

Cash Transfers and High Food Prices: Explaining Outcomes on Ethiopia's Productive Safety Net Programme

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January 2010

An ongoing and highly politicised debate concerns the relative efficacy of cash transfers versus food aid. This paper aims to shed light on this debate, drawing on new empirical evidence from Ethiopia's Productive Safety Net Programme (PSNP). Our data derive from a two-wave panel survey conducted in 2006 and 2008. Ethiopia has experienced unprecedented rates of inflation since 2007, which have reduced the real purchasing power of PSNP cash payments. Our regression findings confirm that food transfers or 'cash plus food' packages are superior to cash transfers alone – they enable higher levels of income growth, livestock accumulation and self-reported food security. These results raise questions of fundamental importance to global humanitarian response and social protection policy. We draw out some implications for the design of social transfer programmes and describe some steps that could be taken to enable 'predictable transfers to meet predictable needs'

Introduction

The rapidly evolving social protection agenda has been closely associated with the delivery of 'predictable cash transfers' to large numbers of people in Africa, Asia and Latin America (Farrington and Slater 2006; Devereux and Sabates-Wheeler 2007). In many programmes, cash transfers are given unconditionally, but in others they are conditional on the uptake of social services (education, health) or the provision of labour (public works), with the aim of changing behaviour or creating productive infrastructure, to facilitate sustainable exits from poverty. Recent debates have focused on whether conditionality affects behaviour and outcomes more positively than unconditional cash transfers (Molyneux 2007), and whether public works actually create economically useful assets (McCord 2008). An ongoing and highly politicised debate concerns the relative efficacy of cash versus food aid. Numerous cash transfer programmes have now been implemented across the world, but the 'cash/food debate' remains unresolved, and has been given fresh impetus and urgency by the recent global food price crisis (Benson et al. 2008).

Typically, cash transfers are set at a level sufficient to purchase a basket of commodities in local markets. These commodities are usually restricted to basic food items – sometimes just a quantity of the staple cereal (e.g. a 50kg bag of maize or rice), sometimes equivalent to a standard food aid ration (e.g. 20kg of maize, 4kg of beans, 1 litre of cooking oil) – but occasionally include other goods and services (e.g. groceries, school fees or a contribution towards health costs). Unless delivered in the form of a commodity-denominated voucher, there is no restriction on what recipients can purchase with the cash, though they are often sensitised about the purpose of the programme, which is invariably to protect subsistence food consumption in poor households.

Two questions arise immediately. Firstly, what prices are used to set the cash transfer level? Food prices can vary substantially between global and domestic markets, and within countries. Secondly, what happens if these prices change significantly after the cash transfer level is set? Prices can increase due to general price inflation, seasonal cycles, or 'price spikes' associated with famines.

Sceptics have used the recent global food crisis to argue that cash transfers are inappropriate in weak economies, pointing to the inability of many large-scale programmes to increase cash payment rates in line with price rises.

In fact, several innovative responses to food price variability have been observed in recent cash transfer programmes in Africa. In Swaziland's Emergency Drought Relief (EDR) programme in 2007/08, social transfers were delivered half in cash and half in food. In Lesotho's Cash and Food Transfers Pilot Project (CFTPP) in 2007/08, a lag between price monitoring and response resulted in declining transfer value, until a once-off adjustment of 25% was made towards the end of the five-month intervention. In Malawi's Food and Cash Transfers (FACT) project in 2005/06 and Dowa Emergency Cash Transfers (DECT) project in 2006/07, transfers were index-linked to local food prices, and were adjusted before each monthly disbursement (Devereux 2008).

This paper aims to shed further light on the cash/food debate, drawing on empirical evidence from Ethiopia's Productive Safety Net Programme (PSNP). Our data derive from a new dataset – a two-wave panel survey of PSNP beneficiaries and a non-beneficiary control group, conducted in 2006 and 2008. Data was collected prior to the roll-out of the programme, so we use the two waves to estimate the programme effect of additional two years. Specifically, we estimate, econometrically, a growth regression model to compare the impacts of different payment modalities. Ethiopia has experienced unprecedented rates of inflation since 2007, which have reduced the real purchasing power of (un-indexed) PSNP cash payments. In this context, our findings confirm that food transfers or 'cash plus food' packages are superior to cash transfers – they enable higher levels of income growth, asset accumulation and self-reported food security. These results raise questions of fundamental importance to global humanitarian response and social protection policy. Can cash transfers be agile enough to respond to dramatic price rises (or even regular food price seasonality)? Do policy-makers have the budgetary flexibility to index-link cash transfers and adjust them frequently – perhaps even monthly? What is the appropriate mix of cash and food transfers in contexts of unpredictable and volatile food prices?

The Cash/Food Debate

The 'cash or food?' debate has a long history in both the humanitarian relief and social protection discourses. Until recently, this choice was more often driven by availability of resources than an objective assessment of needs – donors had food surpluses to disburse – and by pejorative 'elite perceptions' of poor people as incapable of managing cash responsibly. During the 1990s, the technical debate revolved around identifying the advantages and disadvantages of cash versus food transfers, and the conditions under which one should be chosen over the other (see Table 1). Food aid was increasingly criticised for being expensive to ship, store and distribute, competing unfairly with local production and trade, and being inflexible and paternalistic (Barrett and Maxwell 2005). By contrast, cash transfers were seen as cost-efficient to deliver, incentivising agricultural production and market activity, and allowing recipients to meet a range

of food and non-food needs (Creti and Jaspars 2006; Gelan 2006; Harvey 2007). At a theoretical level, the case for cash transfers builds on Sen's analysis of 'entitlement to food' (Sen 1981), which argues that restoring access to food by boosting demand is a more effective and sustainable response to food insecurity – but only if markets are well functioning – than is delivering food aid.

As the cash transfers lobby gained momentum in the early 2000s, the advantages of food transfers and the disadvantages of cash tended to be overlooked (Devereux 2006; Gentilini 2007). For example, food transfers are often controlled by women and benefit children directly, while cash is more likely to be controlled by men and can be diverted to various uses, not all of which benefit women and children (Table 1). Crucially, cash transfers are vulnerable to price inflation of the commodities they are intended to purchase. In contexts where supplies are constrained and traders are slow to respond to demand signals, injecting cash transfers might even exacerbate inflation. This risk was highlighted when global commodity prices surged in 2007/08 (Benson et al. 2008; Tangermann 2008), undermining the purchasing power of people on low incomes and those who depend on cash-based transfers.

In one sense the 'cash/food debate' remains unresolved – cash transfers and food aid can often be found within the same country, sometimes even within the same humanitarian relief or social protection programme (Ethiopia's PSNP being a case in point). On the other hand, perhaps this represents a kind of reconciliation. Government and donor positions are certainly less entrenched than they were a few years ago. Many

governments are now adopting cash transfers for social protection interventions, or even for emergency relief purposes. Large multilateral food donors (notably the World Food Programme) are piloting cash transfers, and advocates of cash transfers (e.g. the UK's Department for International Development) recognise that food aid continues to have an important role, especially in contexts of commodity market failure.

PSNP overview

The Productive Safety Net Programme (PSNP) was launched by the Government of Ethiopia, with donor support, in January 2005. The PSNP is the largest social transfer programme in Africa outside South Africa, reaching approximately 11% of the national population in 2006 (8.3 million out of 71 million people). Responses to food insecurity in Ethiopia had been dominated for decades by emergency food aid, which was mobilised for over five million Ethiopians every year between 1994 and 2003. Recognising that a large component of this food insecurity is 'chronic' rather than 'transitory', and that decades of food aid have had no discernible impact on reducing rural poverty and vulnerability, the PSNP represents an innovative attempt to tackle chronic food insecurity and break Ethiopia's dependence on food aid.

