The advantage of the 2SLS estimator is its computational simplicity and the ability to use post-estimation tests for weakness of the instruments. The second approach, i.e. the bivariate probit model, estimates both binary variables jointly using a standard maximum likelihood procedure. Both approaches yield very similar results for our analysis. To make use of post-estimation tests of validity of instruments, we decide to focus on the 2SLS results in this paper.

Column (1) and (2-3) in table 6 present the estimation results for respectively the first and second stage regressions of the 2SLS estimation process. We find that the instrument is statistically significant at 1 %. With an implied F-statistic of 28.81, this does not seem to be a weak instrument (Staiger and Stock, 1997). Moreover, based on the Durban-Wu-Hausman test we cannot reject the null hypothesis that the political connection variable is exogenous in both models. Households of which the parents of the head held official positions have almost

30 percent higher probability of having political connections than other households in the village. The first stage regression also shows how political connections appear to have only limited correlation with wealth variables or demographic variables, although female headed households are clearly much less connected while households headed by a literate person are significantly more connected to the political elite.

The last 2 columns in table 6 present the results for the 2SLS second stage regressions for FFD and FFW. The results concerning the network variables remain similar as before, with political networks and the informal social safety net having a significant effect on the probability of obtaining free food, while having no significant effect on the probability of participating in FFW. The 2SLS point estimates are larger than implied by the probits in table 3 and 4, or the LPM without instrumenting (not reported), but also have larger standard errors. Given the size of these errors, the reduction in significance level seems to be due to the loss in estimation precision, but in general, they broadly confirm our earlier findings. In short, there is no clear evidence that suggests that unobserved heterogeneity or other endogeneity problems affect our conclusions derived earlier.

It is also possible to explore further whether there is any evidence against reverse causality with respect to the link between obtaining food aid and the informal social safety net measure. In particular, in line with concerns about crowding out of informal security by formal transfer schemes (Dercon and Krishnan, 2003), it may well be that the negative relationship between size of the network in the data (measured in 2004) and receiving food aid is linked to the fact that those receiving food aid reduced their network size, so the correlation would then be just spurious. The data provides us with more direct evidence against this interpretation and therefore against reverse causality. In particular, the survey not

only asked the households about the exact number of people they could rely on in 2004, but also on whether their informal security network had remained the same, increased or decreased compared to 1999. Table 7 shows the frequency of the answers for the food-receiving and free-food-receiving household groups and the FFW participants and non-participants separately.

The results show that there is no statistically significant relationship between participating in the free food program and the change in the household's support network. This suggests that participating in the free food aid program has not systematically influenced the informal social safety net. As for FFW, there seems to be a significant difference in the share of households that claimed to have experienced an increase in ISSN since 1999. However, the difference seems to be in the opposite direction than we would expect, as more households not participating in FFW seem to have increased their ISSN than those participating in FFW. Hence, this would not suggest that has led to an overstatement of our results. .

6. Conclusion

A large part of the Ethiopian population continues to regularly rely on transfers in the form of food aid, delivered via donors and the government. There is little known about how the local political economy and networks affect their allocation, even though targeting is largely administrative based implemented by the local political leadership. This paper offers evidence on these processes.

Official rules and commitments make it clear that free food aid is targeted to those at risk of hunger and poverty, with limited access to alternative means of support, including via

working on food-for-work or other forms of support. Most evidence suggests that targeting is correlated with observable characteristics reflecting needs, but that it is imperfect (Jayne et al. 2001; Gilligan and Hoddinott, 2007). In practice, targeting in food aid distribution in Ethiopia depends on local political leaders, within the Kebele administration, in principle elected but in practice typically closely linked to those in power regionally and nationally. By lack of objectively verifiable information on need, effective targeting also depends on the needy being able to effectively communicate this need or enforce their rights.

