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

Bet Caeyers (E.D.I., Tanzania and University of Oxford)

and

Stefan Dercon (University of Oxford)

*Abstract*
*In many developing countries, the beneficiaries of transfer programmes are determined by community-based processes, based on some general targeting rules related to needs. This opens the door for local social and political processes to impact on who gets access. Despite increasingly large scale social protection programmes in Africa, we have limited evidence on the political economy processes involved. We focus on Ethiopia were the local political authorities are in charge of food aid transfers. We investigate whether social networks and political connections matter for access. We find evidence for the hypothesis that the process results in the targeting of households that cannot easily rely on support from relatives or friends. On average, for each additional person the household can rely on in times of need, the probability of this household of obtaining food aid decreases with almost 1 percentage point. We also find strong evidence of political connections and favouritism. Households having close associates holding official positions have, ceteris paribus, more than 10 percent higher probability of obtaining free food than households that are not well connected with powerful households. We do not find evidence for the hypothesis that other social networks in the community influence the food aid allocation process. Finally, investigating reverse causality, we find no evidence that social and political networks are affected by the food aid transfer system.*

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Contacts: b.caeyers@edi-africa.com and stefan.dercon@economics.ox.ac.uk

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## 1. Introduction

Increasingly large transfer programmes are in operation across the developing world, as there is a growing consensus that they can form a key part of poverty reduction strategies (World Bank, 2006). Targeting is a central feature of these programmes, but concerns remain about the effectiveness of reaching the intended recipients (Coady et al. 2004). This paper investigates how targeted transfers are allocated in Ethiopia, one of the poorest settings in the world.

We focus on transfers in the form of food aid, delivered unconditionally to the recipients. There is considerable evidence on the possible biases in transfer delivery against the poor in Ethiopia, such as in terms of geography, demographics, gender or assets (Jayne et al. 2002, Gilligan and Hoddinott, 2007). Much less is known on how transfers are actually reaching the final recipients. In this paper, we study 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.

As in many other countries, transfers in terms of food aid or cash in Ethiopia are delivered using administrative targeting, with extensive decentralization, whereby the final recipients are selected locally, by implementing more general official targeting criteria. The amount of food to be allocated to each district (Wereda) is determined at the central government level. The actual beneficiary households are designated at the local community level, by the 'Kebele' committees. The Kebele is a local 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 as used in Ethiopia may offer a mechanism to ensure that the poor are served. Alternative mechanisms for unconditional transfer deliver, such as self-selection of recipients, based on stigma, long waiting times or delivery of inferior goods, are not politically feasible. 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 organisations 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 on South Asia, points to the crucial role of the local political economy in service delivery and decentralization (Pande, 2007; Besley et al, 2005; Galasso and Ravallion 2005). The evidence from Africa is however 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 percent 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. In this period, food aid was widely distributed via food-for-work and food aid programmes. 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, 2004). 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 programme 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, 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 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.

The paper focuses exclusively on targeting issues; other papers have addressed the analysis of the impact of the transfer programmes involved (Gilligan and Hoddinott, 2007). Using the same data as used in this paper, and based on a matched difference-in-difference estimator, they found that both food-for-work and food aid programmes raised consumption growth considerably. In their data, 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. In this paper we augment this analysis by looking at the local social and political correlates of food aid access.

In studying the role of social and political networks in access to food aid, we will distinguish 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. The priors are that given that the entire allocation process relies on the local Kebele committee makes list, vertical networks in which a person is connected to the local political elite, may well matter. 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, Dercon and Krishnan, 2003; Attanassio and Rios-Rull, 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 social and political connections seem to matter indeed in the food allocation process. Vertical connections play the most important role, but also the informal social security network of a household might influence the process. Horizontal

networks in general, however, do not seem to have a significant impact on how free food is allocated among the households.