The PSNP aims to provide 'predictable transfers to meet predictable needs.' Chronically food insecure households should receive support for six months each year for up to five years, bridging their annual food consumption gap, protecting their assets against 'distress sales' and building their resilience against shocks. Transfers are delivered through two components. The 'Public Works Programme' provides temporary employment to the majority of PSNP participants (84% in 2008), on rural infrastructure projects such as road construction. 'Direct Support' delivers unconditional transfers to the minority of participants (16% in 2008) in households with no able-bodied members. Complementary programmes such as 'livelihood packages' should generate secondary streams of income, until the household is assessed as 'food sufficient' and ready to 'graduate' from dependence on transfers. Although emergency relief would continue to be required in years of severe shocks, if the PSNP is successful then millions of people would be removed from the annual emergency appeal process, and there would be a gradual shift towards a flexible multi-year safety net that expands and contracts according to need.

Importantly, another ambition of the PSNP was "to shift the financing of the programme from food aid to cash" (GFDRE 2004b: 1). This was more than a signal of the government's intent to phase out non-emergency food aid; it also recognised the developmental potential of cash transfers. "Through the provision of cash transfers rather than food, the programme will enable smallholders to increase consumption and investment levels and stimulate the development of rural markets" (DFID Ethiopia 2005: 1). Initially, cash transfers were not introduced universally throughout the PSNP. The Programme Implementation Manual identified three preconditions for disbursing cash transfers.

Table 1. Cash versus food transfers: advantages and disadvantages

Food	Cash
<p>Advantages</p> <ul style="list-style-type: none"> • Donor food surpluses are available • Immediately increases food availability • Directly addresses nutritional deficits • Can be self-targeting • Usage favours women, children, older persons • Lower security risk 	<ul style="list-style-type: none"> • More cost-efficient than food • Allows more beneficiary choice • More fungible than food • Encourages production • Stimulates the market
<p>Disadvantages</p> <ul style="list-style-type: none"> • High transport and storage costs • Losses from spoilage and theft • Less easily exchanged than cash • Disincentive effects on production • Competes with local markets and trade 	<ul style="list-style-type: none"> • Limited donor resources are available • Losses from inflation • Can be used for non-food consumption • More difficult to target • Usage favours men • Heightened security risk

Source: Devereux 2002: 12

- “Food is available for purchase in the local market (or traders, service cooperatives can be relied on to bring food in if people have cash to buy it);
- The local market will not be unduly distorted by the influx of cash, or the effects would be less detrimental than an influx of food; and
- The woreda administration has the required support systems in place (for transferring/ depositing funds, accounting and auditing)” (GFDRE 2006: 45).

Before the programme was launched an assessment was made of the administrative capacity of each district (or woreda), specifically in terms of their ability to handle large amounts of cash, and local markets were assessed for their capacity to respond to the incremental demand pressure that cash injections into poor rural communities would create. District administrations were also required to consult local people for their preferences for cash or food. Cash was disbursed to participants in ‘high capacity’ woredas with well functioning markets, while food was disbursed in ‘low capacity’ woredas with weak markets.

Chronic food insecurity at the woreda and households level is a defining feature of the eligibility criteria for PSNP participation. The household must have faced continuous food shortages (usually 3 months of food gap or more) in the last 3 years and received food assistance. The other criteria are: households that suddenly become more vulnerable as a result of a severe loss of assets and are unable to support themselves; and, households without family support and other means of social protection and support.

Some district administrations considered disbursing a mix of transfers – e.g. 30% food and 70% cash in Meket woreda, 50/50 in Sekota woreda – but Meket settled on 100% cash following a favourable market assessment, while Sekota opted for 100% food “because of concerns about the availability of food in local markets” (Kebede 2006: 587). Nonetheless, the expectation was that cash transfers would gradually displace food transfers in all woredas as administrative capacity and markets strengthened, and as the expected positive impacts from cash woredas generated confidence and lessons for the wider programme.

“As woredas develop more capacity, they will move towards improving the integration of safety net plans into Woreda Development Plans, implementing more effective safety net activities and increasing the share of transfers provided to households in cash versus food as appropriate” (GFDRE 2006: 4).

Food price inflation and declining real value of PSNP cash transfers

Especially in contexts where markets are thin and imperfectly integrated, cash transfers are vulnerable to food price rises that erode their real value. This can occur for one of three reasons. The first is that injections of cash transfers could create an imbalance between demand and supply, which in itself drives up prices. The second is price seasonality, The third source is general consumer price inflation, which could range in magnitude from single-digit inflation to hyper-inflation (as in Zimbabwe

in 2008). – Whether inflation is triggered by or independent of injections of cash transfers, the consequence is the same – the purchasing power of cash transfers is reduced and the ability of the programme to smooth household food consumption through market purchases is compromised. All three sources of this problem have been observed on the PSNP.

The first possibility, that cash transfers could contribute to price inflation, is exemplified by the case of Meket woreda in North Wollo, Amhara Region. Between 2005 and 2007, Save the Children UK implemented the Meket Livelihood Development Project (MLDP) alongside the PSNP. The MLDP paid public works participants Birr 5 per day, enough to buy 3kg of staple grain “on the assumption that the average consumer price for grain would be Birr 1.7 per kg” (Kebede 2006: 584). In the first year of implementation grain prices rose significantly higher than usual in Meket, for reasons directly related to the PSNP and MLDP. Firstly, traders failed to respond promptly to demand signals following injections of cash into local communities. Secondly, instead of being regular and predictable, cash disbursements were late and arrived in unpredictable lump-sums, resulting in price spikes due to demand surges when food supplies were scarce. Thirdly, some traders allegedly exploited cash recipients by charging excessive profit margins. Fourthly, many farmers who received cash transfers withheld their grain from the market, since they no longer needed to sell produce to meet essential expenses (Kebede 2006).

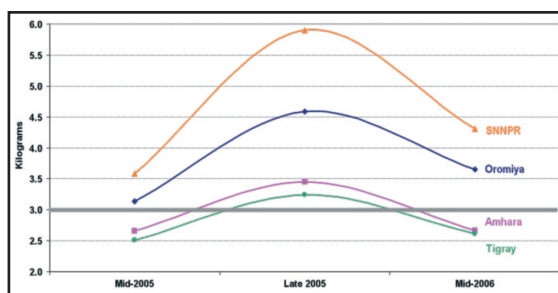
Although this evidence strongly suggests that cash transfers had inflationary consequences in rural Ethiopian markets, this was the first year of the programme and these effects could be interpreted as transitional – traders needed time and confidence to react to the demand signals associated with cash transfers – and to problems with programme implementation – late and erratic deliveries of cash. Nonetheless, “in the immediate term, the fact remains that the increase in prices has meant that cash recipients in Meket were unable to purchase the necessary food basket” (Kebede 2006: 597).

The second source of price variability is seasonality, which is significant in rural Ethiopia, where grain prices are among the most volatile in the world – and this volatility has not reduced by much since grain markets were liberalised in the 1990s (Gabre-Madhin and Mezgebou 2006). Prices also fluctuate in predictable cycles each year, being lowest after harvest and highest in the pre-harvest hungry months. At the time of our first survey of PSNP beneficiaries in mid-2006, average prices of the four main staple cereals in highland Ethiopia – barley, maize, sorghum and wheat – were slightly lower than a year earlier, in mid-2005 (Table 2). Between mid- and late 2005, these prices varied by 39%, with the greatest variability (65%) where average prices were lowest (SNNPR), and the least variability (29%) where prices were highest (Tigray).

