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Payment modality preferences

Evidence from Ethiopia's Productive Safety Net Programme

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ABSTRACT

Economists typically default to the assumption that cash is always preferable to an in-kind transfer. We extend the classic Southworth (1945) framework to predict under what conditions this assumption holds. We take the model to longitudinal household data from Ethiopia where a large-scale social safety net intervention – the Productive Safety Net Programme (PSNP) – operates. Even though most PSNP payments are paid in cash, and even though the (temporal) transaction costs associated with food payments are higher than payments received as cash, the overwhelming majority of the beneficiary households prefer their payments only or partly in food. However, these preferences are neither homogeneous nor stable. Higher food prices induce shifts in preferences towards in-kind transfers, but more food secure households and those closer to food markets and to financial services prefer cash. There is suggestive evidence that preferences for food are also driven by self-control concerns.

Keywords: social protection, food transfers, cash transfers, preferences, Ethiopia, PSNP

JEL classification: D40, I38, O12

1. INTRODUCTION

Social protection programs that aim to reduce poverty and vulnerability are becoming widespread (ILO 2014). In Africa alone, the number of social protection programs have tripled in the last 15 years (Cirillo and Tebaldi 2016) to the extent that today all African countries operate at least one such program (Beegle, Honorati, and Monsalve 2018). Alongside their introduction has been discussions regarding technical aspects of their implementation with issues such as targeting, the level and frequency of payments, the duration of these programs, whether receipt of benefits should be conditioned on specified behaviors and so on. A key design issue relates to their payment modality: cash or in-kind.

From the perspective of program designers, Hoddinott, Sandström, and Upton (2018) note that cash transfers have advantages with respect to timeliness of delivery and, in most cases, reduced cost of delivery (Gentilini 2007; Margolies and Hoddinott 2014). Despite these advantages, Aker (2017) shows that in-kind transfers, such as food, remain widespread for reasons including paternalism (Cunha 2014; Currie and Gahvari 2008), targeting (Bearse, Glomm, and Janeba 2000; Currie and Gahvari 2008; Moffitt 1989; Nichols and Zeckhauser 1982; Pirttilä and Tuomala 2002), the need to supply goods not available in local markets (Aker 2017), and the sense that these are more politically acceptable than cash transfers (Epple and Romano 1996). Additionally, cash transfers are seen to provide beneficiaries with choice. Building on the theoretical work by Southworth (1945), transfers for some recipients are infra-marginal: the amount of the in-kind transfer is less than what the household spends on the transferred good after the transfer. These recipients will be indifferent between cash and in-kind transfers. For others, in-kind transfers are extra-marginal: they distort consumption toward the transferred goods – unless the in-kind transfers can be converted into cash, e.g., through re-sales. Based on these micro-economic insights, economists typically default to the assumption that cash is always preferable to an in-kind transfer on the grounds that cash transfers do not constrain the choices of the program beneficiaries (Currie and Gahvari 2008). Thurow (1974) goes as far as stating that "[…] the general economic case for cash transfers is strong enough that the burden of proof should always lie on those who advocate restricted transfer (p. 195)".

Yet, while there is a growing empirical literature on the impacts of cash and food transfers in developing countries (for summaries, see Gentilini 2016; GAO 2016; Hoddinott, Sandström, and Upton

2018), the evidence base supporting the assertion that beneficiaries prefer cash to food or other in-kind transfers is surprisingly thin.[1] Based on focus group discussions held on eight countries (Bangladesh, Ecuador, Jordan, Kenya, Pakistan, Syria, and the State of Palestine), Berg, Mattinen, and Pattugalan report "an overwhelming preference for cash over in-kind assistance" (2013, p. 52). But quantitative studies describe more varied responses. Ethiopian data from the late 1980s showed that preferences for food rather than cash payments were 19, 83, and 90 percent across three rural localities, respectively (Webb and Kumar 1995). A survey undertaken among Internally Displaced Persons in Kabul, Afghanistan found that 53 percent of respondents expressed a preference for cash, 33 percent favored in-kind transfers, and 10 percent preferred a mix (UNHCR 2015). Khera (2013) reports that 67 percent of his Indian respondents preferred food to cash transfers. In rural Niger, Hoddinott, Sandström, and Upton (2013) find that respondents expressed an overwhelming preference for food transfers – given a range of choices, 61 percent of respondents preferred a 100 percent food transfer, 37 percent preferred a 75/25 or 50/50 mix of food and cash, and only 10 percent preferred 100 percent cash.

This descriptive literature hints at, but generally fails to explore systematically, the reasons why these preferences might differ across and within localities. It notes that older respondents, larger households, and beneficiaries located farther from markets may be more likely to prefer food to cash (Gentilini 2007; Berg, Mattinen, and Pattugalan 2013). Where preference questions are asked in the context of an ongoing transfer program, responses might reflect an endowment effect (Hoddinott, Sandström, and Upton 2013; UNHCR 2015). An example of this comes from Hidrobo et al. (2014) who report that in their comparative study of the impact of cash, food, and vouchers, 55 percent of food beneficiaries preferred to receive transfers entirely in food, 77 percent of cash beneficiaries preferred to receive transfers entirely in cash, and 56 percent of voucher beneficiaries preferred to receive transfers entirely as vouchers. Relatedly, Berg, Mattinen, and Pattugalan (2013) note that respondents might feel that any expression of preference for another mode of aid might lead to the current program being terminated. Third, preferences may not be static; instead responding to external changes, such as prices (Gentilini 2016). Few studies systematically examine the associations between household characteristics and preferences for cash or food transfers. An exception is Khera (2013).[2] Looking at a range of household characteristics, he finds a strong relationship between literacy and food preferences; illiterate persons are more likely to prefer food. He finds no relationship between preferences and household demographic characteristics, nor are there associations between cash or food preferences and distance to market.

These limitations motivate our study. We extend the classic Southworth framework to predict under what conditions beneficiaries will prefer cash as opposed to food transfers. We take these predictions to data well suited to analyzing this issue; data drawn from evaluations of Ethiopia's Productive Safety Net Programme (PSNP). The PSNP is the second largest safety net program in Africa reaching about eight million chronically food insecure people. A feature of the program is that its beneficiaries receive their payments either in cash or food – or in some combination of both. Further, the share of cash and food payments in total payments have varied over the years since the program began in 2005. We have

[1] This is especially striking given that many donors supporting social protection programs state that beneficiary preferences and knowledge should be taken into account when designing interventions. Examples include the UK's Department for International Development's (DFID) "Smart Rules" governing all programs operated by DFID, which state that DFID staff must "Ensure that the views and experiences of citizens and beneficiaries inform the design and delivery of our programmes (DFID 2018, p15). The European Union's guidance notes on humanitarian assistance state that, "Humanitarian assistance must be provided in a way that enhances protection and upholds the safety, dignity and preferences of beneficiaries" (European Union 2013, p13). The World Bank has committed to "Achieving 100 percent Citizen Engagement (CE) in projects that have clearly identifiable beneficiaries" where CE entails finding ways to include citizens to assess priorities for interventions and to learn about design and implementation (Manroth et al. 2014, p4).