We study the role of social networks and political connections in the allocation of food aid in rural Ethiopia, focusing on food aid distributed in the aftermath of one of the largest relief operations of recent years. We use data of a household panel data survey that collected information on food aid transfers during and after a serious drought in 2002. Controlling for baseline characteristics typically correlated with the type of people that rules suggest should be targeted, we find that those with larger social networks for informal insurance have less access to food aid. On average, for each additional person the household can rely on, the probability of obtaining food aid decreases with almost 1 percentage point. More strikingly, we find that households in 'vertical' networks, measured by households having close associates holding official positions, have 12 percentage points higher probability of obtaining food aid than other households in the village that are not vertically connected. We find strong differences between the immediate post-drought period, where political connections are strong and significant, as well as directly observable factors related to temporary need, such as having suffered from the drought, and the subsequent 12 months, in which more general "need" variables dominate. Nevertheless, even in this later period, political connections appear to matter for the size of the transfers received. The allocation of food-for-work appears to be based largely on labor supply characteristics linked to ability to

work, and not need nor political or social connections. However, the level of support received, in terms of total or daily payment received, appears to be linked to political networks.

There are many ways in which this relationship can be understood. It could be informational: being connected with those holding official positions may improve information flows, for example in terms of signaling need or availability of support. This idea is not supported by subjective data that we have available: The share of households that reported to have been well-informed about how food assistance would be allocated was even slightly higher for households without any politically connections than for those with political affiliation, i.e. 37% versus 30% respectively. As these Peasant Associations are usually not more than about 500 households, and also given some of our tests conducted in this paper, improved information is unlikely to be the full story. Favoritism is a plausible explanation, irrespective of whether those households actually need the food aid or not. This is a striking result, leaving less well-connected households with real needs without support. We have to be careful not to overstate these results, as correlations with 'need' variables remain important. But in future programs, it will be worth looking deeper into the political economy of these villages. Looking for ways to increase accountability of local Kebele committees will be required to improve targeting.

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Table 1: Characteristics of FFD/FFW beneficiary households (2002-2004) and non-FFD/FFW beneficiary households: Based on PA criteria (1999)

		Average work ability score of the household head	Average proportion of elderly in household	Average household consumption per capita	Average household land ownership per capita (ha)	Average household size	Average household livestock units per capita	Share of female headed households (%)
FFD	Group NOT receiving free food by FFD (237 observations)	3.82 (0.48)	0.03 (0.11)	74.60 (58.49)	0.22 (0.23)	6.21 (2.78)	0.41 (0.40)	0.25 (0.19)
	Group receiving free food by FFD (365 observations)	3.62 (0.70)	0.05 (0.14)	76.22 (75.46)	0.24 (0.25)	5.68 (2.65)	0.44 (0.42)	0.31 (0.21)
	test-statistic difference in means between 2 groups	3.95***	-1.84*	-0.28	-1.12	2.33**	-0.88	-1.54
FFW	Group NOT participating in FFW (229 observations)	3.53 (0.77)	0.06 (0.17)	76.88 (74.06)	0.20 (0.18)	5.56 (2.97)	0.42 (0.41)	0.35 (0.26)
	Group participating in FFW (373 observations)	3.80 (0.50)	0.04 (0.10)	74.79 (66.17)	0.25 (0.27)	6.09 (2.52)	0.44 (0.42)	0.24 (0.18)
	test-statistic difference in means between 2 groups	-5.07***	1.85*	0.36	-2.63***	-2.35**	-0.48	2.78***
	Full sample (602 observations)	3.70 (0.63)	0.05 (0.13)	69.23.27 (68.92)	0.23 (0.24)	5.89 (2.71)	0.43 (0.41)	0.28 (0.20)

Note: Numbers in parenthesis are standard deviations; Standard t-tests for first six columns and test of equality of proportions for last column; Average work ability of head is evaluated in 2004 instead of 1999, due to data limitations. The score ranges from 1 to 4, where 1 = not able at all and 4 = perfectly able; Livestock units are scaled using standard tropical units; For the binary variable 'Share of female headed households' the statistic used to test equality of proportions adjusted standard deviations appropriately;
* sign. at 10%, ** sign. at 5%, *** sign. at 1 %.

