Impact Evaluation of Cash and Food Transfers in Zinder, Niger: Analytical Report

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Executive summary

The study examines the differential impact of food and cash transfers on 5670 households eligible for emergency assistance in eastern Niger. The first phase included three months of public works (April-June 2011), while the second phase provided three months of unconditional transfers (July-September 2011) to the most vulnerable households during the peak of the lean season.

Virtually all households, 95 percent, reported participating for all three months that public works were available. Just over half the households in the sample had a woman participating in this work. The most common arrangement was for one man from a household and no women to participate (44.4 percent). However, in about one-quarter of households, all work was done by women.

On the use of transfers, cash recipients reported that 70 percent was spent on food items, 10 percent on non-food items, 9 percent on transfers to other households, 7 percent on savings and 3 percent on loans. Food recipients used 78 percent of theor transfer for food consumption, 20 percent on transfers to other households and sold or exchangend the rest for other food items. Only 5 percent of food recipients reported that they sold some of the food, and 13 percent that they exchanged some of the payment for other food or non-food items. However, 85 percent of the food recipients and 33 percent of the cash recipients reported that they shared some of their transfers.

Food recipeints experienced larger positive impacts on food security as measured by the Dietary Diversity Index (DDI), and Food Consumption Score (FCS) than those receiving cash. Food households had an FCS on average 3.9 points higher than cash households in July (survey round after public works) and 4.6 points higher in October (survey round after unconditional transfers). The likelihood of having an acceptable food consumption score is 10.9 percentage points higher for food households in July and 12.1 percentage points higher in October.

Food households consumed more of the items given to them in the food basket: cereals, pulses and oil. They also increased the frequency of their consumption of these items. There is no differential effect on the frequency of consumption of meat, dairy, fruit or vegetables.

One reason that the cash recipients had less diverse diets lies in their choice of using a significant proportions of their transfers to purchase grains in bulk, the cheapest form of calories available. This is a reflection of both the extreme poverty found in this area and uncertainty regarding future food prices.

Households receiving food resorted to fewer coping strategies, such as consuming less preferred foods, reducing portion sizes served to children or buying food on credit. This effect was more pronounced during the height of the lean season than during the growing season.

Food households spent more on non-food items in July. This is equivalent to about eight percent of the value of the monthly transfer. Across the individual items, the most noteworthy finding is that households in cash villages spent more on agricultural inputs in both the lead up and during the main cropping season and the magnitude of this effect especially in October was large. Also, households in

cash villages spent some of their transfers on repairing their dwellings in the three months prior to the July survey, in advance of the rains.

No differential impacts were found when it comes to the gender of head.

Village representatives were asked if they felt that the transfers affected local food prices. While the majority of cash recipients reported that there was no impact at all on prices, a majority of food recipients reported that food deliveries put downward pressure on food prices. This was particularly common for the prices of key staples and goods similar to those distributed, such as millet (94%), sorghum (97%), maize (66%), and cowpeas (83%). The assertions regarding grain price impacts are supported by the food price data collected at the village level.

Respondents expressed an overwhelming preference for food transfers: 61 percent of the respondents preferred 100 percent food, 10 percent preferred 100 percent cash and the rest a mix. 73 percent of food recipients state preferring only food, versus 50 percent of cash recipients. These results hold regardless of gender of household head.

Both food and cash were delivered with the same degree of frequency and timeliness, but the food transfers cost 15 percent more to implement.

Chapter 1 -Introduction

Interest in providing cash transfers for food assistance has been increasing in recent years. The potential benefits and drawbacks of providing cash versus food, across a range of criteria, depend on the context and objectives of the program (Gentilini 2007; Upton and Lentz 2011; Lentz *et al* 2013). It is widely supposed that recipients would prefer to receive cash; provided that cash transfers integrate the transaction costs involved in obtaining a comparable food transfer, recipients can better meet their diverse needs with a cash transfer. However, there is little *rigorous* evidence on the comparative impacts of cash and food transfers on food security and food related outcomes. There are numerous studies on the impact of cash transfers (see summaries in Fiszbein *et al* 2009 and DfID 2011) and numerous studies on the impact of food transfers (see Margolies and Hoddinott 2011). As Hidrobo *et al* (2012) note, however, comparison of these impacts is confounded by differences in program design, the magnitude of the transfer, and the frequency of the transfer.[1]

This is one of four case studies (the others being Ecuador, Uganda and Yemen) commissioned by the World Food Programme (WFP) to contribute to our understanding of the impact of cash and food transfers on household food security. The pilot was implemented by WFP in the Zinder region of Niger. To rigorously assess the comparative impacts of cash and food transfers, clusters of households (villages or groups of villages) were randomly assigned to receive either cash or food.

This report contributes to our understanding of the impact of cash and food transfers on household-level outcomes. Niger is an appropriate venue for such a study. Following a famine in 2005, it has become a significant recipient of food assistance (WFP 2012). There are sharp seasonal dimensions to food insecurity in Niger and our evaluation design allows us to assess whether the impact of food and cash transfers varies by season.

[1] See Hidrobo *et al* (2012) for a review of recent studies including work by Sharma (2006) and Cunha, De Giorgi, & Jayachandran (2011).

Chapter 2 – Context and program design[3]

2.1 Zinder region, Niger

Niger is one of the poorest countries in the world. It is the fifth poorest when ranked by gross national income per capita (PPP dollars), 172 of 187 when ranked on life expectancy and 186 of 187 on the Human Development Index (UNDP 2012). Poverty in Niger is endemic; 65 percent of the population falls under the national poverty line of $1.65 PPP per day, and the Human Development Report headcount index ranks nearly 93 percent of the population as suffering from deprivation (UNDP 2012). Only about 11 percent of Niger's land is considered arable, and crops suffer from volatility in rainfall and frequent drought. Even when food is available, there are systemic and periodic problems with access and use. Severe food crises affected parts of Niger in 2005-2006, 2010, and again in 2012.

The Zinder region is by Nigerian standards relatively well off. It is in the southern part of the country that receives more rain than the arid north. Approximately 40 percent of Niger's millet production comes from Zinder and the nearby region of Maradi, and Zinder is a surplus production zone for millet and cowpeas, two key staples (FEWS 2010). Many inhabitants are agro-pastoralists, mixing agriculture with the raising of livestock primarily small ruminants. It is also a key commercial hub, in part due to its close proximity and close cultural ties to Nigeria (Eilerts 2006). Yet the region has frequently been among the hardest hit by food crises, and chronically suffers some of the highest rates of malnutrition (Grobler-Tanner 2006). During the 2005 famine, daily mortality rates were higher in Zinder than in any other region, and an estimated 65% of the population had to resort to 'irreversible' coping strategies such as selling large livestock or production tools (Reza *et al* 2008). These challenging conditions are embedded in a complex cultural landscape. Zinder is culturally dominated by the Hausa people, a traditionally agricultural people who speak the Hausa language. They share Zinder with several smaller ethnic groups including the agro-pastoral Kanuri and the pastoral Peulh, Touareg, and Toubou.