The PSNP payment rate was set at 6 Birr per day in 2005-06, on the assumption that this could purchase 3 kilograms of staple cereal, at prices prevailing at the time. No allowance was made for price differentials between (and even within) regions, or for fluctuations that might occur in food prices during the year (specifically the likelihood that food prices would rise during the months

preceding the next harvest). In fact, significant variations were observed in prices over space and time, which means that the conversion rate of PSNP cash transfers into food staples was highly variable from woreda to woreda and from month to month. Because of this price variability, the purchasing power of the cash transfer in terms of staple cereals varied by more than 100%, from as little as 2.5 kg (in Tigray in mid-2005) to as much as 5.9 kg (in SNNPR in late 2005). On average over the year, 6 Birr could purchase more than 3 kilograms of staple food in two regions (Oromiya and SNNPR), but less than 3 kilograms in the other two regions (Amhara and Tigray) (see Figure 1). So PSNP beneficiaries in Oromiya and SNNPR received more cash than they needed to meet their subsistence food needs, while beneficiaries in Amhara and Tigray received less cash than they needed.

Figure 1. Value of PSNP cash transfer in staple food by region, 2005/06 (kg for 6 Birr)



Source: Devereux et al. 2006: 38

Interviews with traders confirmed that these effects were attributable to 'normal' food price seasonality, and were neither caused nor exacerbated by PSNP cash transfers.

"No change was created in the price of food due to PSNP; rather, it is the seasons that create price changes" (grocery trader, SNNPR).

The third contributor to food price rises, general inflationary trends, was exacerbated by the global surge in food and other commodity prices in 2007/08, which did not overlook Ethiopia. After an extended period of steady but moderate rates of inflation – it took nine years, from 1998 to 2006, for food prices to double – the average price of a standard food basket redoubled in just 18 months to mid-2008 (Figure 2).

It is often assumed that subsistence-oriented farming households in highland Ethiopia are largely insulated against volatile food prices in global markets, and it is

true, for instance, that local grain prices mainly reflect local production in the latest harvest. (This explains why prices reported in Table 2 are lower in mid-2006 than in mid-2005, despite evidence from Figure 2 that the national CPI – which partly reflects price trends of imported commodities consumed in large urban centres – was climbing over this period.) However, poor rural families in Ethiopia are chronically unable to meet their subsistence food needs through own production, and are net purchasers of food. This makes them acutely vulnerable to rising prices of either domestically produced or imported food commodities. As discussed below, the failure of the *belg* rains in 2008 caused domestic food prices to rise sharply, which interacted with imported food price inflation to produce the surge in the CPI as illustrated in Figure 2.

The unprecedented acceleration of food prices in Ethiopia since mid-2007 is significant for the PSNP because rising food prices erode the purchasing power of un-indexed cash transfers, and the primary intention of PSNP cash transfers is to provide market access to food. Figure 2 reveals how the value of PSNP cash transfers collapsed to less than half of their initial purchasing power within four years of the programme's inception. By mid-2008 the average price of staple grains in Ethiopia was almost three times higher than it was when the PSNP started in January 2005, but the PSNP cash transfer level had increased by only 33%. In response to rising food prices and the declining value of cash transfers, the payment was raised from Birr 6 to Birr 8 per day at the start of the 2008 implementation cycle.

Data

The data presented here come from a longitudinal (panel) quantitative survey data collected at the household and locality levels in 2006 and 2008. These data were collected in the four major regions covered by the PSNP; Tigray, Amhara, Oromiya and SNNPR. The sampling methodology was established during the 2006 survey. A full description of the sample size calculations and sampling frame can be found in (Devereux et al, 2006). Woredas were not part of the sampling frame, as they were pre-selected in 2006 in order to reflect a range of implementation modalities. A three-stage stratified random sampling procedure was followed in each woreda – at the kebele, village and household level. A total of 960 households were sampled, disaggregated as 120 households per woreda, and 60 households per kebele (at two kebeles per woreda), and 60 households per village (at one village per kebele). Note that this sample is not

Table 2. Average price for four food staples by region, 2005/06 (Birr/kg)

Region	Mid-2005	Late 2005	Mid-2006	Average	Variation
Amhara	2.26	1.74	2.25	2.08	30%
Oromiya	1.91	1.31	1.64	1.62	46%
SNNPR	1.68	1.02	1.39	1.36	65%
Tigray	2.39	1.85	2.29	2.18	29%
Staples	2.06	1.48	1.89	1.81	39%

Source: Devereux et al. 2006: 37

Note: This analysis averages prices for barley, maize, sorghum and wheat.

representative of all Ethiopia, nor of all communities where the PSNP is implemented.

Since one objective of this study is to compare trends in households receiving food transfers with trends in those receiving cash transfers, the decision was taken to survey approximately equal numbers of cash and food beneficiaries overall. Also, on the assumption that approximately 80% of PSNP beneficiaries are employed on public works projects while no more than 20% are receiving direct support, these proportions were also reflected in the total sample. Finally, non-beneficiaries were randomly selected (20% of the total) from the pool of households that were not participating in the PSNP within each village visited.

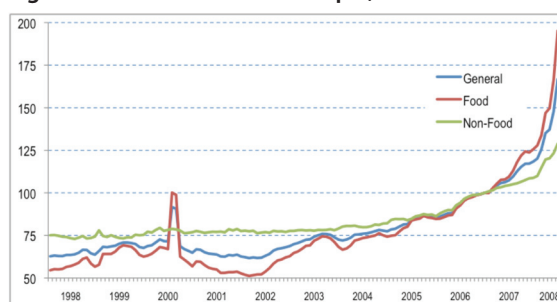
Three methods of quantitative data collection were designed, pre-tested, and administered in the field: a household survey, a community questionnaire, and a market observation survey. These instruments were designed to capture the impact and outcome indicators associated with the PSNP. The household questionnaire contained sections on: household demographics; income from livelihood activities; asset listings and values; savings and investments; extent and nature of programme participation; use of transfers, and other programme related information.

The household questionnaire in 2008 was only slightly modified from the 2006 questionnaire, to maximise comparability and allow inferences to be drawn about changes over time and the impacts of the PSNP on a range of outcome indicators between 2006 and 2008. Attrition was relatively small. In 2008, 93% of the 2006 households were traced and re-interviewed, forming a panel of 893 households. Households that could not be traced were replaced by random selection on the basis of PSNP status from household rosters obtained from *kebele* administrations. Also, several PSNP participants had left the programme since 2006 and formed a new category of 'past beneficiaries'. See table 3 for basic descriptive of the sample in both years.

Programme insights

This section presents findings from the two rounds of the PSNP panel survey, on PSNP cash and food transfers – actual receipts, and beneficiary preferences – and on the falling value of cash transfers between 2006 and 2008.

Figure 2. Price inflation in Ethiopia, 1998–2008



Source: Central Statistical Agency, Ethiopia

Types of transfers – receipt and preferences

In our 2006 survey, 81% of PSNP participants received payment in the form of cash, either in full or in combination with food. Only 19% of households received 'food only' (Table 4). In the 2008 survey, the proportion receiving 'cash plus food' fell from 66% to 53%, while the proportion receiving 'cash only' rose from 15% to 21%. Over the same period, 'food only' recipients did not decline as planned, but increased from 19% to 26%.