[2] A related exception is work by Ghatak, Kumar, and Mitra (2016) who look at associations between beneficiary characteristics and cash payments versus an in-kind payment – a bicycle that will assist adolescent girls in attending school. They find that wealthier beneficiaries are more likely to prefer cash, as do larger households. Beneficiaries who belong to villages that are very far from a bicycle store were less likely to prefer cash over in-kind payments, as were older beneficiaries.

household and locality panel data from five survey rounds spanning from 2006 to 2014. In each round, beneficiary households were asked about their preferences regarding the payment modality (food versus cash). These data allow us to describe preferences for cash and for food, show how these stated preferences change over time, and allow us to assess associations between these preferences and household and locality characteristics. Moreover, Ethiopia is a good place to study this for several reasons. Its large land area combined with rugged terrain and poor, although improving, road infrastructure mean that rural dwellers spend a considerable amount of time reaching food markets. Finally, since the beginning of PSNP, there has been an active debate on whether payments should be made in cash or in-kind. While speaking to the international literature on this topic, this study also contributes to this local policy debate in Africa's second most populous country.

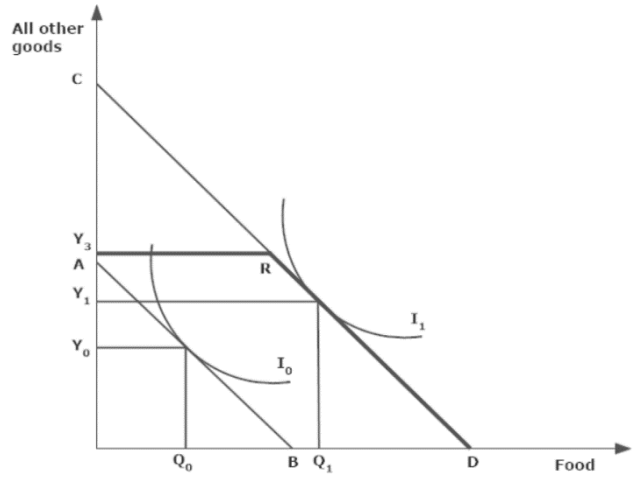
2. MODELLING PREFERENCES FOR CASH AND FOOD TRANSFERS

2.1. The basic model

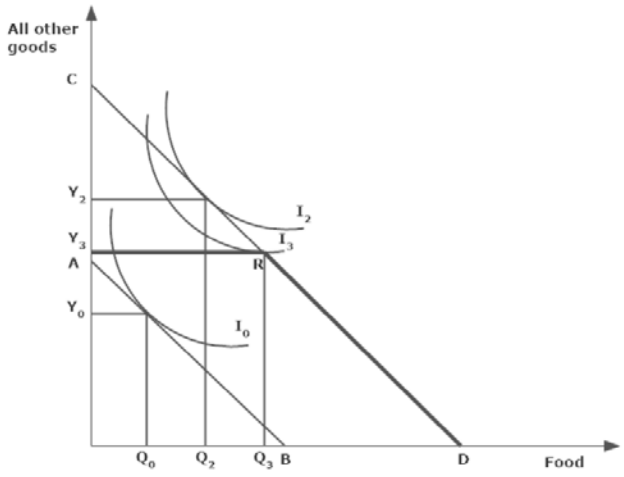
Consider Figure 1a. We have two goods: a food good (think grain); and all other goods. For a given income and set of prices, the budget constraint is given by the chord AB. For given preferences reflected in the indifference curve I_0, the household will consume Y_0 all other goods and Q_0 grains.

Figure 1. Cash versus food transfer – the standard case

a) Poor household



b) Rich household



Consider a transfer made in the form of cash. This shifts the budget constraint out; the new constraint is given by the chord CD. Provided both grains and all other goods are normal goods, we would expect to see the consumption of both rise. But by how much?

For poor or food insecure households, we know that the income elasticity with respect to calories is relatively high. Such households would have preference denoted by I_1 in Figure 1a. The cash transfer would result in a large increase in grain consumption Q_0 Q_1 and a small increase in all other goods, Y_0 Y_1.

For better off households, we know that the income elasticity with respect to calories is relatively low. Such households would have preference denoted by I_2 in Figure 1b. The cash transfer would result in a small increase in grain consumption Q_0 Q_2 and a large increase in all other goods, Y_0 Y_2.

Now suppose that an equivalently valued transfer is made in the form of grain. For our poor households (Figure 1a), this transfer is infra-marginal and so they increase in grain consumption by Q_0 Q_1 and enjoy a small increase in all other goods, Y_0 Y_1. But for better off households (Figure 1b), suppose that there is some maximum amount of grain that they are willing to consume. Denote this by quantity Q_3.

Under the assumption that the grain transfer cannot be resold, this introduces a kink in the budget constraint. For better off households, the budget constraint with the grain transfer is given by the chord DRY_3. This better off household consumes where the indifference curve I_3 is tangent to the budget constraint given by DRY_3. Note that I_3 lies below I_2.

This gives us the well-known result that where the food transfer is infra-marginal, households will be indifferent between a cash transfer and a food transfer of equivalent value. Where the food transfer is extra-marginal, households will prefer the cash transfer to the food transfer. More generally, the basic Southworth model tells us that preferences for cash transfers will rise with income or related measures, such as wealth or food security.

2.2. Extensions

The basic model assumes there are no transactions costs associated with these transfers. In the context of the PSNP, this is a strong assumption to make. First, there are transactions costs associated with receiving transfers. Beneficiaries need to travel to a designated pay point to receive their payments. These can differ across food and cash transfers; for example, in more inaccessible areas where the PSNP operates, trucks carrying food cannot always get close to where beneficiaries live, forcing beneficiaries to travel long distances to receive their payments. Further, when households receive large food payments – payments of 50 kg or more of grains are not uncommon, there may be transaction costs associated with transporting these home. Second, most of the PSNP beneficiaries in our sample have access to a food market that only operates one day a week. Distances to these markets varies from zero to 30 kilometers or more. Third, where beneficiaries are elderly or disabled, or where household sizes are small (and so there is less scope for delegating tasks to other household members), transaction costs associated with using a cash transfer will be higher. Collectively, this discussion implies the following, *ceteris paribus*:

1. When transactions costs associated with receiving food transfers are higher than those for cash transfers, preferences will shift towards cash;
2. Increased distances to food markets will shift preferences towards food; and
3. Household characteristics (age, infirmity) that make it difficult to physically access markets are associated with a greater propensity to prefer food transfers.

Underlying Figure 1 is the assumption that the cash and the food transfer are of equivalent value. But in reality, this assumption may not hold. Like many social protection interventions, the payment rates for the PSNP are set annually. Prior to the start of annual program operations in January, these are set so that the cash transfer is equal in value to the 3 kg daily food payment. But for much of the period covered by our study, this equivalency is set based on national prices. Local prices that are higher than national averages, or where food prices rise over the period of program operations, *ceteris paribus*, will reduce the purchasing power of the cash transfers relative to food transfers, shifting the cash transfer budget constraint (chord CD) inwards relative to the food transfer constraint and thus shifting preferences towards food transfers. Conversely, preferences will shift towards cash in localities where food prices are lower than national averages or when food prices fall.

In addition to concern regarding the purchasing power of their cash transfers, beneficiaries might also be concerned about price volatility. Suppose a household can chose between a food transfer and a cash transfer. Food prices might be either “high” or “low”; averaging over these, the food and cash transfer are of equivalent value. But in terms of food consumption, for risk averse beneficiaries, the expected utility of the certainty of a food transfer is higher than the expected utility of a cash transfer.