Table 2: Characteristics of free-food-receiving (2002-2004) and non-free-food-receiving households: Based on social networks[1]

		Average number of persons the household can rely on in times of need (1)	Size of the largest iddir the household belonged to prior to drought[1] (2)	Share of households that have close associates holding official positions (%) (3)
FFD	Group NOT receiving free food by FFD (237 observations)	9.49 (16.54)	82.72 (154.77)	0.29 (0.21)
	Group receiving free food by FFD (365 observations)	6.64 (6.15)	94.85 (165.68)	0.45 (0.25)
	test-statistic difference in means between 2 groups	2.98***	-0.90	-3.89***
FFW	Group NOT participating in FFW (229 observations)	7.61 (15.04)	80.07 (149.04)	0.30 (0.21)
	Group participating in FFW (373 observations)	7.86 (8.65)	96.21 (168.52)	0.44 (0.25)
	test-statistic difference in means between 2 groups	-0.25	-1.19	-3.49***
	Full sample (602 observations)	7.76 (11.50)	90.07 (161.45)	0.39 (0.24)

Note: Numbers in parentheses are standard deviations; The size of the iddir is expressed as the number of its members. If the household belonged to several iddirs, only the largest iddir was considered. For the binary variables the statistic used to test equality of proportions adjusted standard deviations appropriately;
* sign. at 10%; ** sign. at 5%; *** sign. at 1 %.

Table 3: Determinants of free food allocation (FFD)

Dependent variable	FFD = 1 if HH received free food 2002-2004		FFD = 1 if HH received free food Period 1		FFD = 1 if HH received free food Period 2		Value of food/cash received Period 2 (FF receiving HHs only)	
Estimation equation	(1) PROBIT		(2) PROBIT		(3) PROBIT		(4) OLS	
HH has close associates holding official position(VSN) 2004 ˜	0.119***	(0.045)	0.103**	(0.045)	0.070	(0.047)	-3.227	(22.744)
No. of persons HH can rely on in times of need 2004	-0.007**	(0.003)	-0.007**	(0.003)	-0.001	(0.003)	-1.152	(1.222)
Size of the largest iddir the HH belongs to 1999	-0.003	(0.009)	-0.014	(0.009)	0.006	(0.009)	3.524	(2.982)
Ln (real consumption per capita) 1999	-0.079**	(0.037)	-0.027	(0.036)	-0.114***	(0.040)	-18.991	(12.796)
Average ability score of the household head 2004 (score 1-4)	-0.121***	(0.042)	-0.066*	(0.038)	-0.104***	(0.039)	6.219	(15.878)
Proportion of elderly (>65 yrs) 1999	0.051	(0.191)	0.218	(0.181)	-0.017	(0.173)	-45.613	(54.550)
Land area owned per capita (hectares) 1999	-0.359**	(0.141)	-0.230*	(0.131)	-0.318**	(0.137)	-34.897	(76.112)
Ln (household size) 1999	-0.184***	(0.060)	-0.011	(0.054)	-0.200***	(0.058)	8.025	(21.639)
HH head is female 1999 ˜	-0.022	(0.056)	0.057	(0.054)	-0.009	(0.056)	-43.443**	(21.012)
Proportion of children (< 6 yrs) 1999	-0.078	(0.146)	-0.064	(0.148)	0.048	(0.151)	-10.633	(55.312)
HH head is literate 1999 ˜	0.017	(0.051)	0.044	(0.050)	-0.037	(0.052)	-6.384	(21.551)
HH belongs to major religious group of PA 1999 ˜	-0.036	(0.059)	-0.035	(0.061)	-0.011	(0.064)	34.649	(26.279)
HH received free food in the past (1982-1999) ˜	0.139*	(0.077)	0.050	(0.073)	0.133*	(0.074)	-20.109	(28.979)
HH experienced drought, 2000-2002˜	0.040	(0.057)	0.165***	(0.051)	-0.063	(0.058)	17.967	(17.737)
Male HH member serious illness 1999-2002˜	0.060	(0.083)	0.005	(0.087)	0.048	(0.091)	16.239	(29.740)
Female HH member serious illness 1999-2002˜	0.055	(0.081)	0.081	(0.085)	-0.027	(0.089)	36.238	(29.320)
Any HH member died, 1999-2002˜	0.042	(0.056)	0.112**	(0.055)	-0.082	(0.056)	22.452	(24.089)
Number of observations	602		602		602		263	
R² / Pseudo R²	0.187		0.105		0.175		0.305	

Note: All models in this table include PA dummies (not reported); Period 1 = Sept. 2002-March 2003; Period 2 = Apr. 2003-March 2004; Reported coefficients are marginal effects. Equations 1-3: changes in marginal probabilities for continuous variables and discrete changes in the probability from changing the value from 0 to 1 for dummy variables (marked with ˜); Consumption per capita is measured by total consumption minus transfers in 1999; Iddir size is scaled (divided by 50); Numbers in parentheses are robust standard errors; Last column is conditional on receiving free food. Mean value of food/cash received by those receiving
in this period is 176.9 birr (176.8 standard error). Birr exchange rate at time of survey 8.5 birr per US dollar;
* sign. at 10%; ** sign. at 5%; *** sign. at 1%.