In contrast to these relatively minor shifts in type of transfers actually received, there was a substantial shift in preferences of PSNP participants over this two-year period. In 2006, almost half of all beneficiaries surveyed (45%) expressed a preference for receiving all or part of their transfers from the PSNP in cash – either as a combination of 'half cash and half food' (36%) or as 'cash only' (9%). By 2008, this preference for cash had shrunk to just one in six (16%), while the proportion of beneficiaries choosing 'food only' had risen from just over half (55%) to more than four in five (84%). These findings were reinforced and contextualised by qualitative fieldwork. Participants in community discussions explained their belief that cash transfers were fuelling food price inflation.¹

The Safety Net programme has influenced the market for some time. When beneficiaries were paid in cash, prices increased and supplies also became scarce. They faced great problems in the market during this time. The local traders increased prices on rural people. (Oromia)

Conversely, food transfers were credited with stabilising food prices and supplies.

Since the payment is done in grain, it has not affected the supply and price of food. As a result it has helped the stability of food price and increased the supply of food crops. It has enabled food crops to be available in the market and made the price stable. (Amhara)

Table 3. Sample stratification by PSNP beneficiary status

Household characteristic	2006	2008
PSNP transfers *		
Cash only	120	144
Food only	144	184
Cash + food	498	368
PSNP category *		
Public Works	607	549
Direct Support	155	152
PSNP status		
Current beneficiaries	762	701
Past beneficiaries (2006)		102
Non-beneficiaries	198	157
All households	960	960

Source: Authors' calculations; PSNP 'Trends in Transfers' dataset, 2006/2008

For these reasons, many cash recipients articulated a preference for food, and often requested that PSNP payments be switched to food.

The beneficiaries preferred the payment to be in food and they did not want the cash payment. Since the price of food was increasing they could not buy enough food with the cash given to them. The main problem was lack of food and its high price. (SNNPR)

The type of payment was in cash and this was decided by the government. The community repeatedly requested the local government officials that the payment should be changed into food but there was no feedback at all. (Tigray)

These findings are disappointing from the perspective of one objective of the PSNP – to shift the delivery of social assistance in rural Ethiopia away from food aid towards cash transfers – but can be interpreted as an entirely rational response to the combined effects of high food price inflation, deteriorating household food security, and the weakness of rural commodity markets.

The falling value of PSNP cash transfers in the context of food price inflation

Average values of transfers to PSNP households were substantially higher in 2008 than in 2006. Most of this increase was driven by the substantially increased value of food transfers, due to higher staple food prices – which averaged 4.1 Birr/kg, as opposed to 1.7 Birr/kg in 2006. The market value of food transfers was more than three times the value of cash transfers in 2008 – cash transfers to male-headed households averaged 482 Birr, whereas food transfers were worth 1,326 Birr. If 2006 food prices were used to value food transfers in 2008, the difference would be less dramatic – food transfers would be worth 697 Birr, just 1.4 times higher than cash transfers.

This very likely explains the shift in beneficiary preferences towards food transfers, as reported above. It also demonstrates that the level of cash transfers is increasingly inadequate, having fallen sharply in terms of food purchasing power. This finding is critical for PSNP planners, because it compromises the programme’s primary objective of securing household access to adequate food, as well as the secondary objective of breaking Ethiopia’s chronic dependency on food aid.

The changing relative value of food and cash transfers also affects the calculation of what proportion of their ‘entitlements’ under the PSNP participants actually

received. Programme documents state that each individual is entitled to a maximum of 30 days of transfers each year, which amounted to 240 Birr per capita at 8 Birr in 2008. (It was 180 Birr in 2006, when the daily transfer was set at 6 Birr.) ‘Cash only’ recipients received two-thirds of their entitlement in 2008 (166 Birr = 69% of 240 Birr). Conversely, recipients of ‘cash plus food’ packages received one-third more than they were entitled to (317 Birr = 132%), while ‘food only’ recipients received almost twice their entitlement, in cash equivalent terms (456 Birr = 190%) (Table 5). These calculations show vividly the effects of food price inflation on the transfer value – and the failure of the programme to increase cash transfers sufficiently to match inflation.

Analysis

Our primary purpose in the quantitative evaluation is to determine whether the PSNP has had significant effects on beneficiaries across a range of indicators. With regard to income and assets we want to know whether participation in the programme is associated with higher income and asset growth. As for the food gap, we want to establish whether participation in the programme decreases the average number of months in which a food shortage is experienced compared to non-beneficiaries. Our primary test is therefore to estimate the effect of programme participation on the difference in income/assets between the two periods – is the income/asset growth of participants over time significantly higher than that of non-participants?

Variable description

We use a number of variables to inform our analysis below. For presentational purposes we focus primarily on outcome indicators – income, assets and food security – and the programme transfer type explanatory variables. Variable description and descriptive statistics for the variables are presented in Table 6.

Outcome Variables

Income

An aggregate income variable was created using self-reported farm and non-farm income from all household members over a one-year period, for both 2006 and 2008. Income is measured in Birr. The survey collected average monthly income information from 42 livelihood activities, ranging from agricultural activities to paid employment, services and trading. The aggregate income measure does not include the value of direct transfers (such as Direct Support); however, it does include payments made to participants on public works. This is because respondents could participate in a number of public works programmes. Using information from a separate section in the questionnaire on PSNP involvement we are confident that the majority of the public works reported is PSNP-related works. For this reason we are able to use income (including public works) as one dependent variable, and income excluding public works payment as another. Inclusion of public works payments within the income aggregate enables us to determine the extent to which an income

Table 4. Transfers received and preferences of PSNP households, 2006 and 2008

Transfers	Received		Stated Preference	
	2006	2008	2006	2008
Cash only	15%	21%	9%	3%
Food only	19%	26%	55%	84%
Mixed (cash + food)	66%	53%	36%	13%
Total households	100%	100%	100%	100%

Source: Authors’ calculations; PSNP ‘Trends in Transfers’ dataset, 2006/2008

transfer acts as a safety net relative to non-beneficiaries. Exclusion of the public work payments from income provides an indication of the additional impacts of the PSNP transfer, over and above the transfer itself. For instance, if we find a significant parameter estimate on beneficiary status in this latter model it suggests that there are spill-over benefits to the PSNP, such as increased investment due to more stable income.

Income in 2008 was deflated using the average inflation rate (for food and non-food items) that corresponds to the time between our interview recall periods (between March 2005 and June 2008). Specifically, we took the increase in CPI between March 2005 and March 2007, between April 2005 and April 2007... and so on. We then took an average of the increase in the CPI over the 40 month period. The average monthly inflation rate (using the CPI series) between 2005 and 2008 was 40.9%. This is relatively low given the substantial food price inflation (as opposed to food and non-food) during this period. The variation of the CPI during this 40-month period ranged from a minimum of 80.2% in March 2005 to 166.7% in June 2008. As the size of any programme effect will be sensitive to the inflation rate, we estimated our main regressions using 40.9% and a rate of 80%. We only report results using the former rate, as the implications of our results do not change with a higher inflation rate.

A small percentage of households reported missing values on incomes or assets (52 households for income (6.5%) and 68 households for assets (8.6%)). Looking at the data and speaking with fieldworkers it is clear that many of these respondents had chosen not to disclose their income and assets. In order not to bias our income and asset information we used multiple imputation, based on a range of household characteristics, to impute values for these households. To test for

the robustness of our results, we re-estimated the models allowing the missing values to remain missing and also using imputations based on wealth distribution. The results still hold. To minimise the problems associated with a non-random error term we include a dummy variable in all our regressions that indicates whether multiple imputation was performed for each respondent.³

Our dependent variable used for regression analysis is constructed by taking the difference in the log of income in 2008 and 2006. Table reports mean annual income from both years across all payment types. In 2006

we see that non-beneficiaries had a higher mean income (2,176 Birr) than any category of programme beneficiaries. By 2008 the same group had the lowest mean income across all groups, at 1,587 Birr, representing a decline in real income over the period. All categories of recipients experienced substantial increases in their annual income over the two-year period. In particular, cash payment households experienced more than a doubling of their real income (from 1,483 Birr to 3,282 Birr per annum), whereas the food and mixed payment households witnessed a more modest, yet significant increase.