Our last extension is inspired by a quote from Jean Drèze. Speaking about the debate regarding replacing India’s food transfer system (the Public Distribution System, PDS) with cash payments, Drèze states that one of the concerns raised by PDS participants is that “They are worried that cash can be more

easily misused than food, because food can only be consumed in small quantities over time while cash is easily spent in one go".[3] Such concerns can be thought of in terms of preferences for future rather than present consumption. Summarizing theoretical work in this area, Ashraf, Karlan, and Yin (2006, p 636) write, "One implication is consistent across these models: individuals who voluntarily engage in commitment devices *ex ante* may improve their welfare. If individuals with time-inconsistent preferences are sophisticated enough to realize it, we should observe them engaging in various forms of commitment." For such individuals, a preference for a food transfer rather than cash can be thought of an expression of this type of commitment device.

3. CONTEXT AND DATA

3.1. Ethiopia's Productive Safety Net Programme

Implementation of the PSNP by the Government of Ethiopia, with support from international donors, began in 2005. It was developed in response to continual appeals for emergency food assistance, widespread food insecurity and concerns that repeated droughts were leading to asset depletion (Devereux et al. 2014; Slater and McCord 2013). Starting in the four highland regions of Ethiopia (Amhara; Oromia; Southern Nations, Nationalities and Peoples' (SNNP); and Tigray), the program was expanded (after initial piloting in some districts) to the agro-pastoral regions of Afar and Somali in 2010.[4] The PSNP provides transfers to food insecure households in chronically food insecure localities while also attempting to prevent asset depletion at the household level and creating assets at the community level (Government of Ethiopia 2004; 2010). Unlike the annual emergency appeals that it largely replaced, the PSNP was conceived as a multi-year program designed to provide recipients with predictable and reliable transfers. Most beneficiary households receive payments for undertaking public works. A small proportion of beneficiaries (largely households with elderly or disabled members) receive unconditional payments called direct support, and a few receive both. Public works payments typically account for 80 to 85 percent of all PSNP payments (Berhane et al. 2015). Most PSNP activities and transfers are made during the non-agricultural season, the months *Tir* to *Sene* in the Ethiopian calendar (approximately mid-January to mid-July). PSNP uses a mix of geographic and community-based targeting to identify chronically food-insecure households in chronically food-insecure *woredas* (districts). Multiple evaluations of the program have shown that it is well-targeted (Coll-Black et al 2012), has reduced household food insecurity and distress sales of assets, and has increased household expenditures and uptake of agricultural inputs (Berhane et al. 2015; Berhane et al. 2014; Berhane et al. 2013; Hoddinott et al. 2012).

Payments are made to beneficiaries in the form of food or cash. The PSNP's Program Implementation Manual (PIM) (Government of Ethiopia 2004; 2010; 2014) provides details of how cash or food allocations are determined.[5] For example, planning for a given year's operation begins with the development of a woreda food-security plan. This includes the number of beneficiaries, the amount of cash and food requested, and the timing of the payments. The PSNP operates on a 'cash-first' principle. An initial goal of the PSNP was to shift the financing of the program from food aid to cash (Government of Ethiopia 2004; 2014), motivated in part by the hope that cash transfers would create positive spill-over effects to small-holder farmers, stimulating local agricultural production and food markets.[6] Woredas are encouraged to

[3] http://www.ideasforindia.in/topics/miscellany/ashok-kotwal-speaks-with-jean-dreze.html. Accessed July 24, 2018.

[4] The PSNP has recently entered its fourth implementation phase. This new phase will bring considerable changes in organizational and implementation structures and will expand to new areas, reaching up to 10 million people (World Bank 2014). In this paper, we focus on the first three phases of PSNP – a period covering 2006-2014.

[5] The Program Implementation Manual has been revised several times as the PSNP has evolved. This description reflects program design for the year in which our price data were collected, 2016.

[6] Filipski et al. (2016) illustrated the sizeable nationwide spillovers of PSNP. They found that the program increased national value added by 0.99%.

request payments in cash if there are local food markets with food available and when they have the capacity (e.g., finance officers; cashiers; safes) to disburse cash (Government of Ethiopia 2004; 2014).[7] These requests are first passed to region officials for review and then to the Federal Food Security Coordination Directorate (FCSD) for further review and approval. The FCSD decides on the cash-food split for each region based on region requests and the predicted availability of food and cash. It also produces a "food flow requirements" analysis indicating when food will be made available to woredas for payment (a similar plan is made for cash payments). Once these plans are finalized, the decision to provide food or cash is effectively locked in for the upcoming year.[8] Food payments consist of three kilograms of cereals for each day worked. Generally, these are made in the form of wheat or maize (Government of Ethiopia 2010). Cash payments are intended to be approximately equal the value of the food payments. When the PSNP began operations, cash payments were set at a uniform six birr per day, but by 2015, they had risen to between 14 and 18 birr per day in real terms (Berhane et al. 2015).

3.2. Data: Households

Since 2006, Ethiopia's Central Statistical Agency, together with the International Food Policy Research Institute, has administered a large household panel survey in localities in which the PSNP operates. The initial sample was based on a stratified sampling. The survey team began by randomly selecting districts (woredas) proportional to their size from a list of chronically food-insecure woredas stratified by region where the PSNP was operating in 2006. Within each woreda, enumeration areas (EAs) were then randomly selected from sub-districts (*kebeles*) where the PSNP was operating. Within each EA, 15 beneficiary and 10 non-beneficiary households were sampled from separate lists for each group, yielding a sample of 25 households per EA. This procedure generated a sample of 146 EAs and, because a few sampled households were not interviewed, a sample of 3,688 households (Gilligan, Hoddinott, and Taffesse 2009). These same households were followed bi-annually until 2014. In each survey round, the interviews took place during the lean season (roughly late May to early August). The annual attrition rate across the five survey rounds was about 1.9 percent per year. This is remarkably low compared to other similar large-scale panel surveys conducted in developing countries (Alderman et al. 2001). Much of this attrition is due to kebeles being dropped where the PSNP ceased operating. Work investigating whether potential differences in attrition rates can be attributed to differences in baseline characteristics shows that being a program beneficiary was not correlated with the probability of attrition. Older and smaller households were slightly more likely to attrite than other household types, but the impact of these characteristics on attrition was small (Berhane et al. 2013; Berhane et al. 2011).

Of note is that re-targeting was carried out over the years and, as a result, many of the initial control households became beneficiaries in later survey rounds. In addition, new households were periodically added to the sample to reflect the geographic expansion of the program but also because of the decreasing share of non-beneficiary households in the original sample. In this paper, we restrict the sample to households that benefitted from the program at the time of the interview – or at any time in the past. This maximizes the sample size while ensuring that our sample is formed of households that have a direct experience with the PSNP. After dropping households with missing observations, we have an unbalanced panel data set consisting of 11,989 observations from 3,649 households.[9]

[7] Possibly reflecting the cash first principle, this is not always followed in practice. Appendix Figure A1 in the Appendix shows no clear pattern when we regress the payment modality household received on community's distance to the nearest town. Even in the most remote localities (more than 30 km away from the nearest town), about 70 percent of the households received cash payments during the study period.

[8] In principal, these allocations can be revised after PSNP operations commence. However, the process of doing so is so disruptive – in particular, it leads to significant delays in making payments – that this only occurred in 2008.

[9] These households further group into four regions (Amhara, Oromia, SNNP and Tigray), 78 woredas, and 191 EAs.