The paper is organised 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 networks in the free food distribution process. Section 4 has a description of the data and provides some relevant summary statistics. Section 5, the largest part of this paper, contains the empirical specifications, a discussion of the main problems potentially involved and the estimation results. In this section, much attention is given to potential endogeneity bias. 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 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 programmes related to public works. Estimates put the share of free food transfers in total food aid distributed since 1995 still at 37 percent. As food-for-work is only effective for those able to work, it is recognised 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 tonnes 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 distribution process. Free food distribution allocations are typically made in three stages. First, the federal government in accordance with 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., 2000).

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 Aalan, 2003). 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 (via the peasant association-based cooperatives). 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, and then only in a dramatic way leading to serious repression afterwards. 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), as they otherwise perceived it as a route to exclusion from essential resources distributed by the state.

## 3. The role of social networks in free food distribution

Growing attention is given to the role of *social capital* in affecting the well-being of households and the development of societies (Narayan and Pritchett, 1999; Fafchamps, 2002; Grootaert et al., 2002). The seminal work by Coleman (1988) on education and by Putnam et al. (1993) on civic participation and institutional performance has placed this concept at the forefront of current social science research. 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 modelled as a specific form of *social network* structure that affects individual outcomes. An example of this

approach is Fafchamps and Minten (2002), in which the role of social networks in affecting trader profitability is examined. Their work is an example of a minor part of social capital studies that focuses on the micro level, where social capital is defined as an asset that benefits a single individual/household/firm. This dimension of social capital is sometimes referred to as *social network capital* or simply *social networks*. This contrasts to the major part of 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).

As the aim of this paper is to investigate the importance of social contacts for households *within* each community in the last stage of the food distribution process, we concentrate on *social networks* at the *household level* instead of aggregate *social capital* at the *community level*. In the remaining part of the paper, we will use the term *social networks* 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. We distinguish 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 the horizontal social network, we distinguish a subset denoted by *informal social insurance network*. This net does not include all households of the horizontal network, only those that the household can actually rely on in times of need[3]. These distinctions matter for the discussion, since the roles of these networks in the food distribution process may differ.

We concentrate on three main micro-level properties of networks: their joint value as informal social insurance, their ability to improve information flows and their function as a source of favouritism. Informal insurance networks refer to the group of associates (friends, family, neighbours 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 (Attanasio and Rios-Rull, 2003). In line with these models, there is some evidence from Ethiopia using the data set used in this paper that the presence of food aid in the community crowds out informal insurance (Dercon and Krishnan, 2003).

Controlling for the presence of informal insurance networks, more broadly defined '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, 1975). 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 signalling 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: that political connections can be a source of *favouritism*. It may very well be that the PA leaders use their political power to

manipulate actions in favour of households that they are vertically connected to, irrespective of whether these households need the food aid or not.[4]

This raises the potential for a whole series of other linked behaviours, documented elsewhere in rural settings, from vote buying by local leaders to repression (Pande, 2007; Baland and Robinson, 2005). 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.

## 4. Data source and descriptive statistics

Our analysis is based upon data from the Ethiopian Rural Household Survey (ERHS), a longitudinal household data set collected in collaboration among the International Food Policy Research Institute, Addis Ababa University, and the centre for the Study of African Economies, Oxford. The data set is collected in six rounds from 1994-2004 in 15 rural Ethiopian villages, of which 9 distributed free food during 2002-2004. Using the data of these 9 villages, we obtained a sample of 569 households in total. The last two rounds were collected in 1999 and 2004, 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 of the analysis. Across these villages receiving food aid, about 60 percent of households received food aid.

As a starting point, 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 part of the community survey in each village, PA leaders were asked to nominate the criteria they used to allocate free food aid in their community. We obtain 7 different criteria, which are, ranked from most to less frequently named 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 free food aid should be given to those that are facing serious food shortages (defined as a food gap of 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). The first characteristic reflects the requirement that food-for-work should be used for those able to work, and not free food transfers.