Assets

Total asset value variables were constructed from a detailed asset inventory containing numbers and values of livestock, other productive assets and non-productive assets, in 2006 and 2008. Assets are valued in Birr. Where reported, replacement values were used to value the current value of assets. Where no replacement value was reported, prices were imputed using the mean asset values from the sample data. An adjusted asset value for 2008 was calculated with the same method but using 2006 prices to value 2008 assets. This enabled us to observe changes in real asset values. As with income our dependent variable is constructed by taking the difference in the log of assets in 2008 and 2006. In Table 6 we provide statistics on two aggregate 2008 asset variables. The first includes all asset values. The second excludes 18 extreme values (over 15000 Birr). For the regression analysis we topcode these extreme values at 15000 Birr.

We also constructed a livestock asset value variable. We did this as livestock is a better measure of purely productive assets than all assets and because many households are reliant on livestock for their livelihoods. We wish to see whether there is a programme effect on livestock asset growth.

Table 6 shows that, compared to 2006, all groups had higher mean asset holdings in 2008 (excluding the extreme values). Non-beneficiaries owned significantly more assets in total and livestock (as a subset) in 2006 than other groups. Cash payment households also held more assets in 2006, but not substantially more. By 2008 cash payment households had tripled their aggregate assets, whereas food and mixed payment households only saw a doubling of theirs. When we look at livestock

Table 5. Total value of cash and food transfers to PSNP households, per capita, 2008

Category	Total cereal per household (kg)	Cash value of cereal (Birr)	Total cash received (Birr)	Total value of food and cash received
Household type				
Male-headed	64.7	265.4	82.6	348.0
Female-headed	54.9	225.3	82.8	308.1
PSNP status				
Cash only	n/a	n/a	166.1	166.1
Food only	111.2	455.9	n/a	455.9
Cash + food	55.8	228.7	91.1	316.8

Source: Authors' calculations; PSNP 'Trends in Transfers' dataset, 2006/2008

Note: Calculations of cash value of food are based on an average cereal price of 4.1 Birr/kg.

Across whole sample of current beneficiaries.

only, we see that in fact it is food payment households that experienced the largest increase in livestock; cash payment households actually experienced a real decline. This probably reflects two successive good years enjoyed by the Ethiopian economy, specifically by the agriculture sector. As with income, non-beneficiaries had higher asset holdings in 2006, suggesting that the PSNP was well targeted on poorer households. Unlike income, assets for non-beneficiaries remained substantially higher than for any beneficiary group in 2008.

Food Gap

The other outcome variable of interest is an indicator of food security. As our survey did not collect consumption indicators we use number of months of self-reported food shortage each year, as a proxy for changing nutritional (in)security of the household. We construct a dependent food gap variable by taking the difference in months of food shortage reported in 2008 from the months of food shortage reported in 2006.

Table 6 indicates that across all categories, households experienced an improvement in their food security situation across the two-year period, as indicated by a fall in mean months of food shortage. Non-beneficiaries and 'cash only' recipients are significantly more likely to have never experienced a food shortage (32% and 21% respectively) as compared to mainly food and mixed

beneficiaries (7% and 2% respectively). This may indicate that the 'cash only' households may constitute a group with characteristics more similar to non-beneficiaries than to other beneficiaries. The extent to which PSNP transfers will affect each group will depend, upon other things, on the characteristics of the households.

Explanatory Variables

Programme Beneficiary – transfer type

The survey sample in 2006 comprised 960 households: 198 non-beneficiaries and 762 PSNP beneficiaries. In 2008 we again interviewed 960 households, 893 of whom (93%) were previous respondents: 144 non-beneficiaries, 651 beneficiaries and 98 past beneficiaries. The last category refers to those households who left the programme for various reasons between 2006 and 2008. These households are not included in our analysis here. Thus our sample size comprises 795 households, of which 18% are non-beneficiaries and 82% are beneficiaries.

It is possible to construct a range of variables for programme status. As the primary focus of this paper is the nature of the transfer we categorise beneficiaries according to the type of payment actually received. We are interested to observe whether there are significant differences between respondents receiving different types of payment. In order to create clear categories across time we construct a 4-category variable, illustrated

Table 6. Data description: Outcome indicators

	Description	Non	Food	Mixed	Cash
Obs	Number of observations	117/ 16%	212/30%	260/36%	126/18%
Outcome indicators					
Income_06	Mean (sd) annual income in 2005/2006	2176.4 (2055.6)	1511.6 (1275.1)	1351.2 (1481.3)	1483.1 (1048.3)
Income_08	Mean (sd) annual income 2007/2008, deflated	1587.1 (1913.2)	2067.6 (1494.0)	1821.2 (1571.1)	3282.2 (2806.5)
Assets_06	Total value of productive and non-productive assets in 2006	1443.0 (1489.2)	819.5 (1010.7)	741.5 (678.3)	986.4 (1185.1)
Assets_08	Mean (sd) value of productive and non-productive assets in 2008, priced at 2006 prices	4339.2 (8115.8)	1545.9 (1497.1)	1572.9 (3986.9)	3136.2 (986.4)
Assets_08_E (extreme)	Mean (sd) value assets in 2008, priced at 2006 prices removing values > 15000 (n=697)	2472 (2768.6)	1545.9 (1497.1)	1249.2 (1742.8)	2801.9 (2603.3)
Livestock_06	Mean (sd) value of livestock in 2008	1386.1 (1406.8)	842.51 (968.5)	743.9 (624.9)	978.6 (1120.7)
Livestock_08	Mean (sd) value of livestock in 2008, priced at 2006 prices	1104.9 (890.4)	1196.9 (997.9)	986.0 (781.3)	913.1 (691.9)
Months food shortage06	Mean months of food shortage given food shortage reported 2006	3.35	5	6.02	3.8
Months food shortage 08	Mean months of food shortage given food shortage reported 2008	1.82	1.98	2.85	1.56
Never shortage	% of households never experiencing food shortage	32	6.6	1.7	21
Always shortage	% of households always experiencing food shortage between 2006 and 2008	41	54	64	28

Source: Authors' calculations; PSNP 'Trends in Transfers' dataset, 2006/2008; 'sd' denotes standard deviation.

in Table 7. Non-beneficiaries refer to households who have always been non-beneficiaries – over the two-year period they never participated in the PSNP. ‘Mainly food’ households are those that have always received at least 70% of their PSNP payments in food. ‘Cash’ households are those that have always received at least 70% of their payments in cash. ‘Mixed payment’ households are those that received a mixture of cash and food over the period but not more than 70% food or 70% cash. Fifty-five households from the panel reported that they were non-beneficiaries in 2006 but beneficiaries in 2008. These households are excluded from this analysis. A further 25 households provided confusing signals about their beneficiary status and they have also been dropped. The total sample used for our analysis here is 715.

Other control variables:

Control variables are introduced in the model to deal with observable factors that may affect programme participation and future outcomes. Among these factors we include the age of the household head, whether the household head can read, the highest level of qualifications achieved by the head of the household, labour capacity of the household and household size. In addition, for all estimations we use controls for land use in 2006, asset value in 2006, income in 2006, and regional differences.