In addition, surveys were conducted at the kebele level using structured focus group discussions with kebele leaders and other people who are knowledgeable about the locality. The information collected in these discussions included kebele characteristics, such as infrastructure and population size, and aspects of PSNP implementation. As a part of this survey, retrospective price data were also collected on monthly prices on grains consumed by households in that locality. Moreover, the survey teams also visited local food markets to collect information on their characteristics, including how frequently the markets operates and their latitude and longitude, which allow us to assess how remote the markets are.

Table 3.1. Household descriptive statistics

	Mean	Standard deviation
Dependent variable:		
Preference: 75 or 100 % food (0/1)	0.524	0.499
Independent variables:		
Food secure household (0/1)	0.370	0.483
Nearest food market is less than 3 km (0/1)	0.544	0.498
Nearest bank is less than 3 km (0/1)	0.051	0.220
Food price index	2.464	1.057
Household size	5.135	2.307
Household size squared	31.69	25.79
Head's age in years	49.00	15.38
Head has not attended school (0/1)	0.779	0.415
Female head more than 60 years of age (0/1)	0.084	0.277
Female headed household (0/1)	0.287	0.452
Household received no PSNP payments (0/1)	0.308	0.462
Household received only food payments (0/1)	0.089	0.285
Less than 50% of payments were in cash (0/1)	0.105	0.307
50% of payments were in cash (0/1)	0.078	0.268
More than 50% of payments were in cash (0/1)	0.111	0.314
Household received only cash payments (0/1)	0.308	0.462
Year, 2006 (0/1)	0.156	0.363
Year, 2008 (0/1)	0.173	0.378
Year, 2010 (0/1)	0.183	0.387
Year, 2012 (0/1)	0.217	0.412
Year, 2014 (0/1)	0.271	0.444
Region, Tigray (0/1)	0.258	0.438
Region, Amhara (0/1)	0.294	0.456
Region, Oromia (0/1)	0.234	0.423
Region, SNNP (0/1)	0.215	0.411

Note: Pooled sample size is 11,989 households; 3,649 unique households. (0/1) indicates a binary (dummy) variable.

The household survey instrument includes standard questions on household characteristics (demographics, food security, etc.). Descriptive statistics shown in Table 3.1 show a sample that is poor and food insecure. The primary goal of the PSNP was to improve household food security, specifically to reduce what the Government of Ethiopia refers to as the “food gap”. This was measured by asking survey participants to report the number of months, out of the preceding 12 months, that they had “problems satisfying the food needs of the household”. A month where the household had “problems satisfying food needs” is defined as one where the household experienced hunger for five or more days. Table 3.1 shows that only 37 percent of households in our sample report being fully food secure (i.e. food gap is zero) at any point across our five survey rounds. The mean food gap is 2.4 months. More than three quarters of household heads (77.9 percent) have never attended school and just over a quarter (28.7 percent) are

female-headed. They are somewhat physically isolated. Only about half of our sample live within three kilometers of a food market and just five percent live within three kilometers of a bank. The sample is evenly spread across the four highland regions (Tigray, Amhara, Oromia, SNNP) where the PSNP operates. We have slightly lower proportion of observations in earlier rounds (2006, 2008) and a slightly higher proportion in later rounds (2012, 2014).

Data on receipt of PSNP payments was recorded during the survey. Enumerators recorded payment data directly from "client cards", a document held by PSNP beneficiaries that lists their monthly payments. When these cards were not available, respondents were asked to recall their payments by month. Payment information includes whether the payment is made as cash or as food – and if food, what type of food – as well as the total amount of payment received. Comparisons of payment data based on client cards and from self-reports show that levels, distributions, and timing of payments are comparable. Further, limited access to PSNP payroll data confirms that the self-reported data correlate with the payroll data (Berhane et al. 2013; Berhane et al. 2011). By converting the quantities of food payments received by beneficiaries using the market price data, we can calculate the share of payments made in food and in cash. In 2006, cash payments accounted for about 60 percent of all payments. [10] This increased to 71 percent in 2008, fell in 2010, but rose thereafter with cash accounting for 73 percent of the value of all payments in 2014. At the household level, 85 percent of households in our sample reported having received food payments, and 89 percent report having received cash payments during the study period. Consequently, 75 percent of households in our sample have direct experience with both cash and food payments. We note that reselling the food transfers is rare. In 2016, 93 percent of households that received food transfers reported that they never sold any of them, and most of the remaining 7 percent did so rarely (Hoddinott, Stifel, Hirvonen, and Minten 2018).

Starting in 2010, the household surveys began collecting more detailed information on beneficiaries' experiences associated with obtaining their payments. In order to receive their payments, beneficiaries are instructed – typically with a 1 to 2 day notice – to go to a "pay point", nearly always a roadside location. These are supposed to be sited in such a way that beneficiaries do not have to travel more than three hours (one way) from their home. In practice, however, logistical considerations – most notably road conditions which determine where and how far vehicles carrying payments can travel – play a role in the siting of these pay points. Table 3.2 describes the transactions costs associated with receiving food and cash payments by year. While there is some variability in these data from round to round, the following features emerge. First, generally pay points for food are farther away than those for cash, reflecting the difficulties that heavy goods vehicles face when carrying several tons of grains to remote areas. Second, irrespective of transfer modality, virtually all beneficiaries walk to the pay points. Third, because it takes longer to get to a pay point distributing food, and because it takes even longer to get home again, a significant proportion of food beneficiaries are forced to sleep over at the pay point. Consequently, fourth, beneficiaries reporting that they received food payments are more likely to report having spent money on food and accommodation. But the magnitudes of these costs are small. In 2014, the average food recipient spent 17.6 birr (or 4 percent of the average monthly transfer[11]) on transaction costs while the cash recipient spent 10.4 birr (or 2.3 percent of the average monthly transfer). Collectively, these four points suggest that there are higher transaction costs associated with receipt of food payments, but these are time, not monetary, costs. Once at the pay point, food and cash beneficiaries report similar experiences in terms of how they were treated and their payments and relatively few report being harassed or robbed when travelling home after receiving payment.

[10] Similar patterns emerge if we break these data by beneficiary type (public works or direct support). These results are not reported but are available upon request.

[11] As transfers are not received every month, this percentage is an upper estimate.

Table 3.2. Transactions costs associated with obtaining PSNP payments: 2010, 2012 and 2014

	Food			Cash		
	2010	2012	2014	2010	2012	2014
The last time you received a PSNP payment:						
How many minutes did it take to travel (one way) to pay point? (median)	150	90	120	120	90	60
Respondents who travelled to pay point on foot, percent	86.5	92.4	96.3	98.5	94.2	97.9
Respondents who had to spend night sleeping at pay point, percent	45.9	34.9	28.8	21.4	27.3	8.3
Respondents who reported spending money on transport and accommodation, percent	35.6	36.1	40.3	21.6	24.5	16.5
How much did you spend (birr) on transport and accommodation? (mean)	8.3	10.8	17.6	5.0	5.2	10.4
Respondents who perceive they were treated courteously at the pay point, percent	78.4	80.5	65.9	88.0	76.9	71.4
Respondents who perceive they received their payment in full, percent	72.5	72.2	60.8	76.6	68.9	63.9
Respondents who reported being harassed travelling home after receiving payment, percent	3.0	3.6	1.5	2.4	2.7	1.0
Respondents who reported that payment was stolen while travelling home after receiving payment, percent	2.7	3.3	0.4	1.3	1.5	0.5

3.3. Data: Markets and prices

Most kebeles are served by periodic markets; only 13 percent have a food market operating daily. The markets are typically situated on good (all-weather) roads and have access to electricity and cell phone coverage. Most offer a relatively large number of foods and are large, with 72 percent having 50 traders or more. But they are relatively distant from urban centers; on average, the nearest city with a population of 20,000 people or more is 46 km away (median: 40 km). On average, households live 6.4 km from a market.