2.2 The intervention

In late 2010, the Government of Niger's (GoN) famine early warning system identified the Mirriah *departement* in Zinder as a place where humanitarian assistance would be required during the six month period before the September 2011 harvest. Given the availability of grains in local markets, WFP determined that it would be feasible to provide both food and cash to beneficiaries in this area.[4]

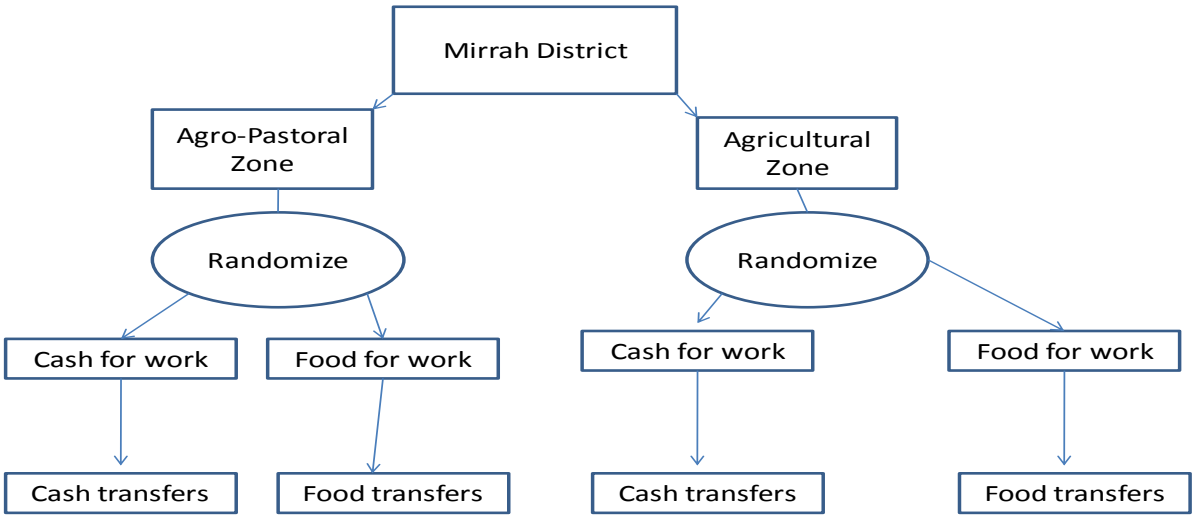
Within Mirrah, WFP in cooperation with the GoN identified 126 villages both in need of assistance and suitable for the public works envisaged as part of this intervention. Some villages were subsequently dropped because another organization was planning to provide food assistance to them or because the villages themselves declined to participate. Further investigation indicated that 13 villages had such poor market access that it was inappropriate to provide them with cash. These villages received transfers but were not included in the surveys leaving 79 villages that were both suitable for the project and that could receive either food or cash transfers. Implementing parties deemed that it would be too

[3] Hoddinott, Sandstrom and Upton (2013) provide a detailed introduction to the study area, the intervention and the data collection that accompanied it.

[4] A market assessment in May 2011 confirmed that most traders in Zinder were still purchasing grain from local sources. Unlike the northern and western parts of Niger, Zinder is relatively secure which meant that heavily armed escorts would not be needed for cash disbursements.

complicated and/or lead to tension if proximate villages—especially that shared a worksite during the public works phase—received different forms of transfer. Hence randomization was done at the worksite level. This led to 52 village or village cluster randomization units. Randomization was done through a procedure that assured an approximately equal distribution of villages/worksites by zone and size receiving each transfer (see Figure 2.1).

Figure 2.1: Randomization into cash or food modality



The project was implemented in two phases over a six month period, from April through September 2011. Phase 1 involved public works activities that took place from April to June. Every household in participating villages was guaranteed 75 day's work on these projects.[5] Most worksites were located near the targeted villages. While participation in public works was voluntary, almost all households in these villages too part in work activities (98 percent in the food transfer zone and 95 percent in the cash transfer zone). The registered beneficiary, who was usually the household head, was paid twice-monthly. In cash villages, they received 1000 FCFA (roughly 2 USD) per day worked to a maximum of 25000 FCFA per month. Food payments were provided in the form of a food basket of commodities similar to those typically eaten in the region. A day payment provided a full ration of food for the average household size of seven people, including 3.5 kg of grain (primarily maize in the first transfer period and sorghum in the second), 0.72 kg of pulses (cowpeas, red beans, or lentils), 0.14 kg of vegetable oil, and 0.035 kg of salt. Based on the average monthly prices of these commodities between April and September 2010, the average monthly cost of this food basket to recipients was 24000 FCFA. During the design phase, respondents told project staff that it would cost approximately 800 FCFA to make four trips per month to markets to buy food. Subtracting these transport costs made the value of

[5] A small number of households such as those with a young mother and young children were exempted from the work requirement and given an unconditional payment.

the food basket and the cash transfer equivalent.[6] The transport, storage and distribution of food and cash payments were contracted out to several Nigerian non-governmental organizations. For the cash transfers, they charged WFP a fixed percentage of the total amount of cash distributed. For food transfers, they charged a monetary fee based on the quantity of food delivered. These transport, storage and distribution costs were 15.4 per cent higher for food relative to the cash payments.[7]

During the second phase, from July through September, 50 percent of households in each village were selected to continue to receive the same transfer without having to fulfill a work requirement; this was dropped out of concern that public works activities would interfere with the planting and weeding of crops during the agricultural season. Targeting of unconditional transfer recipients was undertaken using a combination of demographic targeting and a participatory approach.[8] A locality selected to receive cash(food) used cash(food) for both public works and unconditional transfer payments.

[6] Respondents at the community level indicated that on average it cost 480 FCFA (roughly 1 USD) to transport 100kg of cereals from the market to home, or otherwise1920 FCFA for the transfer period (four trips). This figure, however, does not take into account households pooling transport costs, which could significantly reduce the per-household cost. The average cost for obtaining the food transfers by beneficiaries was reported to be only 60 CFA per trip.

[7] These calculations abstract from a number of fixed costs associated with setting up these payments. For example each smart card used for the cash payments cost $6.00 and there were additional costs associated with writing the computer programs needed to dispense payments through the mobile ATMs. Costs such as these are not included in the calculations reported here. We exclude costs that were common to both the food and cash payments such as costs associated with implementing the public works, identifying the beneficiaries, program sensitization, identification of implementing partners and contract negotiations with MFIs selected to implement this intervention.

[8] The implementing agencies made the selection in partnership with village leadership committees, with reference to a set of categorical indicators such as households with children under the age of 24 months, single parent household, etc.

Chapter 3 – Data

3.1 Surveys and outcome indicators

A standard approach to collecting data in the context of a randomized intervention is to collect two rounds, a baseline prior to implementation and an end-line after the intervention, though as McKenzie (2012) notes, this is not always necessary. In our case, several factors prevented us from doing so. The security situation in Niger at the start of 2012 was poor and this severely limited access by the research team to the study sites. There was considerable uncertainty regarding take-up of public works and the targeting of unconditional recipients had not been fully completed prior to first payments being made in April 2012. For these reasons, data were collected in two rounds fielded in July and October 2011. The first round occurred after the last public works payments were made and before the first unconditional transfers were provided while the second round was fielded immediately after the final unconditional transfer payment in late-September. All 5670 households in the 54 villages and village clusters where cash and food had been randomly assigned were interviewed in the first round. A random sample of 2268 of the households that had been selected to receive unconditional transfers completed an extensive interview; households that had not been selected to receive the unconditional transfers completed a shorter version of this survey. A follow up survey was then administered to the sampled households at the conclusion of the unconditional transfers, with 2209 being successfully traced and interviewed, an attrition rate of 2.6 percent. The survey was conducted by a team of male and female enumerators who had considerable prior survey experience. Data was collected using PDAs.

In both rounds household and community surveys were administered. Both versions of the household survey instrument included questions on demographic characteristics, livelihoods, assets, livestock, agricultural production, and public works participation. Pre-intervention characteristics (ie as of April 2011) including household composition, asset ownership and indebtedness were retrospectively assessed as part of July survey. The longer survey instrument, administered twice, assessed ood security impacts and intra-household sharing in modules on food consumption, coping strategies and children's food consumption. This survey instrument also included questions on non-food expenditures, debt, inter-household transfers, migration, labor force participation, and transfer use and preferences. The community survey instrument collected information on access to services, proximity and distance of markets, prices on key staples and livestock, and criteria for selection of beneficiaries for the unconditional transfers.