The descriptive data show that non-beneficiaries and cash payment households have, on average, younger heads; higher levels of literacy; higher land use in both 2006 and 2008; higher savings and higher expenditures. Compared to other groups, food payment households show higher numbers of heads with no education (83%) and lower levels of literacy, substantially higher numbers of female-headed households (40%), fewer household members and lower levels of land use. Mixed payment households display a similar pattern to food payment households across most demographic indicators. This is interesting because the initial decision on whether to deliver cash or food transfers through the PSNP was based on an assessment of local capacities – of both woreda administrations and local markets – to manage sizeable injections of cash. We might therefore expect food recipients to be clustered in isolated areas with weak markets, far from urban centres, with low levels of economic activity and higher than average poverty rates. Conversely, cash recipients would more likely be located near towns and be better integrated into thriving markets, with lower poverty rates at both household and woreda levels. The descriptive indicators provide some confirmation for this speculation.

Across regions, the highest proportion of cash payment households is located in Tigray, with food transfers dominating in Amhara and Oromiya, while most beneficiaries in SNNPR received mixed payments of cash plus food. We are interested in estimating the differentiated programme effects of different payment modalities. It is possible that the impact could be a ‘region effect’ given that ‘cash only’ payments are not provided in all regions. We control for region by including regional dummies in the regression analysis. These are significant in most cases, however their inclusion does not detract from the main conclusions around programme modalities.

One reason for the prevalence of cash transfers in Tigray could be high levels of public and private investment in the region in recent years, which has stimulated economic growth that ‘trickles down’ to villagers through remittances, improved off-farm employment opportunities, and more demand for locally produced goods and services. One of the two Tigray woredas in our survey – Enderta – is located near to Mekele, the regional capital, so local incomes have probably been boosted through these mechanisms. These factors would also have influenced the decision to deliver cash rather than food transfers in Tigray.

Econometric results

Methodology

We use the following empirical model to test for the effect of programme participation and payment modality.⁴

$$\text{LN}(\text{Inc08}) - \text{LN}(\text{Inc06}) = \beta_0 + \beta_1 \text{BS} + \beta_2 \text{C} + \varepsilon \quad (1)$$

where LN stands for the natural logarithm, Inc08 and Inc06 stands for real income in 2008 and income in 2006, BS is a dummy variable for beneficiary status; C stands for controls, which includes regional controls, and ε is the error term. β s are vectors of parameters to be estimated by ordinary least squares regression (OLS). The differences in logs can be interpreted as percentage differences in the underlying levels.

We chose to use traditional OLS multivariate regression analysis for the following three reasons. First, our outcome is a continuous variable, normally distributed. Second, we have a small sample. An alternative route would use matching methods for evaluation of the average programme effect as this would enable us to compare ‘similarly endowed’ beneficiaries and non-beneficiaries and would substantially overcome possible problems related to unobservable factors that influence our outcomes. Our sample of non-beneficiaries is too small to allow for matching.⁵ Third and partly related to the second point, participation in the PSNP was targeted mainly on poor people. For this reason, we believe that the problems of self-selection regarding the impact of programme participation on outcomes are minimal. As we have shown above in the descriptive variables, programme participants had lower income and assets, on average, and came from relatively poorer families, than non-participants. Hence, our model assumes that if the programme is to have an effect, this would have to be such that it enabled beneficiaries to overcome their initial situation which was worse than for non-beneficiaries. We believe that the OLS estimate of this impact is a sufficient methodology.

Table 8 shows results from the estimated parameters of the above model for income I (including public works payments), income II (excluding public works payments), aggregate assets, livestock and the food gap. We find a positive and significant growth of income for food payment and mixed payment beneficiaries compared with non-beneficiaries (both at the 1% level). We do not find a significant effect for the cash payment group compared to non-beneficiaries. In other words, income growth is higher with participation in the programme for food recipients and mixed payment recipients, relative to non-participants.

Since our dependent variables (income and assets) are expressed as the difference in logs we can interpret the parameter as a percentage differences in the rate of change of income growth. So, holding all other factors constant, being a food payment beneficiary increased income growth by 59% relative to a non-beneficiary. Mixed payment households also witnessed a positive and significant income growth relative to non-beneficiaries, to the order of 45%. There is no significant difference for cash payment beneficiaries. The difference between the estimated parameters for food payment (0.59) and cash payment (0.15) in Table 8 is statistically significant at the 5% level.

This represents a very substantial programme impact. The reasons for this are multiple. The obvious reason is that the PSNP transfer from the public works is included in the income variable. Thus, the PSNP is providing a direct income effect. In other words it has buffered possible negative growth rates for beneficiaries. Another reason may be that transfers, especially those in the form

of food, enable beneficiaries to sell the food that they produce and would otherwise have consumed. Furthermore, some beneficiaries are able to sell some of the food they received. The food also enables them to spend more time trading and doing other productive activities, given that they do not have to worry about securing food. In order to test whether this second explanation is a possibility we estimate model 2 using income II that excludes public works payments. We find a significant effect (at the 10% level) for food payment households only, suggesting that for these households the transfer has enabled and encouraged income growth above and beyond a direct safety net. In this model the size of the programme effect is much smaller (34% higher growth for food payment beneficiaries compared to non-beneficiaries).

Thus we see that the PSNP has acted as a safety net for beneficiaries, in the sense that the decline in their income has not been as severe as for non-beneficiaries. In fact beneficiaries have experienced some income

Table 7. Data description: Explanatory variables

	Description	Non	Food	Mixed	Cash
Obs	Number of observations	117/16%	212/30%	260/36%	126/18%
Explanatory variables					
Region					
Amhara	% of households	17.87	38.16	24.64	19.32
SNNPR	% of households	21.82	7.88	69.09	1.21
Oromiya	% of households	19.14	49.38	31.48	0
Tigray	% of households	7.18	22.1	24.31	46.41
Household resources, 2006					
Livelihood Package	% of households obtaining a PSNP-related livelihood package	26	32	30	22
Labour cap	An index measuring labour capacity in 2006	3.14	2.07	2.69	2.3
Public Works participant	% of households engaged in public works in 2006	-	81	77	79
Household Size_06	Number of members comprising the household in 2006	6.01	4.65	5.7	4.7
Headship characteristics					
Age	Age of household head in 2006	44	47	49	45
Education	% of household heads with no education in 2006	72	83	79	79
Female headed	% of female headed households in 2006	13	40	26	32
Literate	% of household heads indicating they are able to read	37	20	26	28
Land Use 06	Hectares used in 06	1.03 (0.40)	0.41 (0.40)	0.44 (0.43)	0.55 (0.57)
Land Use 08	Hectares used in 08	1.2 (1.53)	0.59 (0.48)	0.63 (0.76)	0.84 (0.83)

Source: Authors' calculations; PSNP 'Trends in Transfers' dataset, 2006/2008

growth. We also see some evidence of other transfer effects. There are a number of reasons why non-beneficiaries faced a reduction in real income. The first is that due to high food prices they needed to consume more food rather than sell it. Second, it is possible that non-beneficiaries, being fully aware of the PSNP and the possibility of their being included if they meet the eligibility criteria, systematically under-reported their income. We do not find this argument compelling, given that the asset data is not similarly underestimated.