Previous research on PSNP finds that in years of high inflation the real value of the unindexed cash payments lost value relative to food payments (Sabates-Wheeler and Devereux 2010). Therefore, as noted in section 2, given the lower real value of the cash payments, high food inflation should shift the preferences of the infra-marginal households toward food payments. The challenge is to construct a meaningful measure of inflation that is specific to the PSNP localities where our data were collected. We do the following. In each survey round, we collected 12 months of recall data on the prices paid by consumers for staples. With this information, we construct a food price index. The food price index is a weighted average of prices of the six main cereals (maize, teff, barley, wheat, sorghum, and millet) in each community in a given year. The weights are based on the consumption shares of each cereal type in the community that were estimated from data collected in the food consumption module of the household questionnaire. Applying weights from the first (2006) and last (2014) surveys, we constructed an Ideal Fisher price index (Deaton and Tarozzi 2000) that captures both the temporal and spatial differences in price levels. Figure A2 in the Appendix shows how this food price index varied over the survey rounds in each region.[12]

We first use this food price index to adjust the nominal daily public work wages. Appendix Figure A3 shows how real daily wage rates, expressed in 2014 birr, have fluctuated over time. The most dramatic reduction in the purchasing power of the PSNP Public Works wage was between 2006 and 2008, a consequence of the massive food price spike that occurred across Ethiopia and, indeed, around the world

[12] These 12-month recall data correspond to monthly retail prices collected contemporaneously by the Central Statistical Agency (Hoddinott, Stifel, Hirvonen, Minten 2018).

in 2008. While the PSNP wage had been increased from 6 to 8 birr per day, this was not sufficient to offset the increase in cereal prices.

3.4. Data: Preferences for cash or food payments

Lastly, and crucially for our analysis, in each round PSNP beneficiary households were asked their preferences regarding payment modality.[13] Specifically, the following question was asked: "Given a choice, what proportion of your payment would you like to receive in cash and what proportion would you like to receive in-kind?" with response options: "All cash"; "75% cash; 25% food"; "50% cash; 50% food"; "25% cash; 75% food"; and "All food". Even though most PSNP payments are paid in cash, and even though the (temporal) transaction costs associated with food payments are higher than payments received as cash, the overwhelming majority of beneficiary households prefer their payments only or partly in food (Table 3.3). On average, across rounds, only 12 percent of households prefer cash-only payments. 53 percent would prefer that 75 percent or more of their payments were made in food (Table 3.3; also see first row of Table 3.1), the dependent variable used in our econometric analysis below. Table 3.3 also suggests that these preferences are not stable over time. For example, in 2008 preferences shifted toward food type payments. As noted above, with the purchasing power of the wage falling by 50 percent or so, it is perhaps not surprising that in 2008 we see a sharp shift in household preferences away from cash toward food payments (Table 3.3). These two observations– that few PSNP beneficiaries prefer only cash payments, but that preferences for shares of payments in food or cash are not stable over time – form the first two findings of this paper.

Table 3.3. Household payment modality preferences, by round, percent

Year	2006	2008	2010	2012	2014	all years
All food	37	60	46	44	40	45
75% food; 75% cash	6	6	5	10	9	8
50% cash; 50% food	30	16	24	27	32	26
25% food; 75% cash	10	8	13	10	7	9
All cash	17	9	12	9	12	12
Total	100	100	100	100	100	100

4. ECONOMETRIC APPROACH

Our econometric analysis focuses on modelling household's payment modality preferences. We begin modelling these preferences using a binary variable obtaining a value of 1 if household *h* in village *v* and at time *t* reports preferring food payments (100 % food or 75 % food), and zero otherwise (50% food, 25 % food, or 0 % food):

$$food_{hvt} = X'_{hvt}\beta + \gamma F'_{vt} + W'_v\delta + R'_v\eta + t'_t\theta + \varepsilon_{hvt}\,, \quad (1)$$

where X'_{hvt} is a vector of household characteristics, such as household's self-reported food security status, size (plus squared term), head's characteristics (age, sex, and level of education) and composition of the payments (cash or food) received by the household at the time *t*. Variable F'_{vt} is the food price index calculated for the village at the time of *t*. Vector W'_v represents time-invariant community level characteristics: distances to the nearest food market and bank. Indicator variables for the region in which the household is located are captured in vector R'_v, while the vector t_t captures survey time dummies. Together, the inclusion of these two vectors mean that our model controls for both time and region fixed effects. Finally, ε_{hvt} represents the error term.

[13] In 2006, this question was only asked from households that reported benefitting from the PSNP. In the subsequent rounds, this was asked from all households.

We use a linear probability model (LPM) to estimate equation (1). In our robustness checks, we consider alternative regression models, including logit and ordered logit. We cluster our standard errors at the household level.

5. RESULTS

5.1. Basic findings

Table 5.1 provides our basic results. Column (1) focuses primarily on household characteristics. Consistent with our conceptual framework, controlling for time and region fixed effects, food secure households are 3.1 percentage points less likely to prefer receiving payments in the form of food. Preferences for food rise with household size (but at a diminishing rate) and with the age of the household head. The associations between preferences for food and the schooling levels or the sex of the household head are not statistically significant. The coefficient on the year dummy for 2008 equals 0.212, indicating that relative to the omitted category of 2006, the year of our first survey, preferences for food jumped by more than 20 percentage points during the height of the food price crisis. Considering that 52.4 percent of the households in our sample (Table 3.1) prefer food payments, this translates into a 40-percent change in payment modality preferences.

Table 5.1. Modelling household food payment preferences

	1	2	3
Food secure household	-0.031***	-0.031***	-0.031***
	(0.009)	(0.009)	(0.009)
Nearest food market is less than 3 km		-0.028***	-0.028***
		(0.009)	(0.009)
Nearest bank is less than 3 km		-0.036**	-0.041**
		(0.018)	(0.018)
Food price index			0.023***
			(0.006)
Household size	0.017**	0.017**	0.018**
	(0.008)	(0.008)	(0.008)
Household size squared	-0.001*	-0.001*	-0.001**
	(0.001)	(0.001)	(0.001)
Head's age	0.001**	0.001**	0.001***
	(0.000)	(0.000)	(0.000)
Head has not attended school	-0.009	-0.009	-0.009
	(0.012)	(0.012)	(0.012)
Female head more than 60 years of age	-0.023	-0.025	-0.025
	(0.021)	(0.021)	(0.021)
Female headed household	0.012	0.014	0.014
	(0.012)	(0.012)	(0.012)
Household received no PSNP payments	0.034***	0.034***	0.032***
	(0.011)	(0.011)	(0.011)
Household received only food payments	0.190***	0.186***	0.183***
	(0.017)	(0.017)	(0.017)
Less than 50 % the payments were in cash	0.198***	0.196***	0.187***
	(0.015)	(0.015)	(0.015)
50 % of the payments were in cash	0.196***	0.191***	0.191***
	(0.017)	(0.017)	(0.017)
More than 50 % the payments were in cash	0.118***	0.116***	0.115***
	(0.016)	(0.016)	(0.016)
Year, 2008	0.212***	0.214***	0.177***
	(0.014)	(0.014)	(0.018)

	1	2	3
Year, 2010	0.016	0.023	0.003
	(0.015)	(0.015)	(0.016)
Year, 2012	0.058***	0.059***	0.018
	(0.015)	(0.015)	(0.018)
Year, 2014	0.044***	0.047***	-0.001
	(0.014)	(0.014)	(0.018)
Region dummies?	yes	yes	yes
Adjusted R^2	0.170	0.171	0.172

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are in parentheses and clustered at the household level. Reference year is 2006. Reference household received only cash payments. Sample size is 11,989.