3.2 Household demographics and balance of baseline characteristics

Table 3.1 provides pre-intervention descriptive statistics of households using information found in the retrospective components of the survey instrument.[13] A household head needed be a current household member, so in cases in which the de jure head of household had migrated the oldest spouse or, if no spouse was present, oldest other present household member was assigned as head. On average households have 6.8 members of whom 4.1 are children aged 0-14 years. Household heads are on average 44 years old, the majority (85 per cent) is not polygamous, and 26 percent are female. Fewer than

[13] We provide unweighted statistics. Using sampling weights that reflect the inclusion probability of the households in the sample have a minor impact on the results.

nine percent of heads have any formal education.[14] Nearly all households own or rent farmland, with an average land area of 4.8 hectares cultivated by each household in the 2010-2011 growing season. Around 30 per cent of households report that they own no livestock and another 12 percent own only chickens or one ruminant. Housing quality is poor and the vast majority of households own little in the way of productive assets or consumer durables. Over 60 percent of the households are Hausa, traditionally agricultural and market-oriented people, followed by Kanuri (24 percent). The remaining households are the traditionally nomadic pastoralists Touareg, Peulh or Toubou.

Table 3.1: Characteristics of households and individuals by modality (cash/food), April 2011

	All	Cash villages	Food villages
Number of households	*5668*	*2946*	*2714*
Household characteristics			
Household size (average)	6.8	6.8	6.8
Number of children (average)	4.1	4.1	4.0
Dependency ratio (average)	2.0	2.1	1.9
Polygamous household (average)	14.4	12.9	16.1
Households belonging to ethnic majority (percentage)	90.2	90.5	89.9
Ethnic groups (percentage)			
Hausa	61.6	57.9	65.6
Peulh	4.5	6.2	2.5
Kanuri	23.9	27.7	19.7
Touareg	9.7	7.4	12.1
Toubou	0.4	0.7	0.0
Characteristics of heads			
Female household heads (percentage)	25.7	25.4	26.0
Age of head (average)	44.3	43.6	45.0
Heads with formal education (percentage)	8.6	8.2	9.1
Households with handicapped head (percentage)	5.7	5.7	5.6
Households with migrant household heads (percentage)	11.3	13.0	9.6
Number of individuals	*38375*	*19979*	*18396*
Member characteristics			
Females (percentage)	49.2	49.6	48.7
Age (average)	17.6	17.2	18.0
Formal education (percentage)	22.5	22.2	22.9
Handicapped (percentage)	2.7	2.8	2.6

[14] Formal education refers to the completion of at least one year of primary schooling. We exclude attendance at Koranic schools because individuals attending these do not necessarily learn to read and write. If Koranic schools are included, 50.5 percent of heads have some schooling.

Table3.2 reports dwelling characteristics and wealth holdings. Most households live in earth clay or mud brick dwellings. There is little evidence of anyone owning improved dwellings such as those with brick walls and the iron/zinc sheet roofs seen elsewhere in Africa. Few households, less than 12 percent, have a proper latrine and slightly fewer than half can obtain water from a protected source such as closed well.

Table 3.2: Dwelling characteristics and wealth by modality (cash/food), April 2011

	Cash	Food	All
Number of households	2948	2719	5668
Dwelling and source of water			
Walls			
Mud/banco	57.9	67.4	62.4
Grass/tarp/no walls	42.1	32.6	37.6
Latrine	11.8	10.9	11.4
Source of water			
Closed well/running water	49.4	50.2	49.8
Open well/surface water	50.6	49.8	50.2
Livestock* (percentage)			
No livestock	34.3	24.3	29.5
Only chicken or one ruminant	13.4	11.2	12.3
Some ruminants or one big animal	36.8	45.1	40.8
Many ruminants or some big animals	12.1	16.2	14.1
Many different types or > four big animals	3.5	3.2	3.4
Tropical Livestock Units	0.76	0.90	0.83
Fields			
Households with fields in use during the last harvest	96.7	97.0	96.8
Hectares in use (average)	4.4	5.4	4.8

*Some ruminants or one big animal: 2-7 sheep/goats or one cow/oxen, camel, donkey or horse or more than 10 animals in total; Many ruminants or some big animals: more than 7 sheep/goats or 1-5 goats and 1-4 big animals or 2-4 big animals or more than 20 animals in total; Many diffeerent types of animals or more than four big animals: more than one ruminant and at least one traction animal and at least one transport animal and at least one milk cow

Source: Household survey, July 2011.

Data on ownership of productive assets and consumer durables were collected in the first survey round (July) with households being asked to recall purchases of these items in the previous three months. Households own little in the way of productive assets or consumer durables. We summarize these in the form of an asset index. The striking feature of these data is how they illustrate just how poor these households are. A typical household owns a bed, some mats for the floor, a blanket, a mosquito

night, a lamp or two, some hoes and not much else. Approximately 20 percent own cell phones and about a quarter have a radio. Almost three percent own a bike and 4 percent own a scooter.

We examine two types of indicators on livestock ownership. The first is whether the household owns any livestock. The second is the reported number of household tropical livestock units (TLUs). This is a summary measure for the number of animals owned per household by the type and size of animals.[15] Around 30 per cent of households report that they own no livestock and another 12 percent own only chickens or one ruminant.

Nearly all (96 per cent) of all the households report that they had fields in use during the last harvest. Mean area cultivated by modality is 4.4 hectares for households in cash villages and 5.4 hectares for households in food villages.

It is of interest to determine whether our randomization produced samples that were balanced across pre-intervention characteristics, that is whether mean characteristics were similar at the level randomization took place. Table 3.3 provides pre-intervention descriptive statistics of households using information found in the retrospective components of the survey instrument.[16] Thus, the descriptive statistics reflect characteristics of households in April 2011, prior to the start of the intervention. Table 3.3 shows tests for balancing across a range of village characteristics, reported as worksite means and disaggregated by whether the locality was randomized to receive food or cash. We cannot reject the null hypothesis that the mean values of these characteristics are equal across cash and food work sites.

[15] Tropical livestock units (TLU) provide a convenient method for quantifying a wide range of different livestock types and sizes in a standardised manner. One TLU is approximately 250 kg of live weight. We use the following weights: 1 for camels, 0.8 for milk cows, 0.7 for oxen and horses, 0.6 for other cows, 0.4 for donkeys, 0.15 for sheep, 0.1 for goats and 0.02 for poultry. In other words a camel is worth 50 times a chicken.

[16] We provide unweighted statistics. Using sampling weights that reflect the inclusion probability of the households in the sample have a minor impact on the results.

Table 3.3: Pre-intervention characteristics by transfer modality

Demographic characteristics	CASH work sites	FOOD work sites	P-value
Household size (average)	7.0	6.9	0.55
Polygamous household (percentage)	13.2	15.7	0.24
Households belonging to ethnic majority (percentage)	90.4	87.7	0.49
Female household heads (percentage)	18.3	17.5	0.80
Age of head (average)	44.6	45.1	0.60
Heads with formal education (percentage)	7.2	6.1	0.56
Livelihoods and assets			
Percentage households growing crops (percentage)	96.9	97.2	0.76
Area cultivated (ha)	4.6	5.3	0.34
Tropical Livestock Units	0.9	1.0	0.65
Asset Score	-0.1	0.2	0.22
Land allocation to crops			
Millet Allocation (percentage)	64.4	62.0	0.49
Sorghum Allocation (percentage)	17.5	16.9	0.80
Cowpeas Allocation (percentage)	11.7	14.1	0.19
Peanuts Allocation (percentage)	4.5	4.8	0.86
Infrastructure			
Road Accessible in All Seasons (percentage)	68.6	64.4	0.74
Distance to Main Road (minutes)	57.5	53.0	0.65
Market in Village (percentage)	11.1	8.7	0.77
Time to Reach Market if NOT in village (minutes)	62.5	72.3	0.47
Cell Phone Service in Village (percentage)	86.6	96.0	0.23

Notes: P values are from t tests where the null hypothesis is that the work site means are equal. There are 27 worksites that received food and 25 that received cash.