Models 3 and 4 provide results for the assets and livestock estimations. Table 8 also shows the estimation results for the food gap. For assets in aggregate we see that, while earlier descriptive statistics showed large increases in assets for everyone, mixed payment households experienced significantly less asset growth than non-beneficiaries (model 3). Model 4 indicates that food payment households have experienced 62% higher growth in livestock than non-beneficiaries, and this is significantly different at the 1% level. Furthermore, food payment households have significantly higher livestock growth than other payment types. This result sits well with model 2 results as it suggests some investment spill-over effects of the PSNP transfer (again, over and above the safety net function).

The signs on `land_06` assets_06 and `income_06` across the first 4 models appear counter-intuitive. If we look back at the descriptive statistics we see that those respondents with more land and income in 2006 were predominantly non-beneficiaries. It is these households that experienced negative real income growth over the two-year period, thus explaining the negative relationship between higher initial income and lower income growth. This is largely due to the model specification and the fact that we chose not to include initial income as an explanatory variable. With the exception of a significant and negative impact of an illness shocks on income growth, we see that shocks are not significant in explaining outcomes across the models and between participant modalities.

Food and mixed payment households had fewer months of food shortage than non-beneficiaries and cash households. Food and mixed payment households experienced an average reduction in food shortage of 1.2 months a year, an improvement in household food security which is significantly better than the experiences of non-beneficiaries and cash payment recipients.

There are intriguing differences across the four regions. While in the income model all other regions had higher income growth than Amhara, in the food gap model, all other households had significantly higher months of food shortage than Amhara. It is important to emphasise that our sample was drawn from just two woredas within each region, so the findings reported here cannot claim to be representative at the regional level. Nonetheless, this apparent paradox needs to be explained. The main factor is probably the failure of belg rains in 2008, which affected Amhara most severely. Food and cash crop production were substantially reduced, and livestock deaths were reported by many respondents in our Amhara woredas (but nowhere else). This explains the fall in real incomes in our Amhara sample – evidently,

the PSNP is not robust enough to protect livelihoods against severe shocks.

However, respondents in Amhara region also registered higher levels of food security in 2008 (fewer self-reported months of hunger), which seems implausible given that their incomes were falling. The explanation is that these woredas received emergency food aid in 2008, following the belg rains failure. Moreover, PSNP households in Amhara region that received their payments in cash were given two extra months of transfers. Programme officials argued that these households were doubly affected by drought as well as the surge in food prices. Conversely, households that received their PSNP payments in food were not given additional support, because food transfers are not undermined by price inflation. This resolves the apparent paradox, of negative income growth in our Amhara sample (caused by drought and high food prices) but improved household food security (because of the emergency intervention and the extension of PSNP support).

Discussion

Very few social protection programmes deliver both cash and food transfers to their beneficiaries, and in this sense the Productive Safety Net Programme offers a rare opportunity for comparative analysis. In a context of high food price inflation and a fixed cash payment, cash recipients would be expected to derive smaller welfare gains relative to food recipients. Our panel survey confirms this hypothesis. We find positive programme effects on income growth and food security, especially for food only and mixed (cash plus food) payment households. PSNP food recipients have enjoyed accelerated income growth relative to cash recipients, whose income gains have been compromised by inflation. Not surprisingly, therefore, beneficiary attitudes are hardening against cash and in favour of food transfers.

In one sense these outcomes are positive: since our data reveal that cash payment recipients were initially better off across a range of indicators (and remain better off), it could be argued that the PSNP has had a pro-poor growth acceleration effect. This result is specific to our sample, and may not hold for other PSNP communities, or to social protection schemes in other countries.

On the other hand, these findings support the view that a reliance on un-indexed cash transfers to deliver social protection in an inflationary environment is not an optimal strategy, because commodity-based transfers retain their value whereas the purchasing power of cash transfers is eroded by rising commodity prices. An appropriate response to inflation is to reconsider the balance between cash and food transfers, or alternatively to introduce index-linking to cash payments, to ensure that they retain their real value irrespective of food price movements.

A related approach is explored by FEG Consulting (2008), which assessed the differential levels of assistance that PSNP beneficiaries would need under alternative scenarios, one of which was high food prices. Instead of raising the level of daily transfer payments, FEG calibrated different durations of PSNP support by household wealth status, assuming good or poor harvest outcomes and

Table 8. Estimation results – income, assets and food gap

	1	2	3	4	5
	INCOME I (Ln08-Ln06)	INCOME II (Ln08-Ln06)	ASSETS (Ln08-Ln06)	LIVESTOCK (Ln08-Ln06)	FOOD GAP (mn08-mn06)
	coef/(s.e.)	coef/(s.e.)	coef/(s.e.)	coef/(s.e.)	coef/(s.e.)
Food	0.597*** (0.152)	0.340* (0.2)	-0.282 (0.211)	0.629*** (0.237)	-1.246*** (0.450)
Mixed	0.453*** (0.163)	0.084 (0.221)	-0.437*** (0.195)	0.152 (0.218)	-1.242*** (0.422)
Cash	0.150 (0.208)	0.210 (0.273)	-0.363 (0.264)	-0.057 (0.309)	-0.419 (0.453)
SNNPR	0.701*** (0.162)	1.23*** (0.215)	-0.761*** (0.233)	0.129 (0.299)	1.922*** (0.478)
Oromiya	0.504*** (0.154)	0.605*** (0.192)	-0.960*** (0.204)	-0.121 (0.253)	2.809*** (0.432)
Tigray	1.802*** (0.164)	2.07*** (0.215)	0.134 (0.204)	0.299 (0.248)	2.375*** (0.324)
HoH age_06	0.002 (0.004)	0.001 (0.004)	-0.191*** (0.005)	-0.015*** (0.006)	0.010 (0.009)
HoH literacy_06	-0.011 (0.119)	0.009 (0.186)	0.03 (0.177)	0.302 (0.241)	0.025 (0.371)
HoH education_06	-0.036 (0.029)	-0.57 (0.041)	-0.046 (0.044)	0.032 (0.051)	0.079 (0.092)
Labour Cap_06	0.004 (0.036)	0.023 (0.052)	-0.094 (0.044)	-0.027 (0.065)	-0.024 (0.118)
Household size_06	-0.040* (0.023)	-0.108*** (0.033)	0.062* (0.035)	-0.014 (0.043)	-0.131* (0.077)
HoH gender_06	-0.040 (0.124)	-0.162 (0.160)	-0.077 (0.187)	-0.044 (0.202)	-0.715*** (0.306)
Land Use_06	-0.211*** (0.093)	-0.272** (0.119)	-0.123 (0.134)	-0.202* (0.119)	0.617*** (0.217)
Ln Income 06			-0.122* (0.075)	-0.286*** (0.110)	0.219 (0.142)
Ln Assets 08	-0.061 (0.037)	0.008 (0.045)			-0.009 (0.101)
Drought Shock	0.017 (0.115)	0.041 (0.159)	-0.401 (0.171)	0.127 (0.185)	0.415 (0.306)
Illness shock	-0.009 (0.105)	-0.262* (0.138)	-0.103 (0.152)	0.120 (0.169)	0.111 (0.289)
Flood shock	0.221 (0.118)	-0.120 (0.178)	0.151 (0.174)	-0.108 (0.196)	0.115 (0.336)
Credit	0.095 (0.082)	0.131 (0.115)	-0.194 (0.128)	-0.300*** (0.154)	-0.105 (0.250)
imputation dummy	-0.171 (0.465)	-0.304 (0.333)	0.122 (0.537)	0.199 (0.204)	
Constant	-0.353 (0.349)	-0.316 (0.400)	3.24*** (0.655)	2.865*** (0.931)	-5.582*** (1.240)
Obs	708	708	708	708	708
r squared	0.2890	0.2303	0.1103	0.1021	0.1838

Source: Authors' calculations; PSNP 'Trends in Transfers' dataset, 2006/2008

Notes: Robust standard errors in parentheses.