Table 4: Determinants of food-for-work participation (FFW)

Dependent variable	FFW = 1 if HH participated in FFW 2002-2004		FFW = 1 if HH participated in FFW Period 1		FFW = 1 if HH participated in FFW Period 2	
Estimation equation	(1) PROBIT		(2) PROBIT		(3) PROBIT	
HH has close associates holding official position (VSN) 2004 ˜	0.029	(0.046)	0.019	(0.048)	0.061	(0.048)
No. of persons HH can rely on in times of need 2004	-0.001	(0.002)	-0.001	(0.002)	-0.001	(0.002)
Size of the largest iddir the HH belongs to 1999	-0.006	(0.009)	-0.001	(0.009)	-0.003	(0.009)
Ln (real consumption per capita) 1999	0.028	(0.034)	0.058	(0.037)	0.022	(0.036)
Average ability score of the household head 2004 (score 1-4)	0.175***	(0.039)	0.185***	(0.042)	0.178***	(0.041)
Proportion of elderly (>65 yrs) 1999	0.164	(0.179)	0.046	(0.188)	0.214	(0.188)
Land area owned per capita (hectares) 1999	0.156	(0.134)	0.271*	(0.148)	0.185	(0.139)
Ln (household size) 1999	0.117**	(0.056)	0.130**	(0.059)	0.095	(0.059)
HH head is female 1999 ˜	-0.101*	(0.053)	-0.081	(0.055)	-0.130**	(0.056)
Proportion of children (< 6 yrs) 1999	0.066	(0.148)	0.127	(0.154)	0.038	(0.154)
HH head is literate 1999 ˜	0.030	(0.050)	-0.005	(0.052)	0.057	(0.051)
HH belongs to major religious group of PA 1999 ˜	0.005	(0.058)	-0.016	(0.060)	-0.019	(0.060)
HH received free food in the past (1982-1999) ˜	-0.013	(0.071)	-0.044	(0.073)	0.031	(0.075)
HH experienced drought, 2000-2002˜	0.067	(0.057)	0.102*	(0.058)	0.076	(0.058)
Male HH member serious illness 1999-2002˜	-0.201**	(0.094)	-0.249***	(0.091)	-0.238***	(0.090)
Female HH member serious illness 1999-2002˜	-0.004	(0.088)	-0.052	(0.092)	0.019	(0.089)
Any HH member died, 1999-2002˜	-0.009	(0.053)	-0.014	(0.055)	-0.015	(0.055)
Number of observations	602		602		602	
Pseudo R^2	0.172		0.189		0.193	

Note: All models in this table include PA dummies (not reported); Period 1 = Sept. 2002-March 2003; Period 2 = Apr. 2003-March 2004; Reported coefficients are marginal effects. Changes in marginal probabilities for continuous variables and discrete changes in the probability from changing the value from 0 to 1 for dummy variables (marked with ˜); consumption per capita is measured by total consumption minus transfers in 1999; Iddir size is scaled (divided by 50); Numbers in parentheses are robust standard errors;
* sign. at 10%; ** sign. at 5%; *** sign. at 1%.

Table 5: Determinants of food-for-work (FFW) rewards among FFW-participating households (OLS, two-part model)