Table 2.1 also provides information on locality characteristics aggregated at the worksite level. About two-thirds of villages are accessible by road. It typically takes just under one hour to reach a road and about the same time to access a market. There are relatively few food markets in these villages. Nearly all have cell phone coverage. There are no statistically significant differences across treatment arms in infrastructure.

Chapter 4 – Methods

Measuring impacts of a project in which the beneficiaries are randomly assigned to receive different types of transfers is quite straightforward. If program assignment is random, the beneficiary groups will on average have the same characteristics, and the outcomes across the groups can therefore be directly compared. This allows us to measure the impact of the program by measuring the average difference *in outcomes* between the cash and food households. This can be written as a single difference model of the form

$$y_{iw} = \alpha + \delta food\ village_i + \varepsilon_{iw} \quad (1)$$

where y_{iw} is the outcome of interest for household i at worksite w after the intervention and $food\ village_i$ is a dummy variable equal to one if a household lives in a village receiving food (and 0 otherwise). The parameter δ is the parameter of primary interest. It tells us the impact on outcomes of being randomized into a village receiving food relative to being randomized into a village receiving cash. We take into account that the randomization was made at the worksite level by allowing the error terms to be correlated at this level. The randomization of the modality ensures that E($food\ village_i\ \varepsilon_{iw}$) equals 0 and thus that δ is an unbiased estimate of impact[18].

To improve the precision of the impact estimates, we control for household baseline and village characteristics. Accordingly, we estimate the following model

$$y_{iw} = \alpha + \beta X_i + \delta food\ village_i + \varepsilon_{iw} \quad (2)$$

where X_i is a vector of household baseline covariates and village characteristics. These include household demographics such as size and head characteristics such as sex, age and level of education. We control for ethnicity and for ownership of durables which acts as a proxy for household wealth. We control for livelihood zone (agricultural, agro-pastoral), whether or not there is a market and a cereal bank in the village, the price of millet at the end of the transfer period and the change in the price of millet over the transfer period. We also control for cattle prices (milk cows and a goats) as reported in our community surveys. We control for the distance to a main highway and whether or not the village has mobile network coverage and for commune fixed effects.[19] We estimate (2) separately for outcomes measured in July and in October[20].

For some outcomes, such as inter-household transfers and credit and debt transactions, pre-intervention data was collected through recall. This allows us to use a method that can account for any pre-existing differences between cash and food households that may arise due to sampling error, a

[18] For some outcomes, such as those pertaining to household food security, because we do not observe pre-intervention outcomes, we cannot estimate a double difference model. McKenzie (2012) argues that difference-in-difference estimators are preferable to a post-intervention estimator only when the autocorrelation of the outcome variables is relatively high. He notes that this will not be the case for outcomes such as consumption that fluctuate over time.

[19] For brevity, we only report δ in our tables. Full results are available on request.

[20] We use OLS for outcomes that are continuous, probits where they are dichotomous, Poisson regressions where we have count data and tobits where the outcome is continuous but also censored at zero. Estimates of δ are transformed into marginal effects where the estimator is non-linear.

double difference estimator. This measures the change in the outcome of the food households minus the change in the outcome of the cash households before and after the intervention. We write

$$y_{iwt} = \alpha + \beta X_i + \gamma round_t + \theta food\ village_i + \delta(food\ village * round)_{it} + \varepsilon_{iwt} \quad (3)$$

where $round_t$ is a dummy variable that indicates each intervention period and $food\ village * round$ is the interaction variable for being a food receiving household during the intervention period.

Chapter 5 – Program components and beneficiary preferences

5.1 Public works component

Following a process of sensitization in all villages, public works began between April 1st and 17th, 2011 and were completed by June 30th, 2011. Within each village, a public works committee was established to provide a means of liaising with the NGOs responsible for implementation. The type of work chosen reflected both technical criteria – what was most appropriate given the geography of the village – and village preferences. Type of works included road construction, soil conservation, three planting, well drilling, irrigation, deepening of ponds and gardening.

Within each village, every household was guaranteed 75 days work on these projects.[21] Work norms established by the Government of Niger ensured that the amount of physical work that constituted "a day's work" was the same across these different activities so, for example, in areas where half-moons *(demi-lune)* were constructed for soil conservation, a day's work consisted of digging three half-moons. This work was typically undertaken in the immediate surroundings of the village but there were a few cases where public works were situated in between two or more adjoining villages or where participants had to travel to an adjacent village. Households could send more than one person to complete a day's work.

Table 5.1 provides information on the extent to which households actually participated in the construction of these public works, disaggregating by a number of household characteristics.

Table 5.1: Household participation in public works by location, inclusion in unconditional transfers and transfer modality

	All	Agricultural	Agro-Pastoral	Included in unconditional transfers	Excluded from unconditional transfers	Cash	Food
All three months	95.0%	96.3%	93.2%	94.0%	95.7%	95.4%	94.6%
Two months	0.7	0.7	0.6	0.7	0.8	0.7	0.7
One month	0.5	0.4	0.5	0.5	0.4	0.4	0.5
Did not participate	3.8	2.6	5.7	5.8	3.1	3.4	4.2
Number of observations	5,669	3,423	2,246	2,267	3,402	2,948	2,721

Source: Household survey, July 2011.

[21] A small number of households in each village, such as single-person households consisting of a widowed woman or households with a young mother and young children, were exempted from the work requirement and given an unconditional payment.

Virtually all households – 95 percent - reported participating for all three months that public works were available. There were no differences when disaggregating by agro-ecological zone, whether the household was included in or excluded from receipt of unconditional transfers during the second phase of the intervention, or whether households were in villages receiving cash or food payments. Only 147 households, out of 5,669, reported not doing public works. The most frequent reason given was that there were no able bodied workers in the household (87 households), illness (17 households) and that the work sites were too far away (10 households).

Table 5.1 does not tell us, however, if households worked their full entitlement. Table 5.2 shows the amount of days worked expressed as a percentage of work entitlement worked by month, location, inclusion in unconditional transfers and transfer modality. Conditional on doing any work (ie excluding the few households that reported not working), nearly all households, more than 95 percent, reported working their full entitlement. There is little variation in this across April, May and June. There is no difference in work by households included or excluded from unconditional transfers or by transfer modality. Households in the agricultural zone were slightly more likely to work their full entitlement than households in agro-pastoral areas but even in the latter, 93 percent of households worked their full entitlement.

Table 5.2: Percentage of work entitlement worked by month, location, inclusion in unconditional transfers and transfer modality

Month	All	Agricultural	Agro-Pastoral	Included in unconditional transfers	Excluded from unconditional transfers	Cash	Food
April	93.6%	95.2%	91.1%	93.1%	93.9%	92.5%	94.8%
May	96.6	97.8	94.6	96.5	96.6	95.9	97.2
June	96.1	98.0	93.1	96.0	96.2	94.9	97.4
All months	95.4	97.0	93.0	95.2	95.6	94.4	96.5

Source: Household survey, July 2011.

The survey instrument asked about who in the household undertook these public works. The cell with the largest percentage in Table 5.3 shows that across the full sample, it was most common for one man and no women from a household to participate (44.4 percent). However, in about one-quarter of households, all of the work was done by women. On average 1.4 members per household participated in the public works.

Table 5.3 Number of household members doing public works, by sex

		Number of women				
		0	1	2	3 or more	Total
Number of men	0	0.0%	24.8%	2.6%	0.2%	27.7%
	1	44.4	18.4	2.1	0.1	64.9
	2	4.2	1.8	0.4	0.1	6.3
	3 or more	0.7	0.3	0.1	0.1	1.0
	Total	49.3	45.3	5.1	0.5	100.0

Source: Household survey, July 2011.