In column (2), we add in variables denoting households' access to food markets and financial services (banks). Living within 3 km of a food market reduces preferences for food by 2.8 percentage points. Living within 3 km of a bank has a similar association, reducing preferences for food by 3.6 percentage points. This too is consistent with our conceptual framework.

In column (3), we add in our food price index. The coefficient is positive and statistically significant. A one-unit increase in the food price index is associated with a 2.3 percentage point increase in food payment preferences. While this magnitude may seem small, the cumulative effect of food prices, food and financial services access, and food security is large. Consider a food secure household living within 3 km of both a food market and a bank where food prices are 1 standard deviation lower than elsewhere. *Ceteris paribus*, these joint characteristics shift preferences towards cash by 12.3 percentage points. Considering that 52.4 percent of the households in our sample (Table 3.1) prefer food payments, this translates into a 23-percent shift in preferences toward cash.

5.2. Robustness: Modifying the outcome variable

We explored whether our findings are robust to alternative econometric techniques. First, using a logit model instead of a linear probability model yields nearly identical point estimates, i.e., marginal effects. (Appendix Table A1).

Second, the selection of the cut-off point in our outcome variable may seem arbitrary to some readers. We explored sensitivity in this regards by re-running Table 5.1, but replacing the outcome variable with a binary variable that obtains a value of 1 if the household prefers 100% food, 25% cash; 75% food or 50% both, and zero otherwise. Appendix Table A2 shows that the results are robust to defining the outcome variable in this way.

Third, the decision to collapse our categorical outcome variable into a binary one discards potentially useful information. To this end, we checked whether our results are robust to using ordered logit models that are more suited to analyzing ordered outcome variables. Appendix Table A3 reports results based on an ordered logit model. The estimated marginal effects are in line with what we report in column 3 of Table 5.1. Food secure households are less likely to prefer food and more likely to prefer cash. Access to food markets and banks are associated with a shift in preferences away from food to cash payments. Finally, increases in food prices are associated with a shift in preferences away from cash to food payments.

5.3. Interaction terms

We wondered whether these associations documented above differ between food secure and food insecure households. We explored this by interacting household's food security status with their access to markets, banks, and the food price index. Many of these interaction terms appear with insignificant coefficients (Appendix Table A4). The exception is the interaction on the food price index; the coefficient on the interaction term is negative and the joint significance test cannot reject the null that the coefficient is

equal – in absolute terms – to the coefficient on the un-interacted price index variable (Wald test; p=0.115). This implies that, in contrast to food insecure households, the preferences of food secure households are less influenced by higher (or lower) food prices.

5.4. Household fixed effect models

Our base econometric specification does not fully exploit the panel nature of our data. In particular, we could also estimate Equation (1) using household fixed effects. However, as is well known, the within-transformation procedure underlying the fixed effects model removes all time-invariant factors; such as market and bank access and – to a large extent – household's food security status that varies little over time. To solve this issue, we do the following. In the first step, we estimate Equation (1) using household fixed effects:

$$food_{hvt} = D'_{hvt}\vartheta + \gamma F'_{vt} + t'_t\theta + \mu_{hv} + \varepsilon_{hvt}\,, \tag{2}$$

where D'_{hvt} is a vector of time-varying household characteristics and F'_{vt} is the price index observed for the community at time t. The term μ_h represent household fixed effects.

In the second step, we decompose the fixed effect component (estimated using Equation 2) by regressing μ_{hv} on the time-invariant characteristics (Dercon, Hoddinott, and Woldehanna 2012; Falco et al. 2011; Reilly and Witt 1996).

$$\mu_{hv} = Z'_{hv}\sigma + \varepsilon_{hv}\,, \tag{3}$$

where, Z'_{hvd} captures the time-invariant household and community characteristics, such as market and bank access and household's food security status.

Table 5.2 presents the results when we estimate specification (2). Importantly, we see that the coefficient on the price index is nearly identical to that which was obtained in Table 5.1 and, thus, is not sensitive to the inclusion of household fixed effects.

Table 5.2. Household fixed effects model

Food price index	0.022***
	(0.008)
Household size	-0.008
	(0.012)
Household size squared	0.001
	(0.001)
Head's age	0.002***
	(0.001)
Household received no PSNP payments	0.009
	(0.014)
Household received only food payments	0.116***
	(0.021)
Less than 50 % the payments were in cash	0.078***
	(0.020)
50 % of the payments were in cash	0.090***
	(0.020)
More than 50 % the payments were in cash	0.058***
	(0.018)
Survey year dummies?	Yes
Household fixed effects?	Yes
Adjusted R^2	0.041

Notes: See Table 5.1.

Table 5.3 shows the results when we decompose the fixed effect component extracted from specification (2). We see that the coefficients on binary variables capturing food secure households and households with good access to markets and banks are all negative and statistically significant at least at the 5 percent level, with the exception of the coefficient on the bank variable (p=0.146).

Table 5.3. Decomposing household fixed effect using household characteristics with limited variation over time

Food secure household	-0.025**
	(0.011)
Nearest food market is less than 3 km	-0.049***
	(0.012)
Nearest bank is less than 3 km	-0.036
	(0.023)
Head has not attended school	-0.015
	(0.014)
Female head more than 60 years of age	-0.069***
	(0.021)
Female headed household	0.037***
	(0.014)
Region dummies?	Yes
Adjusted R^2	0.198

Notes: See Table 5.1. Sample size is 3,649.

5.5. Food payments as commitment devices

In our discussion of the Southworth model, we noted the possibility that some households might prefer food payments rather than cash because – absent the sale of the transfer – food pre-commits the households' consumption of the transfer. Although the finding that preferences for cash increase when households live in proximity to a financial institution is consistent with this idea, we do not have data in the 2006-2014 household panel survey that allow us to test it formally. However, there is a new household survey being fielded as part of the evaluation of the current phase of the program (PSNP IV). In the survey instrument fielded in mid-2018, we were able to insert a question asking why households prefer food (cash). Their responses are shown in Table 5.4.

Consistent with our conceptual model and the results shown in Tables 5 and 6, relative prices are the dominant reasons, 59.0 and 51.1 percent, why respondents prefer at least some of their payment in food (cash). Respondents who preferred cash payments also noted the ability to exercise choice that cash provides; 22.3 percent noted that cash allows them buy foods that are not part of the PSNP payment package and 10.1 percent stated that cash payments mean that they can buy non-food items or save the money for future investments. Transactions costs (money, time) to collect payments are relatively unimportant. Consistent with Dreze's conjecture, 21.8 percent of respondents who preferred food payments, did so because they were concerned that cash would be more easily misused.