**Table 1: Characteristics of free-food-receiving (2002-2004) and non-free-food-receiving households: Based on PA criteria[1] (1999)**

| | Average work ability score of the household head[2] | Average proportion of elderly in household | Average household consumption per capita | Average household land ownership per capita (hectare) | Average household size | Average household livestock units per capita[3] | Share of female headed households (%) |
|---|---|---|---|---|---|---|---|
| Group not receiving free food (225 observations) | 3.79 (0.518) | 0.04 (0.111) | 75.35 (63.006) | 0.23 (0.296) | 6.31 (2.702) | 0.41 (0.369) | 26.8 |
| Group receiving free food (344 observations) | 3.63 (0.679) | 0.05 (0.140) | 75.69 (76.004) | 0.26 (0.274) | 5.70 (2.635) | 0.44 (0.412) | 31.1 |
| Full sample (569 observations) | 3.696 (0.625) | 0.048) (0.130) | 75.56 (71.091) | 0.25 (0.283) | 5.94 (2.676) | 0.43 (0.396) | 30.8 |
| t-statistic difference in means between 2 groups | 3.031** | -1.131 | -0.055 | -1.353 | 2.655* | -0.840 | -1.369 |
| Correlation coefficient between receiving free food and PA criterion | **-0.13**** | **+ 0.05** | **+0.00** | **+0.06** | **-0.11**** | **+0.04** | **+0.06** |

**Notes:**
1) Numbers in parenthesis are standard deviations; *= significant at 5%, ** = significant at 1%
2) This characteristic 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.
3) Livestock units are scaled using standard tropical units.

The highest correlation is found for 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[5], ranging from one to four, where one equals not able to work at all and four equals 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. This result is also reflected in the significantly negative correlation coefficient, -0.13. This criterion seems to be the most important criterion for food aid targeting among the criteria provided by the PA leaders. Given that disability is also the most emphasised criterion for free food distribution by the DPPC, this result is not surprising (DPPC, 2000).

Surprisingly, the correlation coefficient between most of the other criteria and whether the household received food aid is not significant. Only for household size, the coefficient is significant, with larger households obtaining less. As larger households are more likely to have able bodied members, this could simply be a reflection of the basic requirement for free food aid delivery. Of course, as this is not a multivariate profile, we have to be careful with drawing inference from this. Overall, though, there is no strong correlation between several of the criteria quoted by the PA leaders and those actually receiving food aid.

Table 2 shows other characteristics of the households in the survey sample, again distinguishing between free-food-receiving and non-free-food-receiving groups, 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 insurance network. In 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 if 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, 2005). 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).

Column 1 in table 2 shows that this may indeed be the case, as there is a negative correlation between the size of the network and access to free food aid. 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, as 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, 2003; Fafchamps and Gubert, 2007), so we will have to be careful to interpret these correlations in a bivariate analysis.

To measure the broader horizontal social network of the households, we use the size of the 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 et al. (2005) and Krishnan and Sciubba (2007) document how members of iddirs also typically are linked in other ways, such as in the form of labour-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).[6] As virtually everybody is a member of at least one iddir, we use the average size of the largest iddir a person belongs to as our proxy for the network strength.[7] Table 2 shows that the average size of the iddir the household belonged to prior to the drought was 77.97 for the non-free-food-receiving group, and 92.41 for the free-food-receiving group. However, the differences are not significant.

**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 | Average size of the iddir the household belonged to prior to drought[1] | Share of households that have close associates holding official positions (%) | Share of households describing the food aid allocation process as 'unfair' (%) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Group not receiving free food (225 observations) | 9.52<br>(16.9) | 77.97<br>(142.9) | 31.1 | 50.7 |
| Group receiving free food (344 observations) | 6.68<br>(6.2) | 92.41<br>(157.4) | 45.4 | 37.7 |
| Full sample (569 observations) | 7.80<br>(11.8) | 86.70<br>(151.9) | 39.72 | 42.86 |
| t-statistic difference in means between 2 groups | 2.836** | -1.109 | -3.423** | +3.0315** |
| Correlation coefficient between receiving free food and social network | -0.12** | +0.05 | +0.14** | |

**Notes:**
1) Numbers in parentheses are standard deviations; * = significant at 5%; **= significant at 1%
2) 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.