Table 5.4: Women's participation in public works by month, location, inclusion in unconditional transfers and transfer modality

Month	All	Agricultural	Agro-Pastoral	Included in unconditional transfers	Excluded from unconditional transfers	Cash	Food
Mean number women participating	0.57	0.50	0.67	0.61	0.54	0.55	0.58
Percent of households with any women participating	51	45	59	54	49	49	52
Share of public works undertaken by female members (percent)	38	34	43	41	36	37	39

Source: Household survey, July 2011.

Table 5.4 shows that across the full sample, women's participation accounted for 38 percent of the work days spent on public works. Just over half the households in the sample had a woman participating in this work. A larger share of the projects was undertaken by women in agro-pastoral areas (43%) than in agricultural areas (34%). There was no meaningful difference in women's participation in villages receiving cash relative to villages receiving food.

5.2 Targeting of unconditional transfers

During the second phase, the peak of the lean season from July to September, the most vulnerable half of all households in each village were supposed to be selected to receive unconditional transfers. During project planning, WFP and the implementing NGOs (Aquadev and Karkara) agreed that the following criteria would be used to determine which households would be selected to receive these transfers:

- Female headed households (for Karkara only, female heads with 5 or more dependents);[22]
- Households with children age 6 to 23 months;
- Households with lactating mother and child 0 to 5 months;
- Households with migrants from Côte d'Ivoire, Libya or Nigeria;
- Households with handicapped person (for Karkara only); and
- Very vulnerable households (as decided in a consultative process with the community)

Lala In 23 out of 31 villages, Karkara facilitated a process by which all community members participated in the selection of beneficiaries. Five had selection undertaken by a village committee while the remaining three relied on criteria provided by Karkara. Aquadev attempted to assess the vulnerability of households based on whether they met the criteria described above. Out of the 49 villages where Aquadev was the implementer, beneficiaries in 36 were chosen based on the list provided by Aquadev. In 10, all community members participated in the selection of beneficiaries while in the other three, selection was undertaken by a village committee. In addition to these differences, these NGOs did not always include the same groups during consultation processes. Table 5.5 shows the percentages of various village actors who participated in beneficiary selection by implementing NGO and transfer modality. Village heads (or chiefs) and elders were most frequently involved (81% and 84.5% of all villages, respectively), followed by other members of the village executive committees. Government officials were only involved in a few cases (7.6% of all villages). Karkara was more likely to consult with representatives from youth and with representatives of ethnic minorities while Aquadev was more likely to include other village members.

Table 5.5: Actors involved in targeting by implementing NGO and transfer modality

		NGO		Transfer modality	
	All	Aquadev	Karkara	Cash	Food
Village Head	81.0%	81.3%	80.7%	84.1%	77.1%
Elders	84.8	81.3	90.3	90.9	77.1
Representatives from youth	54.5	54.2	67.7	65.9	51.4
Women's representatives	81.0	83.3	77.4	79.6	82.9
Representatives of ethnic minorities	46.8	41.7	54.8	59.1	31.4
Government officials	7.6	6.3	9.7	9.1	5.8
Other members of the village committee	59.5	60.4	58.1	65.9	51.4
Other members of the village	39.2	54.2	16.1	38.6	40.0

Source: Community survey, October 2011.

How did these different approaches affect the use of targeting criteria?

[22] The reason for the slight difference between the two NGOs was their own experiences of what constituted a vulnerable household in this area.

Table 5.6 examines the characteristics of the households in July 2011 based on whether or not they were selected for the unconditional transfers[23]. We look at some of the agreed vulnerability criteria along with other characteristics[24]. We do this for all households and separately for cash and food households.

[23] The targeting exercise was done at the end of June 2011 so we use the household characteristics from July in this analysis (contrary to the basic descriptive tables where characteristics from April 2011 are reported). Due to returning migrants between April and July there are quite large difference in household composition between April and July. There are for example much less female headed households in July.

[24] We do not have information about the presence of returnees from Côte d'Ivoire, Libya or Nigeria for the whole sample (only for those with the long questionnaire).

Table 5.6: Characteristics of households targeted and not targeted for unconditional transfers

	All			Cash			Food		
	Targeted	**Not targeted**	**P-value**	**Targeted**	**Not targeted**	**P-value**	**Targeted**	**Not targeted**	**P-value**
Stated vulnerability criteria									
Female household head (percentage)	23.6	13.4	0.000	22.1	11.8	0.000	25.1	15.1	0.000
Female household head with 5 or more dependants	7.4	3.5	0.000	7.5	3.7	0.000	7.2	3.3	0.000
At least one child under age 6 months in the household	8.5	10.0	0.055	9.2	9.2	0.976	8.3	10.6	0.032
At least one child age 6-23 months in the household	42.1	50.2	0.000	41.3	51.0	0.000	42.9	49.3	0.001
At least one handicapped person in the household	12.5	8.7	0.000	12.8	8.9	0.001	12.2	8.4	0.001
Other criteria									
Household size (average)	7.4	6.6	0.000	7.5	6.6	0.000	7.2	6.7	0.000
Number of children (average)	4.3	3.9	0.000	4.4	4.0	0.000	4.1	3.9	0.020
Dependency ratio (average)	1.9	1.8	0.000	2.0	1.8	0.000	1.9	1.8	0.089
Polygamous household (percentage)	16.2	12.6	0.000	14.8	10.9	0.001	17.7	14.5	0.023
Households belonging to ethnic majority (percentage)	89.8	90.6	0.292	90.2	90.8	0.619	89.3	90.5	0.320
Hausa (percentage)	61.9	61.3	0.619	58.5	57.3	0.513	65.7	65.6	0.993
Peulh (percentage)	4.3	4.6	0.548	6.1	6.4	0.718	2.4	2.7	0.596
Kanuri (percentage)	23.5	24.2	0.530	27.1	28.4	0.406	19.7	19.7	0.978
Touareg (percentage)	9.9	9.5	0.633	7.6	7.2	0.635	12.3	12.0	0.834
Toubou (percentage)	0.4	0.4	0.889	0.7	0.7	0.881	-	-	-
Age of head (average)	48.5	41.5	0.000	48.7	40.3	0.000	48.3	42.7	0.000
Head has formal education (percentage)	7.6	10.0	0.002	7.0	10.5	0.001	8.3	9.4	0.321
Head is handicapped (percentage)	7.4	4.1	0.000	7.5	3.9	0.000	7.2	4.4	0.001
Head of household migrated (percentage)	3.8	4.5	0.184	4.5	4.5	0.995	3.1	4.6	0.045
Household has livestock (percentage)	73.9	69.9	0.001	69.1	65.8	0.054	79.1	74.4	0.003

Tropical livestock units (average)	0.9	0.8	0.004	0.8	0.7	0.151	1.0	0.8	0.006
Durables, PCA score (average)	0.0	0.0	0.384	-0.2	-0.3	0.285	0.2	0.2	0.859
Proper walls (percentage)	61.9	63.0	0.386	58.0	57.7	0.866	66.1	68.8	0.133
Latrine (percentage)	10.7	12.2	0.072	10.0	13.8	0.001	11.4	10.4	0.417
Running water/closed well (percentage)	50.3	49.3	0.438	50.1	48.7	0.445	50.5	49.9	0.748
Value of loans (average)	17116	17192	0.930	19082	18931	0.909	14994	15297	0.783
Hh head has an official role in village (percentage)	27.1	22.8	0.000	27.3	21.3	0.000	26.8	24.5	0.169
Father of hh head has an official role in village (percentage)	30.7	28.4	0.060	29.4	27.0	0.154	32.0	29.9	0.220
Mother of hh head has an official role in village (percentage)	23.8	22.6	0.288	23.6	22.0	0.288	24.0	23.3	0.668
Observations	2786	2882		1453	1496		1333	1386	

There are few striking differences between targeted and non-targeted households. Some exceptions include female headed households, household having at least one child age 6 to 23 months and age of household head. Of the targeted households 24 percent are female headed versus 13 percent of the non-targeted. When it comes to households having at least one child aged 6 to 23 months (one of the vulnerability criteria) there are actually more households (50 percent) with this characteristic among the non-targeted households compared to the targeted ones (42 per cent)[25]. Targeted households have on average older heads (49) than non-targeted ones.