Table 5.4. Reasons for preferring food or cash payments, 2018

Reasons for preferring at least part of the PSNP payment in food	Percent
With cash payment we cannot buy equal amount of grain	59.0
Cash can be more easily misused than food, because food can only be consumed in small quantities over time, while cash is easily spent in one go	21.8
If the payment is in food, we spend less money or time to collect the payment	7.2
There are typically less delays with food payment deliveries compared to cash payments	3.9
Compared to cash payments, there is less pressure to the share the food payment with neighbors, relatives, or friends	3.3
Other	4.8
Observations	*2,434*
Reasons for preferring at least part of the PSNP payment in cash	**Percent**
With cash we can buy more grain	51.1
With cash we can buy other foods that are not part of the PSNP food payment package	22.3
With cash we can buy non-food items, save the money for future, or invest it	10.1
There are typically less delays with cash payment deliveries compared to food payments	3.6
If the payment is in cash, we spend less money or time to collect the payment	3.3
Compared to food payments, there is less pressure to share the cash payment with neighbors, relatives, or friends	2.1
We have difficulties to store the food payments; part will be lost because of this	1.7
Other	5.7
Observations	*2,262*

Source: PSNP-4 midline evaluation survey (2018).

6. CONCLUSIONS

Economists typically default to the assumption that cash is always preferable to an in-kind transfer. We extend the classic Southworth (1945) framework to predict under what conditions this assumption holds. We take the model to longitudinal household data from Ethiopia where a large-scale social safety net intervention – the Productive Safety Net Programme (PSNP) operates. Even though most PSNP payments are paid in cash, and even though the (temporal) transaction costs associated with food payments are higher than payments received as cash, the overwhelming majority of beneficiary households prefer their payments only or partly in food. However, these preferences are neither homogeneous nor stable. Higher food prices induce shifts in preferences towards in-kind transfers. However, more food secure households and those closer to food markets and to financial services prefer cash. There is suggestive evidence that preferences for food are also driven by self-control concerns.

These results present a potential conundrum for governments designing social protection interventions and for the donors that support them. As the examples in footnote 1 illustrate, it is an article of faith amongst organizations, such as the World Bank, that beneficiary preferences need to be taken into account. But in examples such as the PSNP, such preferences skew towards food while, the Government of Ethiopia and its development partners, would prefer that cash be provided, not least because, as Margolies and Hoddinott (2014) show, the implementation costs associated with cash transfers are considerably lower than the cost of providing food. That said, our results also suggest such preferences are not immutable. Ensuring that the purchasing power of cash payments keeps pace with changes in food prices and ensuring beneficiaries have access to food markets and financial services all make it more likely that the preferences of beneficiaries and program designers (and their funders) will align.

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APPENDIX

Appendix Table A1. Replicating Table 5.1 using a logit model

	1	2	3
Food secure household	-0.030***	-0.030***	-0.031***
	(0.009)	(0.009)	(0.009)
Nearest food market is less than 3 km		-0.029***	-0.029***
		(0.009)	(0.009)
Nearest bank is less than 3 km		-0.035*	-0.040**
		(0.018)	(0.018)
Food price index			0.021***
			(0.006)
Household size	0.017**	0.018**	0.019**
	(0.008)	(0.008)	(0.008)
Household size squared	-0.001*	-0.001*	-0.001**
	(0.001)	(0.001)	(0.001)
Head's age	0.001**	0.001**	0.001***
	(0.000)	(0.000)	(0.000)
Head has not attended school	-0.009	-0.010	-0.009
	(0.012)	(0.012)	(0.012)
Female head more than 60 years of age	-0.023	-0.024	-0.024
	(0.021)	(0.021)	(0.021)
Female headed household	0.013	0.014	0.015
	(0.012)	(0.012)	(0.012)
Household did not receive any PSNP payments	0.032***	0.031***	0.030***
	(0.011)	(0.011)	(0.011)
Household received only food payments	0.183***	0.179***	0.175***
	(0.017)	(0.017)	(0.017)
Less than 50 % the payments were in cash	0.193***	0.191***	0.182***
	(0.016)	(0.016)	(0.016)
50 % of the payments were in cash	0.189***	0.184***	0.184***
	(0.017)	(0.017)	(0.017)
More than 50 % the payments were in cash	0.111***	0.108***	0.107***
	(0.016)	(0.016)	(0.016)
Year, 2008	0.216***	0.219***	0.184***
	(0.015)	(0.014)	(0.018)
Year, 2010	0.015	0.023	0.004
	(0.015)	(0.015)	(0.016)
Year, 2012	0.056***	0.057***	0.019
	(0.014)	(0.014)	(0.018)
Year, 2014	0.043***	0.045***	0.001
	(0.014)	(0.014)	(0.018)
Region dummies	Yes	Yes	Yes

Notes: See Table 5.1.

Appendix Table A2. Replicating Table 5.1 including the middle category to the outcome variable

	1	2	3
Food secure household	-0.027***	-0.027***	-0.027***
	(0.007)	(0.007)	(0.007)
Nearest food market is less than 3 km		-0.026***	-0.026***
		(0.008)	(0.008)
Nearest bank is less than 3 km		-0.032*	-0.037**
		(0.017)	(0.017)
Food price index			0.019***
			(0.005)
Household size	0.009	0.010	0.011
	(0.007)	(0.007)	(0.007)
Household size squared	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)
Head's age	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Head has not attended school	-0.012	-0.012	-0.012
	(0.010)	(0.010)	(0.010)
Female head more than 60 years of age	-0.011	-0.013	-0.013
	(0.017)	(0.017)	(0.017)
Female headed household	0.017	0.018*	0.019*
	(0.010)	(0.010)	(0.010)
Household did not receive any PSNP payments	0.033***	0.032***	0.031***
	(0.011)	(0.011)	(0.011)
Household received only food payments	0.123***	0.119***	0.116***
	(0.013)	(0.013)	(0.013)
Less than 50 % the payments were in cash	0.114***	0.112***	0.104***
	(0.012)	(0.012)	(0.012)
50 % of the payments were in cash	0.140***	0.135***	0.135***
	(0.013)	(0.013)	(0.013)
More than 50 % the payments were in cash	0.094***	0.092***	0.091***
	(0.013)	(0.013)	(0.013)
Year dummies	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes
Adjusted R^2	0.087	0.088	0.089

Notes: See Table 5.1. Dependent variable obtains a value 1 if household prefers 100 % food, 75 % food or 50 % food, zero otherwise. Mean of the dependent variable is 0.787.

Appendix Table A3. Replicating Column 3 of Table 5.1 using an ordered logit model

	All food	75 % food; 25 % cash	50 % food; 50 % cash	75 % cash; 25 % food	All Cash
Food secure household	-0.031***	-0.00020**	0.009***	0.008***	0.014***
	(0.008)	(0.00010)	(0.002)	(0.002)	(0.004)
Nearest food market is less than 3 km	-0.025***	-0.00016*	0.007***	0.006***	0.011***
	(0.008)	(0.00008)	(0.002)	(0.002)	(0.004)
Nearest bank is less than 3 km	-0.030*	-0.00020	0.009*	0.007*	0.014*
	(0.017)	(0.00013)	(0.005)	(0.004)	(0.008)
Food price index	0.024***	0.0002**	-0.007***	-0.006***	-0.011***
	(0.005)	(0.00007)	(0.002)	(0.001)	(0.002)
Other household level controls	Yes	Yes	Yes	Yes	Yes
Survey year dummies	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes

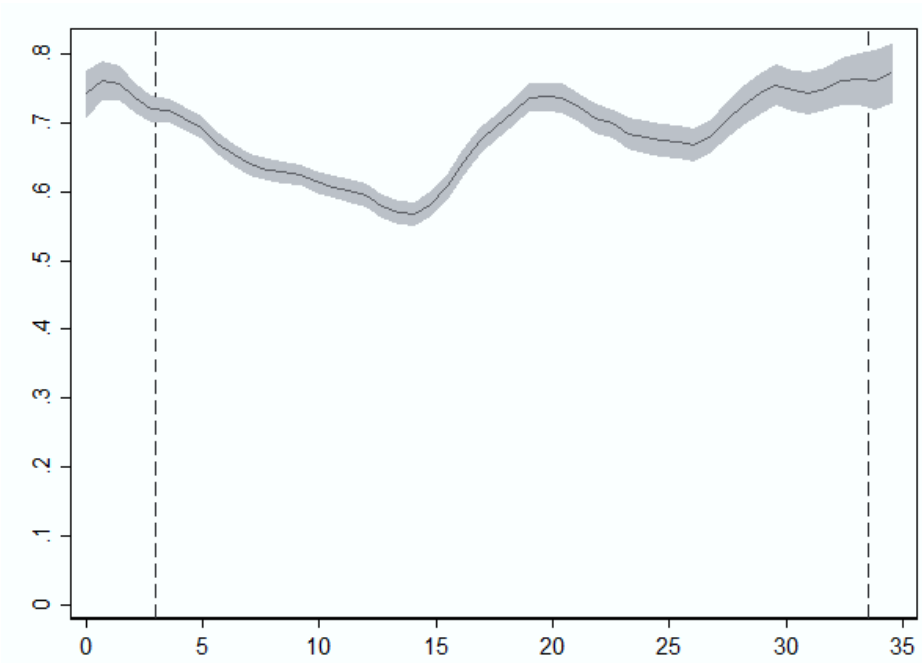
Notes: See Table 5.1.

Appendix Table A4. Modelling household food payment preferences, interactions with food security status

	1	2	3
Food secure household	-0.032**	-0.028***	0.006
	(0.013)	(0.009)	(0.024)
Nearest food market is less than 3 km (A)	-0.029**	-0.026***	-0.028***
	(0.011)	(0.009)	(0.009)
--- * Food secure household (B)	0.002		
	(0.017)		
Nearest bank is less than 3 km (A)	-0.041**	-0.031	-0.043**
	(0.018)	(0.020)	(0.018)
--- * Food secure household (B)		-0.036	
		(0.028)	
Food price index (A)	0.023***	0.023***	0.028***
	(0.006)	(0.006)	(0.007)
--- * Food secure household (B)			-0.015*
			(0.009)
Other household level controls	Yes	Yes	Yes
Survey year dummies	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes
Wald test, joint significance (A+B), p-value	0.0588	0.0143	0.1149
Adjusted R^2	0.172	0.172	0.172

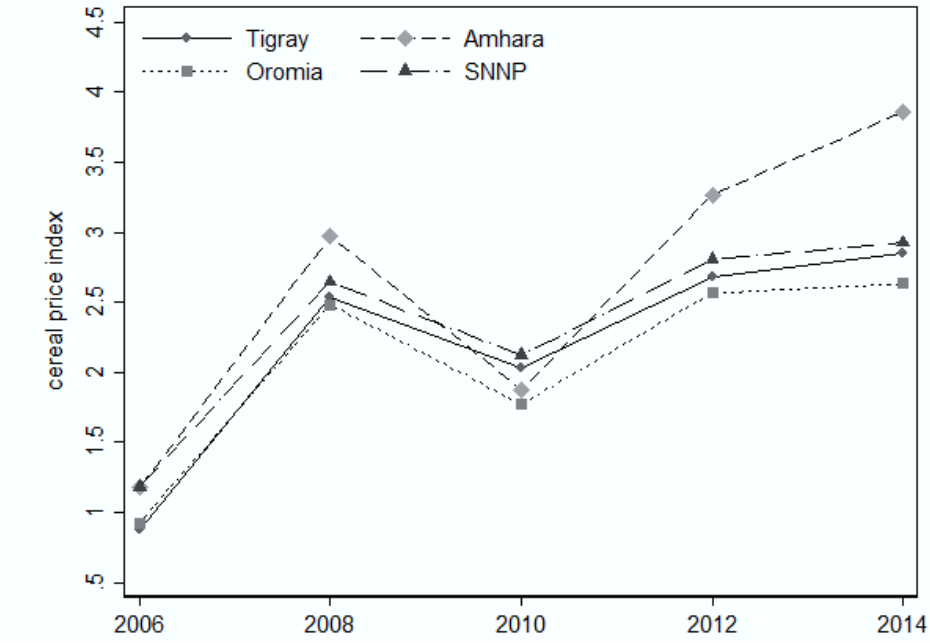
Notes: See Table 5.1.

Appendix Figure A1. Share of monthly PSNP payments made in cash, by distance to nearest town



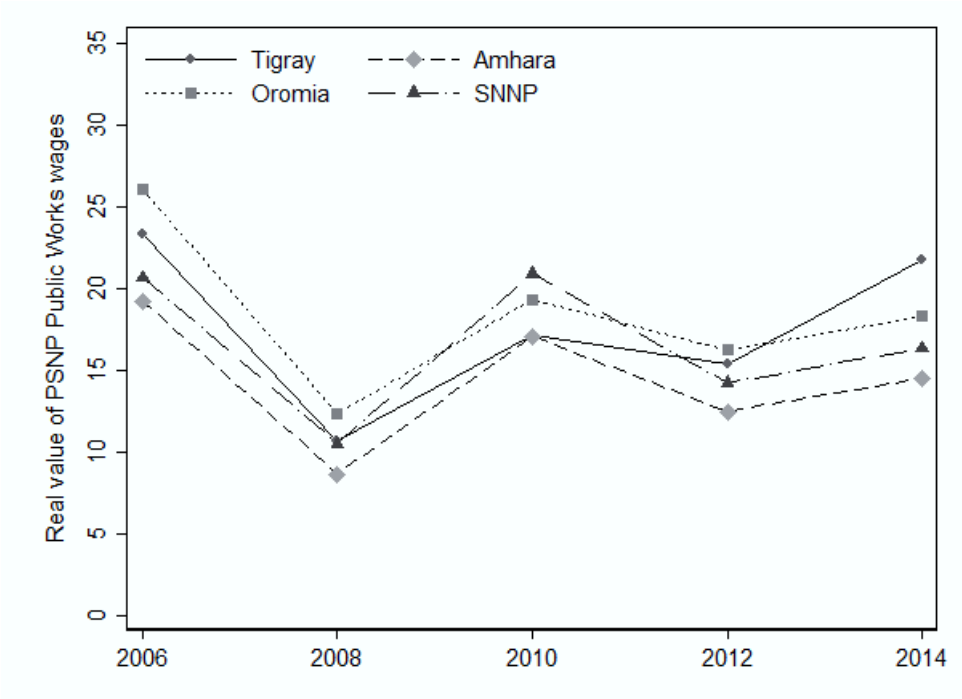
Note: Local polynomial regression. Vertical axis is share of households receiving payments in cash. Dashed lines represent the bottom and top 5% of the distance distribution. Horizontal axis is truncated at 35 km.

Appendix Figure A2. Food (cereal) price index over survey rounds, by region



Notes: See Section 2 that describes how the food price index has been constructed.

Appendix Figure A3. Real value of PSNP Public Works wages, by round and region



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