Finally, we explore a measure of political (vertical) connectivity. The most direct measure collected for our purposes is a simple question on whether the household has close associates holding official positions in the Kebele. Note that any positions in the Kebele are effectively 'political', based on appointments by the political leadership. Table 2 suggests that vertical social networks indeed matter in the food allocation process. The correlation coefficient between whether the household obtained food aid and whether the household has close associates holding official positions is significant and highly positive, i.e. +0.14. This correlation coefficient is even higher than the correlation coefficient between the average ability score of the household head and the dummy for whether the household obtained food aid, which was shown in table 1 to be the most significant 'official' criterion of the PA leaders among those that they claim to be using. Obviously, these are just descriptive statistics, but nevertheless striking.

To help our interpretation, we also asked questions in which the respondents were asked whether they would describe the food aid allocation process as 'very fair', 'somewhat fair', 'just ok', 'somewhat unfair' or 'very unfair'. Column (4) shows the total share of households responding either 'somewhat unfair' or 'very unfair'. We can see that there is a significant difference between the non-food-receiving and food-receiving groups in this share, suggestive of perceptions of favouritism and capture.

## 5. Empirical analysis

### *5.1. Model specification*

First, we will explore a conditional correlation equation expressing the probability of obtaining food aid as a function of household characteristics based on the PA criteria, social networks and other exogenous attributes that we believe to be important.

This leads to the following estimation equation:

$$FF_{ij} = \alpha + \beta PAC_{ij} + \gamma HSN_{ij} + \delta VSN_{ij} + \varepsilon ISSN_{ij} + \eta X_{ij} + \theta Z_j + \mu_{ij} \qquad (1)$$

where $FF_{ij}$ is a dummy equal to one if household *i* in PA *j* received free food between 2002 and 2004; $PAC_{ij}$ is a vector of 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 that we believe to be important; 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. The remaining term $\mu_{ij}$ is an error term.

Based on the earlier discussion, the vector $PAC_{ij}$ in the model consists of the following characteristics of the household: its work ability (proxied by the average 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 for 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 think may play a role in the food distribution process. More specifically, broader measures of 'need' may include the proportion of children in the household and a set of household level idiosyncratic shocks. Furthermore, a dummy for whether the household head has had any education (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). Similarly, Weredas are 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 et al., 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 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.

There are a number of potential problems with (1), 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. We will need to return to this further. First, table 3 gives the results from estimating (1), the probability of obtaining free food for households residing in PAs in which free food was distributed, using the probit model. The robustness of the results to objections related to endogeneity will be discussed subsequently.

*5.2 Basic specification*

First, the results are presented without the network and connections variables. There is evidence of means based targeting within villages. Evaluated at the mean of all other variables, households at the 25$^{th}$ percentile of log per capita consumption have an average probability of 66 percent of receiving free food. The probability declines to 57 and 49 percent at the 75$^{th}$ and 95$^{th}$ percentile, respectively. Note, however, that the 'richest' households still have almost 50 percent probability of obtaining food aid. Another significant determinant is the average work ability score of the household head. A one point increase of this score decreases the probability of obtaining free food by almost 10 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.[10] 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 the decline with higher levels consumption is only relatively slow.

**Table 3: Determinants of free food allocation – Probit (marginal effects)**

| Dependent variable : Free Food Distribution = 1 if household received free food between 2002-2004 | | |
|---|---|---|
| Specifications | (1) | (2) |
| Household has close associates holding official position ~ | | 0.103 (0.047)** |