The descriptive statistics give some preliminary indication that the stated vulnerability criteria were used to a variable degree in the selection of households for the second round of transfers. Especially the presence of young children does not seem to have been given a lot of weight in the targeting process. To get a more complete picture of the situation, we ran a series of regressions where the outcome variable equaled one if the household was selected for transfers, zero otherwise.

A few interesting things come across in the analysis. Easily verifiable characteristics such as household size and age of head are significant across implementation partner and modality. This is also the case for female headed households, but the slightly tighter criterion of Karkara shows in the analysis. For food receiving households assisted by Karkara, female headed households with at least five dependents is the criteria that turns out as significant. The presence of children under the age of 6 month has virtually no effect on the likelihood of selection nor does the presence of children age 6-23 months does not increase probability of selection.

There is some variation when we disaggregate by transfer modality. When it comes to the selection of cash households Karkara used some criteria that points to vulnerability: presence of handicapped head and low durables score but also favored village leaders and discriminated against Kanuris (ethnic group). Aquadev again favored households with livestock and better dwelling characteristics but did not favor village leaders in the selection of cash households. However, the point estimates for these characteristics barely differ when we compare across cash and food villages and so we conclude that targeting was not affected by the transfer modality used.

5.3 Reception and use of transfers

Beneficiaries were asked how they used their July transfer. Cash recipients reported that 70 percent was spent on food items, 10 percent on non-food items, 9 percent on transfers to other households, 7 percent on savings and 3 percent on loans. Food recipients used 78 percent of the transfer for food consumption, 20 percent on transfers to other households and sold or exchangend the rest for other food items. Only 5 percent of food recipients reported that they sold some of the food, and 13 percent that they exchanged some of the payment for other food or non-food items. However, 85 percent of the food recipients and 33 percent of the cash recipients reported that they shared some of their transfers.

In July, male heads were more likely to collect these transfers if they were given in cash but this was not the case in the October round. Female spouses were more likely to be the individuals who chose how to use transfers if they were given as food (Table 5.7).

[25] We take into account that the interviews took place approximately one month after the targeting exercise.

Table 5.7: Identity of person who receives transfer and decides on it use by transfer period, modality and sex of head (percent)

	July					
	Male head			**Female head**		
	Cash	Food	P-value	Cash	Food	P-value
Picks up the transfer						
Head	60.9	54.6	0.008	77.7	73.6	0.273
Spouse	25.6	27.8	0.319			
Other male	9.1	13.3	0.005	17.7	17.2	0.892
Other female	4.4	4.3	0.965	4.6	9.2	0.039
Decides on how to use the transfer						
Head	76.6	72.6	0.056	90.0	93.9	0.100
Spouse	14.8	20.3	0.003			
Other male	3.0	1.6	0.058	7.7	5.0	0.197
Other female	1.7	1.7	0.968	2.3	1.1	0.306
Head and spouse together	3.8	3.7	0.888			
Number of households	*936*	*807*		*260*	*261*	
	October					
	Male head			**Female head**		
	Cash	Food	P-value	Cash	Food	P-value
Picks up the transfer						
Head	69.0	70.4	0.518	84.9	77.8	0.055
Spouse	22.3	19.5	0.152			
Other male	6.2	8.6	0.060	11.9	17.6	0.091
Other female	2.5	1.5	0.150	3.2	4.6	0.446
Decides on how to use the transfer						
Head	82.6	74.0	0.000	96.7	94.9	0.340
Spouse	12.5	21.5	0.000			
Other male	1.0	1.0	0.952	2.8	3.0	0.918
Other female	0.7	0.4	0.335	0.5	2.1	0.128
Head and spouse together	3.1	3.2	0.963			
Number of households	*961*	*791*		*218*	*239*	

Source: Household surveys, July, October, 2011.

5.4 Transfers and food prices

Villagers were asked at the community level as well if they felt that the distribution, in cash or in food, affected local food prices. The results are shown in Table 5.8. While the majority of cash recipients reported that there was no impact at all on prices, a majority of food recipients reported that food deliveries put downward pressure on food prices. This was particularly common for the prices of key staples and goods similar to those distributed,

such as millet (94%), sorghum (97%), maize (66%), and cowpeas (83%). In the case of vegetable oil, several cash-recipient villages (18%) reported that distributions also put upward pressure on prices, and several food-recipient villages (40%) reported that distributions put downward pressure on price.

Table 5.8: Perceived food price impacts, by transfer modality

	Upward Impact		NO Impact		Downward Impact	
	CASH	FOOD	CASH	FOOD	CASH	FOOD
Millet	9%	0%	64%	6%	27%	94%
Sorghum	7	0	69	3	24	97
Maize	7	0	76	34	18	66
Rice	16	3	82	69	2	29
Cowpeas	2	0	76	17	22	83
Vegetable Oil	18	3	80	57	2	40

Source: Community survey, October, 2011.

Table 5.9: Reported average food and livestock prices by season and transfer modality

	ALL	CASH	FOOD	P-value
1 Tia of millet				
Cold Season (Oct 2010-Feb 2011)	716	669	777	0.06
Dry Season (Mar-Jun 2011)	578	531	640	0.02
Hungry Season (Jul-Sept 2011)	646	613	689	0.11
1 Tia of maize				
Dry Season (Mar-Jun 2011))	595	550	645	0.02
Hungry Season (Jul-Sept 2011))	604	580	629	0.35
1 milk cow				
Cold Season (Oct-Feb)	171375	174111	167857	0.60
Dry Season (Mar-Jun 2011)	190062	210777	163428	0.38
Hungry Season (Jul-Sept 2010)	144562	150222	137285	0.32
1 goat				
Cold Season (Oct-Feb)	19968	20722	19000	0.21
Dry Season (Mar-Jun 2011)	18856	19277	18314	0.50
Hungry Season (Jul-Sept 2010)	15456	16166	14542	0.29

Source: Community surveys, July, October, 2011.

The assertions regarding grain price impacts are supported by the food price data collected at the community level. Prices of millet and maize were on average *higher* in the food villages, including within each of the agricultural and pastoral regions (see Table 5.9). The trend over time (depicted in Figures 5.1 and 5.2 for millet and maize, respectively) shows that, while prices in both regions followed seasonal trends, grain prices rose less sharply, and fell more dramatically, in food villages. The millet price in particular continued to drop during the early part of the unconditional transfer period in food villages, while it was rising in cash villages (see Figure 5.1). The same trend is less marked, although visible particularly during the public works period, in the case of maize prices. The medians of

millet prices by season were in turn somewhat higher in the food regions, and ranges wider (see Figure 5.3), while those for livestock were similar (see Figures 5.4 and 5.5). This is consistent with villagers' assessment of the price impacts of food distributions.