Dependent variable	Total value of food/cash received Period 2		Total nr of days worked in FFW Period 2		Daily wage rate FFW (value in Birr) Period 2	
Estimation equation	(1) OLS		(2) OLS		(3) OLS	
HH has close associates holding official position (VSN) 2004	96.052*	(53.084)	4.512	(7.255)	0.943***	(0.330)
No. of persons HH can rely on in times of need 2004	-4.186**	(1.875)	-0.707**	(0.288)	-0.011	(0.016)
Size of the largest iddir the HH belongs to 1999	-3.258	(4.386)	0.687	(0.695)	-0.042	(0.040)
Ln (real consumption per capita) 1999	-11.734	(24.003)	-1.406	(4.565)	-0.105	(0.201)
Average ability score of the household head 2004 (score 1-4)	22.857	(27.234)	3.103	(4.477)	-0.003	(0.233)
Proportion of elderly (>65 yrs) 1999	92.865	(198.795)	-2.968	(29.517)	0.652	(1.392)
Land area owned per capita (hectares) 1999	-9.530	(114.982)	35.762	(27.333)	-0.326	(0.741)
Ln (household size) 1999	84.680**	(37.613)	27.017***	(7.033)	0.137	(0.324)
HH head is female 1999	55.710	(43.021)	1.933	(7.597)	0.210	(0.305)
Proportion of children (< 6 yrs) 1999	-70.811	(103.319)	0.873	(18.643)	-0.373	(0.847)
HH head is literate 1999	31.590	(43.003)	5.056	(6.659)	0.190	(0.342)
HH belongs to major religious group of PA 1999	-82.859	(74.232)	-18.707	(13.730)	0.022	(0.363)
HH received free food in the past (1982-1999)	-25.451	(107.057)	9.080	(12.719)	0.036	(0.477)
HH experienced drought, 2000-200	-115.559*	(69.551)	10.409	(8.305)	-0.891	(0.585)
Male HH member serious illness 1999-2002	123.616	(106.066)	-5.599	(11.294)	1.044	(0.723)
Female HH member serious illness 1999-2002	-5.474	(61.922)	14.442	(14.114)	-0.108	(0.447)
Any HH member died, 1999-2002	13.911	(50.905)	18.542**	(9.145)	-0.293	(0.365)
No. of observations (FFW participants only)	344		334		334	
Adjusted R^2	0.340		0.410		0.384	

Note: All models in this table include PA dummies (not reported); Period 2 = Apr. 2003-March 2004; Income per capita is measured by total income minus transfers in 1999; Iddir size is scaled (divided by 50); 9 missing and 1 outlier observations are dropped in regressions (2) and (3). Numbers in parentheses are robust standard errors; Mean values (standard errors in brackets): total value 341 (431); days worked 78 (73) and daily payment 3.80 (3.33);
* sign. at 10%; ** sign. at 5%; *** sign. at 1%.

Table 6: Instrumental Variable Estimations

Dependent variable	HH has close associates holding official position (2004)		FFD = 1 if HH received free food 2002-2004		FFW = 1 if HH participated in FFW 2002-2004	
Estimation equation	(1) 2SLS: 1st stage		(2) 2SLS: 2nd stage FFD		(3) 2SLS: 2nd stage FFW	
At least one of the head's parents has held an official position	0.277***	(0.053)				
HH has close associates holding official position (VSN) 2004			0.302*	(0.177)	0.066	(0.181)
No. of persons HH can rely on in times of need 2004	0.003	(0.002)	-0.003**	(0.001)	-0.001	(0.002)
Size of the largest iddir the HH belongs to 1999	0.009	(0.007)	-0.005	(0.008)	-0.005	(0.008)
Ln (real consumption per capita) 1999	-0.020	(0.030)	-0.062**	(0.030)	0.022	(0.029)
Average ability score of the household head 2004 (score 1-4)	0.045	(0.035)	-0.104***	(0.032)	0.149***	(0.035)
Proportion of elderly (>65 yrs) 1999	0.034	(0.167)	-0.004	(0.131)	0.110	(0.162)
Land area owned per capita (hectares) 1999	-0.132	(0.121)	-0.237**	(0.113)	0.123	(0.096)
Ln (household size) 1999	-0.045	(0.048)	-0.137***	(0.050)	0.099**	(0.048)
HH head is female 1999 ˜	-0.117**	(0.047)	0.016	(0.051)	-0.086*	(0.048)
Proportion of children (< 6 yrs) 1999	-0.122	(0.125)	-0.037	(0.127)	0.072	(0.128)
HH head is literate 1999 ˜	0.111**	(0.045)	-0.019	(0.050)	0.013	(0.048)
HH belongs to major religious group of PA 1999˜	-0.022	(0.055)	-0.027	(0.052)	0.005	(0.055)
HH received free food in the past (1982-1999) ˜	-0.059	(0.063)	0.134*	(0.073)	-0.011	(0.067)
HH experienced drought, 2000-2002˜	0.062	(0.049)	0.004	(0.051)	0.053	(0.050)
Male HH member serious illness 1999-2002˜	-0.107	(0.082)	0.070	(0.076)	-0.165**	(0.084)
Female HH member serious illness 1999-2002˜	0.043	(0.080)	0.042	(0.072)	-0.005	(0.077)
Any HH member died, 1999-2002˜	0.005	(0.047)	0.026	(0.048)	-0.001	(0.045)
Number of observations	602		602		602	
(Pseudo) R^2	0.189		0.187		0.202	
F-statistic instrument	28.81					