| | | |
|---|---|---|
| No. of persons the household can rely on in times of need | | -0.007 (0.003)** |
| Iddir size | | 0.001 (0.01) |
| Ln (per capita real consumption) | -0.094 (0.038)** | -0.093 (0.038)** |
| Average work ability score of the household head | -0.096 (0.041)** | -0.096 (0.042)** |
| Proportion of elderly (>65 yrs) | -0.138 (0.186) | -0.134 (0.188) |
| Land area owned per capita | -0.323 (0.114)*** | -0.318 (0.114)*** |
| Ln (household size) | -0.263 (0.062)*** | -0.253 (0.063)*** |
| Household head is female˜ | -0.028 (0.055) | -0.026 (0.056) |
| Proportion of children (<6 yrs) | -032 (0.177) | -0.056 (0.177) |
| Household head has any formal education˜ | 0.066 (0.0.062) | 0.061 (0.064) |
| Household belongs to the major religious group of the PA˜ | 0.022 (0.075) | 0.042 (0.076) |
| Household received free food in the past (1982-1999) ˜ | 0.137 (0.081)* | 0.141 (0.083)* |
| Household experienced drought, 2000-2002˜ | 0.058 (0.056) | 0.057 (0.058) |
| Male household member had serious illness, 1999-2002˜ | 0.034 (0.087) | 0.052 (0.086) |
| Female household member had serious illness, 1999-2002˜ | 0.080 (0.079) | 0.081 (0.079) |
| Any household member died, 1999-2002˜ | 0.026 (0.057) | 0.022 (0.058) |
| No. of observations | 569 | 569 |
| Pseudo $R^2$ | 0.171 | 0.182 |

Notes: All models in this table include PA dummies (not reported); 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 ˜ ); Income per capita is measured by total income minus transfers in 1999; Iddirsize is scaled; Numbers in parentheses are robust standard errors; * significant at 10%; ** significant at 5%; ***
significant at 1%.

Another significant determinant is the dummy for 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 almost 14 percentage points higher probability of receiving free food between 2002 and 2004. Again, this is consistent with targeting rules that suggest to take 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). 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).

Column (2) augments this regression by adding the social network and connections variables. The variables that had been included in column (1) barely change in size or significance, suggesting relatively low correlations between these controls and the network variables. The results suggest that social networks in general are related to the food distribution process. The Wald-statistic for joint significance of the social network variables is 8.77, which is equivalent to a p-value of Prob > W = 0.0326 (not reported). But the results also show that not all types of social networks matter equally. Households with political connections (vertical networks) had 10 percentage points higher probability of obtaining food aid in 2002-2004 than households that did not have associates holding official positions. 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). The third social network type, horizontal connections measured by the size of the iddir the household belonged to prior to the drought, does not seem to be related to the food distribution process.

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*5.3. Robustness tests*

It is plausible that social networks and political connections are affected by the food aid distribution process, making any causal interpretation of the results above incorrect. 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, and they were simply in power throughout this period. In particular, we are certain that the connections refer to the same leadership as during the 2002 drought and its aftermath, as the last elections in the Kebele took place in 2001, and the subsequent election only took place in 2005. Still, it could be the case that the leadership forged connections 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 and variables. Column (1) in table 4 shows what happens to the results if we run the same regression as in column (2) of table 3, but now omit past food aid (1982-1999) from the regression.

**Table 4. Exploring for endogeneity**

| | Omitting past food aid | First stage IV probit (OLS) | Second stage IV probit (Probit) |
|---|---|---|---|
| Dependent variable | Free food distribution = 1 if household received free food | Household has close associates holding official position (2004) | Free food distribution = 1 if household received free food |
| Any of the parents of the head held official position˜ | | 0.304 (0.053)*** | |
| Any of parents of the head was important in village social life˜ | | 0.083 (0.042)* | |
| Household has close associates holding official position (2004)˜ | 0.102 (0.048)** | | 0.101 (0.505) |
| No. of persons the household can rely on in times of need (2004) | -0.007 (0.003)** | 0.001 (0.002) | -0.007 (0.035)** |
| Iddir size | 0.001 (0.010) | 0.005 (0.008) | 0.001 (0.026) |
| Ln (per capita real consumption) | -0.093 (0.038)** | -0.015 (0.030) | -0.093 (0.099)** |
| Average work ability score of the household head | -0.100 (0.042)** | 0.043 (0.037) | -0.096 (0.113)** |
| Proportion of elderly (>65 yrs) | -0.157 (0.189) | 0.194 (0.185) | -0.133 (0.500) |
| Land area owned per capita | -0.315 (0.115)*** | -0.007 (0.103) | -0.319 (0.299)*** |
| Ln (household size) | -0.247 (0.063)*** | -0.022 (0.049) | -0.253 (0.167)*** |
| Household head is female˜ | -0.020 (0.055) | -0.136 (0.048)*** | -0.026 (0.162) |