Asterisks *, **, *** indicate significant at 10%, 5% and 1% level, respectively.

average or high food prices. FEG notes that: "Because of atypical current year conditions, woreda administrations in the pilot woredas face high support needs due to high staple food prices – which had risen to roughly 300 to 350% of 2005/06 levels by the 2008 Belg season" (FEG Consulting 2008: 10).

Table 9 shows the results of FEG simulations for one woreda in SNNP Region. The threefold increase in food prices observed in Boricha woreda over two years is responsible for a fourfold increase in the numbers of people needing assistance to cover their 'livelihoods protection deficit', from 23,000 to 96,000, or 9% to 38% of the woreda population. This is disaggregated into a doubling of individuals needing assistance for less than 3 months, a substantial increase in the numbers needing assistance for 3 months, and a new category of individuals who would need assistance for 6 months of this particularly difficult year.

From a beneficiary perspective, index-linking cash transfers or extending payments in drought years or when prices rise is highly desirable, because it upgrades the provision of cash transfers from discretionary and variable social assistance to a form of quasi-social insurance. However, from an administrator's perspective this would require a degree of flexibility in programme design, delivery and (especially) budgeting that is extremely challenging. The PSNP cash transfers budget would have needed to treble in two years, just to keep pace with food price inflation in Ethiopia between 2006 and 2008.

Nonetheless, our findings confirm that any social protection programme that aims to enhance or protect household food security must introduce mechanisms that buffer social transfers against shocks such as high food prices. This would imply a design phase that

includes: (1) inflation forecasting, (2) assessment of local markets, (3) building a contingency fund into programme budgets, and (4) taking into account the characteristics of different beneficiary groups, before (5) choosing between alternative payment modalities.

Implications for policy

This paper has demonstrated that the susceptibility of social transfers to price inflation has been under-acknowledged by policy-makers and programme designers whose mandate is to deliver 'predictable transfers to meet predictable needs'. If it is to achieve this objective, cash transfers must respond to changes in commodity prices that undermine purchasing power. Possible responses include adjustments to transfer payments, insurance mechanisms and price stabilisation measures.

Transfer mechanisms

There are several ways in which social transfer interventions such as the Productive Safety Net Programme could be redesigned to be more responsive to food price variability, including the following, all of which share the disadvantage that they require unprecedented flexibility by governments and/or donors in terms of instruments (cash, food, vouchers) and financing.

- Index-link cash transfers to the cost of a basket of basic food and non-food items (as in Malawi's 'Food and Cash Transfer' and 'Dowa Emergency Cash Transfers' projects).
- Provide transfers in the form of commodity-denominated vouchers. (This has the advantage of guaranteeing access to the specified commodities at whatever cost, while not undermining market functioning as is the risk with direct commodity transfers.)

Table 9. Number of beneficiaries requiring different durations of PSNP assistance in 'average' and 'high inflation' years, Boricha woreda, SNNPR

Duration of deficit (months)	Months of assistance required	Average year (2006)		Inflation year (2008)	
		Total beneficiaries	% of Woreda population	Total beneficiaries	% of Woreda population
<1.5	<3	14,002	5%	26,545	10%
1.5–4.5	3	9,726	4%	55,963	22%
4.5–7.5	6	0	0%	13,587	5%
7.5–10.5	9	0	0%	0	0%
Total		23,728	9%	96,095	38%

Source: Compiled from FEG Consulting (2008: 13, 19)

Note: 'Average year': 2006 crop production; Belg 2006 market prices

'Inflation year': Average crop production (2006); Belg 2008 market prices

- Extend the duration of transfers when food prices rise (e.g. from 6 to 9 months, as in the FEG Consulting scenario discussed above).
- Switch out of cash transfers towards food transfers when cash is devalued by price rises (as has happened in several PSNP woredas in Ethiopia).
- Provide a combination of cash plus food (as in Lesotho's 'Cash and Food Transfers Pilot Project' and Swaziland's 'Emergency Drought Relief' programme).

Insurance mechanisms

Social transfers can be complemented by mechanisms that provide some form of insurance for vulnerable households against price rises. Two examples are (1) employment guarantee schemes – as in India's 'National Rural Employment Guarantee Scheme', which offers up to one hundred days of paid work to every rural household every year, on demand; (2) weather-indexed crop insurance schemes – which make payouts to farmers when rainfall in an area falls below predetermined thresholds, enabling food purchases before prices rise, if payouts are timely.

Price stabilisation mechanisms

African governments used to operate a number of mechanisms to stabilise food supplies and prices – across the country, between seasons and from year to year. These included buffer stock management, pan-territorial pricing and price banding. Most of these mechanisms were abolished under agricultural liberalisation reforms during the 1980s and 1990s, but an argument could be made to retain or revive some of their positive food security features.

Any combination of these measures would provide more effective social protection, not just against poverty and food insecurity, but also against market failure, which is both a characteristic and a cause of vulnerability, in Ethiopia and many other low-income food deficit countries.

End Notes

¹ All quotations in this section are sourced from Devereux et al. 2008.

² Due to this it would be incorrect to include a public works dummy as an explanatory variable of the programme effect as the PW participation is in fact part of the treatment indicator. Thus, we do not include a PW dummy in the final estimations.

³ We re-ran the model excluding the imputation dummy and find that the signs and significance of the parameter values do not change.

⁴ This model specification was chosen over an alternative that would place $\ln\text{Inc06}$ on the right hand side. The problem with including income as an explanatory variable in a household model is that errors in variables are large and the coefficient is biased towards zero. Thus, our specification has the advantage of reducing measurement error on income. Our purpose is to obtain a consistent estimator of β_1 and we know that the dummy variable for beneficiaries does not have measurement error. However, our specification does place a restriction on prior income, such that we assume it follows a unit root process. Empirically this is not supported by our data; however, the main results of the paper to either model specification (constrained or unconstrained) do not change. Thus we choose the model that minimises measurement error.

⁵ We performed matching methods and were not able to find a match. In particular, the test for the balancing properties of the treatment group and the control group, based on the observable variables that we had, indicated that we were not able to take into account a significant proportion of the differences between these groups (the pseudo-R-squared after matching did not come close to zero). This meant that we were not able to compare participants who were the poorest groups targeted by the government with similar non-participants with these observable characteristics because this last group were generally non-poor. This would be an issue of concern to us had we not found any programme effects. That is, comparing the outcomes of the poor participants with the richer non-participants and found no programme effect for the former. As shown in the paper we do find programme effects even though we have this comparison group.

Acknowledgements

This article draws on two assessments of the Productive Safety Net Programme that were led by the authors (Devereux et al. 2006; Devereux et al. 2008). We thank our co-authors and members of the PSNP Donor Group who commissioned both evaluations – in particular Tim Robertson, Wout Soer and William Wiseman – and several workshop participants and individuals who commented on draft reports and/or the analysis contained in this paper – notably Harold Alderman, Michael Carter, Lawrence Haddad, John Hoddinott and Ricardo Sabates. We are grateful for the helpful comments provided by two referees.

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This **Working Paper** was written by **Rachel Sabates-Wheeler** and **Stephen Devereux** of the **Future Agricultures Consortium**. The series editor is David Hughes. Further information about this series of Working Papers at: www.future-agricultures.org

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FAC appreciates the support of the
UK Department for International Development (DFID)