Note: All models in this table include PA dummies (not reported); Consumption per capita is measured by total consumption minus transfers in 1999; Iddir size is scaled (divided by 50); Numbers in parentheses are robust standard errors;
* sign. at 10%; ** sign. at 5%; *** sign. at 1%.

Table 7: Change in informal social safety net (ISSN) 1999-2004

		Share of households with no change in ISSN (%)	Share of households with increase in ISSN (%)	Share of households with decrease in ISSN (%)
FFD	Non-free food receiving group (232 observations)	30.60	34.05	35.34
	Free food receiving group (356 observations)	35.67	30.34	33.99
	t-statistic difference in shares between 2 groups	-1.27	0.94	0.34
FFW	Group NOT participating in FFW (223 observations)	30.94	37.22	31.84
	Group participating in FFW (365 observations)	35.34	28.49	36.16
	t-statistic difference in shares between 2 groups	-1.10	2.21[**]	-1.07
	Full sample (588)	33.67	31.80	34.52

ENDNOTES

[1] Gilligan and Hoddinott's data are less well suited to study the first stage of the targeting system, from the central government to the districts (Woredas). Using a large national data set, relating to food aid distribution in the mid-1990s, Jayne et al. (2001) showed considerable inertia in food aid allocations to specific regions and areas, and large variation in the household-level allocation rules across regions.

[2] The importance of social capital and political connectivity at the community level in explaining differences *between* communities in their food aid targeting processes is of course also of interest. It may be, for instance, that the degree of successful food aid targeting of a community is related to its degree of political connectedness to the district administration, as well as their social cohesion, trust and control. The available data are unlikely to be most suitable for this, as we only have a limited number of Peasant Associations (15) in the data.

[3] This property of social networks is, for obvious reasons, often used in the job search literature (Lin, 2001).

[4] These five questions were, "can this person: 1) Stand up after sitting down? 2) Sweep the floor? 3) Walk for 5 km? 4) Carry 20 liter of water for 20m? 5) Hoe a field for a morning?"

[5] The measure is only available for round 6, but this is unlikely to have changed significantly over time; nevertheless, the potential endogeneity with food aid is explored further below.

[6] We explored other measures for the strength of the iddir, but the data on the value of benefits of the iddir proved too incomplete to pursue across all the villages. Bold and Dercon (2009) use more data collected on all the iddirs for a sub-sample, but this sub-sample proved too small for the purposes in this paper. Data limitations also prohibited us from using the sum of the members of all iddirs the household belonged to, instead of taking the size of the largest iddir.

[7] The data on these political connections were collected in round 6, although political office had not changed since the elections of 2001, before the drought crisis; any consequences for the analysis are discussed further below.

[8] Note that in the reported regressions, we did not include livestock ownership, although it does reflect a criterion of the PA leaders. Including livestock, together with consumption and land ownership, does not change any of the results and does not show any significant effect of livestock. However, it appears to cause problems of multicollinearity, affecting significance levels of other variables. Since only one PA claimed to be using livestock ownership as a target criterion and since its coefficient estimate in the regressions is never significant, we believe that avoiding multicollinearity problems is a preferable choice. We fully recognize that land ownership and real consumption are also highly correlated, but as we will see in the regressions, land ownership has a very significant impact on the food distribution process. Hence, we decide to include it in the regression model.

[9] This is due to data limitations, as explained in the previous section.

[10] Nevertheless, these effects are still estimated with a high standard error, and a full pooling test between the two periods suggest that overall, the differences are not significant, despite the significance of individual results.

[11] For example, because those who were in charge of food distribution in the 1980s are likely no longer to be in charge in 2002.