| | | | |
|---|---|---|---|
| Proportion of children (<6 yrs) | -0.060 (0.175) | 0.140 (0.147) | -0.056 (0.466) |
| Household head has any formal education˜ | 0.060 (0.064) | 0.082 (0.056) | 0.061 (0.181) |
| Household belongs to the major religious group of the PA˜ | 0.029 (0.076) | -0.112 (0.067)* | 0.041 (0.205) |
| Household received free food in the past (1982-1999) ˜ | | -0.039 (0.068) | 0.141 (0.208)* |
| Household experienced drought, 2000-2002˜ | 0.057 (0.057) | 0.073 (0.048) | 0.057 (0.152) |
| Male household member had serious illness, 1999-2002˜ | 0.061 (0.084) | -0.096 (0.080) | 0.051 (0.237) |
| Female household member had serious illness, 1999-2002˜ | 0.077 (0.079) | 0.066 (0.078) | 0.081 (0.221) |
| Any household member died, 1999-2002˜ | 0.017 (0.058) | 0.017 (0.048) | 0.022 (0.153) |
| No. of observations | 569 | 569 | 569 |
| Joint F-test on instruments | | 20.38 (Prob>F=0.0000) | |
| Wald test for exogeneity | | | 0.00 (Prob>chi2=0.989) |
| Pseudo $R^2$ | 0.177 | 0.199 | |

Notes: All models in this table include PA dummies (not reported); Reported coefficients are 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 ˜ ); Iddirsize is scaled; Numbers in parentheses are robust standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%..

We see that the coefficient estimates for all social network variables remain close to identical. In particular, the network coefficients are identical. Against this, one could argue that past food aid programs back to 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).

However, this does not show that other sources of unobserved heterogeneity affect our inference on the impact of social network and political connections variables. It might be that social networks, being the result of behavioural 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 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 wealth, can be explored further. In particular, acknowledging that there may be a problem of unobserved heterogeneity, we use instrumental variables to estimate the relationship in equation (1) to get at the relationship between political connections and food aid. As we aim to focus on the social and political processes, we use parental characteristics to instrument the political connections variable. In particular, we use a dummy describing whether *any parent* of the household head held an official position in the Kebele or elsewhere and a dummy for whether *any parent* was important in village social life. Since both these variables relate to the past, they are unlikely to impact on the probability of obtaining food aid other than through current political connections. We could nevertheless expect a potential problem with these instruments. There are two reasons why the variation of our instruments across households is small. First, these instruments are binary variables, so they can only take two possible values, zero and one. Second, only 16% of the households had a head of which the parents held official positions[12]. This low variation in the instruments is expected to decrease the precision of the estimates. We will have to take this into account while interpreting the results. We use both variables as instruments, while in fact we could have done with one of them only. Using only the variable describing whether any parent of the household head held a position yielded effectively the same results – both in terms of the first stage diagnostics and the coefficients in the second stage, even though the precision of the estimates is improved using two instruments.

Column (2) and Column (3) in table 4 present the estimation results for respectively the first and second stage regressions of the IV probit estimation process. Note that a linear probability model is used in the first stage regression, in line with the arguments in Angrist and Krueger (2001). We find that the instruments are statistically significant, especially the dummy for whether the parents held official positions, which is significant at the 1 percent level. Households of which the parents of the head held official positions have 30 percent higher probability of having vertical connections than other households in the village. Moreover, this probability increases with nearly 9 percent if any of the parents of the household head was important in village social life. The F-test for joint significance of the identifying instruments is 20.38, which is equivalent to a p-value of Prob>F = 0.000. This suggests that we are not dealing with weak instruments.[13] Furthermore, running an IV linear probability model (not reported) provides us with a Hansen J statistic of 1.072 which is equivalent to a p-value of Prob>chi2 = 0.30. This test for overidentification of all instruments suggests that our instruments are only weakly correlated with the dependent variable and hence that also the validity condition is satisfied.