Figure 5.1 Average millet prices by transfer modality and month, April 2010 to October 2011

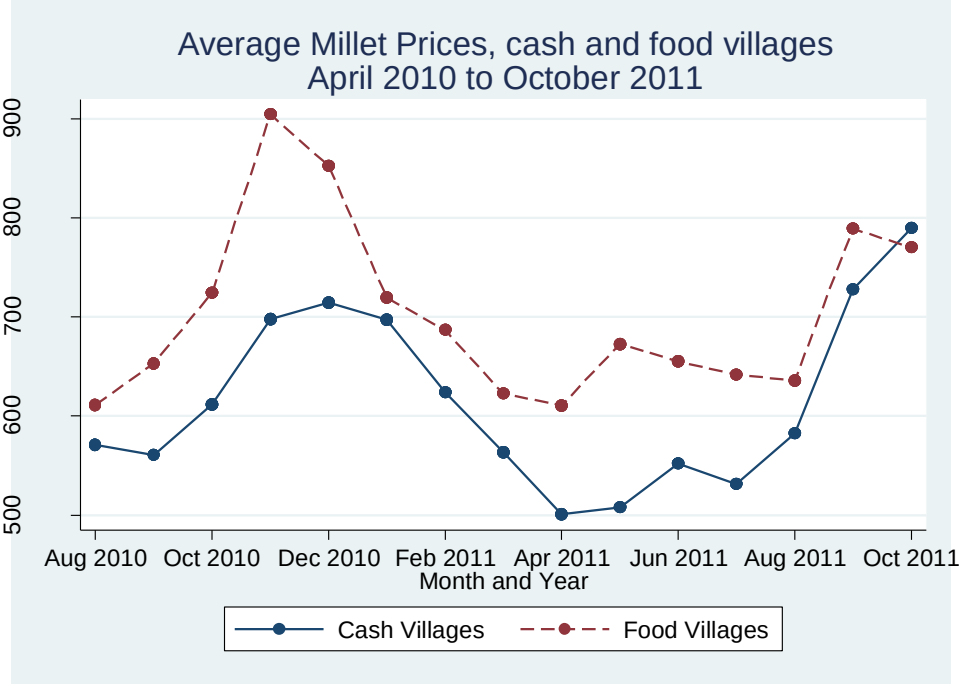


Figure 5.2: Average maize prices by transfer modality and month, April 2010 to October 2011

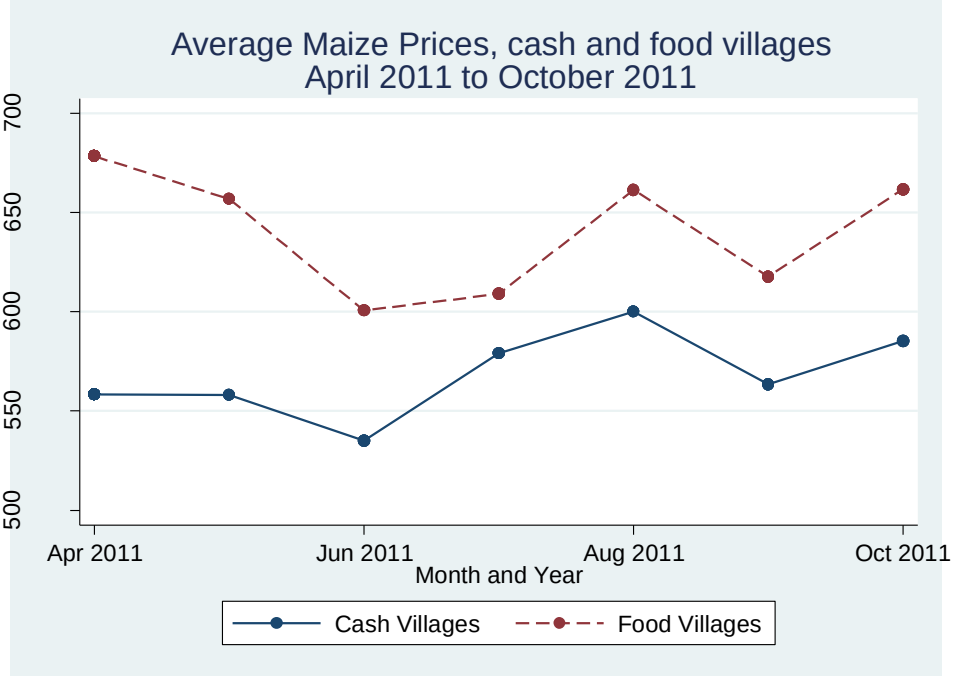
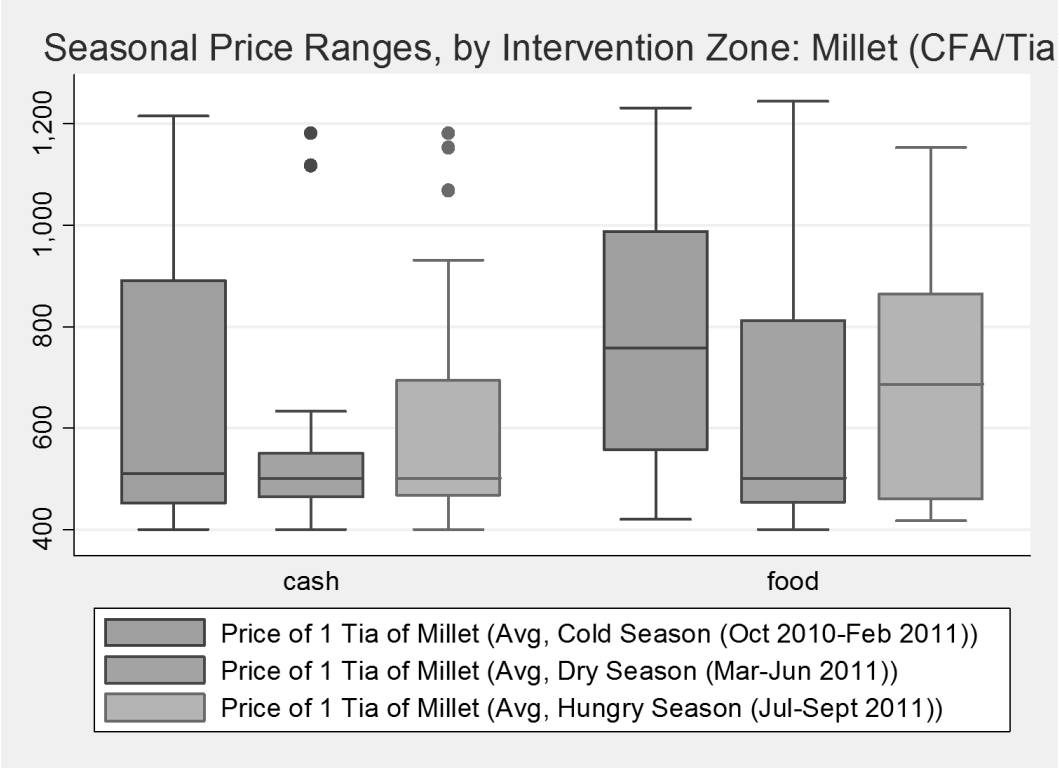
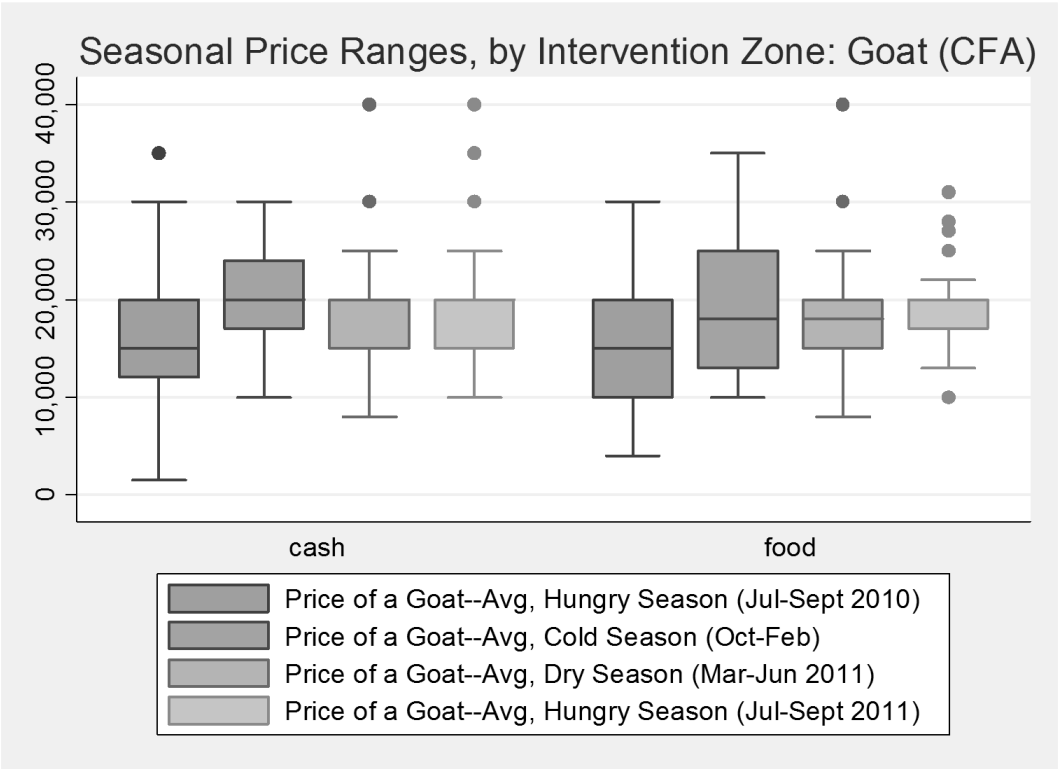