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. Households not belonging to the major religious group in their community also have fewer connections. Column (3) in table 4 presents the results for the IV probit model in which vertical connections are instrumented by the dummy for whether any of the parents of the household head held official positions and a dummy for whether any of the parents of the household head was important in social life. Although the coefficient estimate of vertical connections is very similar to the probit estimate, it is no longer significant. It is immediately clear that this finding results from the large increase in the variance of the estimate, as the standard error changes from 0.047 in the probit model to 0.505 in the IV probit model. In general, IV probit estimates will always be less efficient than probit estimates. In our case, however, the variance of the estimates was expected to be especially high, given the small variation in the instruments' values as we discussed above. The key reason for estimating the IV regression was related to a concern with *inconsistency* related to unobserved heterogeneity. Since the consistent coefficient estimates are virtually the same as the efficient ones, we conclude that vertical connections are very likely to be

exogenous in our model. This is also strongly supported by the Wald test of exogeneity reported in table 4. In short, there is no clear evidence to suggest that unobserved heterogeneity or other endogeneity problems affect our conclusion 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 inquired 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 5 shows the frequency of the answers for the free-food-receiving and non-free-food-receiving household groups separately.

**Table 5. 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 (%) |
|---|---|---|---|
| Non-free food receiving group | 32.42 | 31.96 | 35.62 |
| Free food receiving group | 35.81 | 29.38 | 34.72 |
| Full sample | 34.53 | 30.40 | 35.07 |
| t-statistic difference in shares between 2 groups | -0.89 | 0.59 | 0.44 |

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 food aid program has not systematically influenced the informal social safety net.

## 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 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 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 suggest that targeting is correlated with observable characteristics reflecting needs, but that it is imperfect (Jayne et al. 2001; Gillingan 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 close 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 free food aid distributed in the aftermath of one of the largest relief operations of recent years. Its relevance goes beyond this particular period, as food aid continues to be an important part of the current expanding Productive Safety Net Programme in many areas, and as targeting continues to depend on local Kebele committees. In other words, it would be hard to dismiss these findings as the reliance on local processes has even been increased in 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 10 percentage points higher probability of obtaining food aid than other households in the village that are not vertically connected.

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 signalling need or availability of support. As these Peasant Associations are usually not more than about 500 households, this is unlikely to be the full story. Favouritism is a plausible explanation, irrespective of whether those households actually need the food aid or not. Our empirical findings, controlling for potential endogeneity, strongly support this view, whether linked to unobserved heterogeneity or reverse causality. This is a striking result, leaving less well-connected households with real needs without support. Looking for ways to increase accountability of local Kebele committees will be crucial to improve targeting.

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[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] In reality, the informal insurance network could also include both horizontal and vertical contacts. though we believe its occurrence in vertical networks to be limited because of the common place social distance between rural households and the political elite.

4 Also this property of social networks is, for obvious reasons, often used in the job search literature (Lin, 2001).

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

[6] Researching the iddir, we found iddirs in the poorest villages in Ethiopia as well as in the World Bank office in Addis Ababa, linked to the Ethiopian staff association.

[7] 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 (2008) 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.

[8] Note that we did not include livestock ownership in the regression, although it does reflect a criterion of the PA leaders. Including livestock, together with consumption and land ownership, however, would cause unnecessary problems of multicollinearity. 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, though recognizing that this may have implications for the variance estimates.

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

[10] These results support our decision to keep land per capita in the regression, recognizing the potential multicollinearity with real consumption per capita it causes. Dropping land per capita from the model decreases the significance level of real consumption per capita to 1 percent (not reported).

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

[12] 70% of the households had a head of which the father or the mother was important in village social life.

[13] Note that the F-statistic is significantly greater than 10.3, which is the critical value of the F-statistic proposed by Stock and Yogo (2005) above which the null of weak IVs is rejected at the 5 % level.