Figure 5.3: Seasonal price ranges, millet, by transfer modality



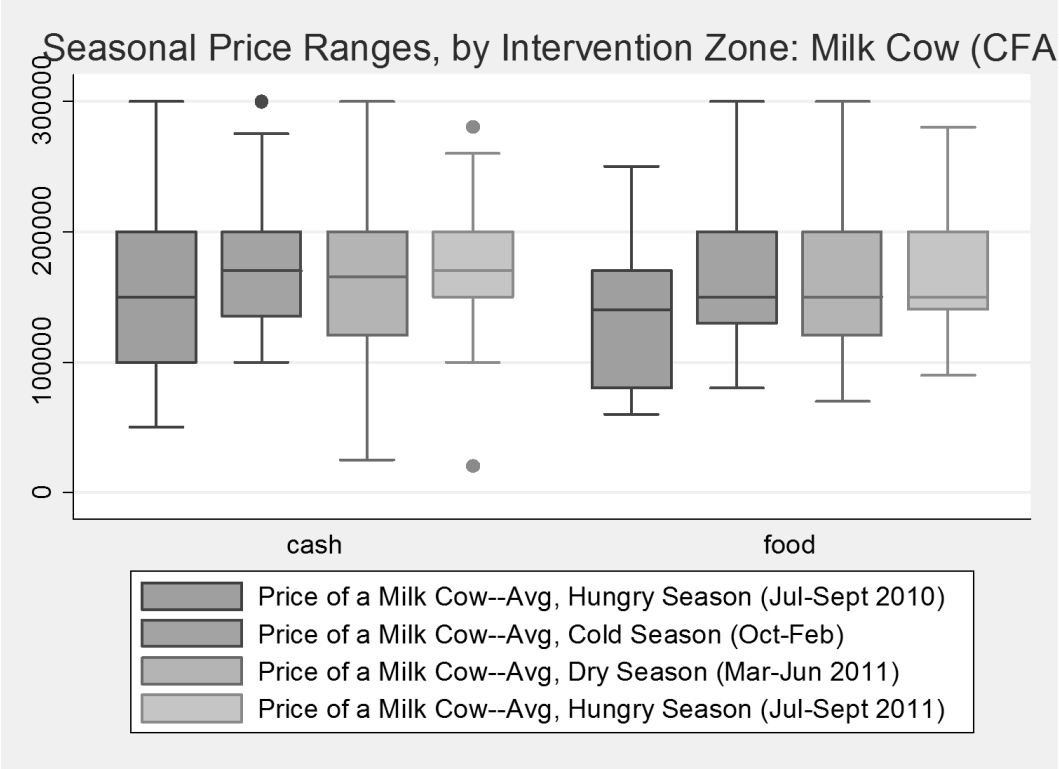
Note: These represent the range of prices reported. The middle line in the box represents the median price. The box encompasses the 2nd and 3rd quartiles, and the lines reach out to the 1st and 4th quartiles.

Figure 5.4: Seasonal price ranges, goat, by transfer modality



Note: These represent the range of prices reported. The middle line in the box represents the median price. The box encompasses the 2nd and 3rd quartiles, and the lines reach out to the 1st and 4th quartiles.

Figure 5.5: Seasonal price ranges, milk cows, by transfer modality



Note: These represent the range of prices reported. The middle line in the box represents the median price. The box encompasses the 2nd and 3rd quartiles, and the lines reach out to the 1st and 4th quartiles.

5.5 Preferences for cash and food

In the October survey round, we elicited stated preferences for the form of food assistance transfer. The survey first asked what mix of cash and food would be preferred (100% food, 75% food and 25% cash, 50% each, 25% food and 75% cash, or 100% cash). We then asked, for both maize and millet, to make a choice between a cash value and 40 Tias of grain (roughly 100 kilograms). The cash value started at 10,000 FCFA (approximately half the value of the 40 Tias) and rose to 30,000 (approximately one and a half times the value of the 40 Tias).

Economic theory predicts that, given transfers of equivalent value, recipients should not prefer an in-kind transfer over a cash transfer. If the food transfer is extra-marginal, or more than the recipient would consume in the absence of the transfer, then they would wish to sell some of the food to meet other needs (facing perhaps transaction costs), hence would strictly prefer to be given cash. If the transfer is infra-marginal, or less than what the recipient would consume in the absence of the transfer, they should be indifferent, as they could always purchase the food basket with the cash.

We observe in this case, however, that respondents expressed an overwhelming preference for food transfers (see Table 5.10); over-all, 61% of respondents prefer 100% food, 37% prefer 75% or 50% food, and only 10% prefer 100% cash. In some cases, preference may be biased by habit, or the form of transfer that the recipient has received in the past. The reported food preference in this case is stronger among food recipients, but it is still strong among both sets of recipients; 50% of cash recipients (versus 73% of food recipients) state preferring 100% food. As pertains to the value at which cash becomes preferred, on average those who switched from a food to a cash preference as the cash value rose switched at something close to the market value of the commodity (22,000 CFA for millet, and 21,400 for maize; although prices of maize in the market tend to be slightly higher than those of millet). All the same, a significant number of respondents (65% of food recipients and 44% of cash recipients) always chose the food, even at the cash value of 30,000F. Further, a full 71% of food recipients and 56% of cash recipients (63% of all recipients) either always chose food, or only switched to cash at a value that exceeded the value of the food, showing that they effectively value the food above its market price.

Table 5.10 Cash/food transfers, by transfer type received

	CASH	FOOD	P-value	ALL
100% Food	50%	73%	0	61%
75% Food, 25% Cash	14	11	0.036	12
50% Food, 50% Cash	18	12	0	15
25% Food, 75% Cash	2	1	0.158	2
100% Cash	16	3	0	10
Switch from Millet to Cash	21282	23503	0	22070
Values Millet Above Market Price	68	81	0	74
Chose 40 tias of millet over all amounts	44	65	0	54
Switch from Maize to Cash	20447	23332	0	21461
Values Maize Above Market Price	61	78	0	69
Chose 40 tias of maize over all amounts	42	64	0	52
Values both foods above market price	56	71	0	63
Number of Households	1197	1030		2209

One key possible explanation for a food preference is that households have different subjective 'costs' of food given their livelihoods, distance to markets, or other characteristics. We hence examine the food preference across a few different characteristics (see Table 5.11). Food preferences are in this case more pronounced in the agricultural (and hence more food-producing) zone. A full 67% of households in the agricultural zone expressed a preference for 100% food, while just over half did so in the pastoral zone. These trends are similar between Hausa households and non-Hausa households which is consistent as the Hausa are historically more purely agricultural than the non-Hausa (including the Kanuri, Touareg, Peulh, and Toubou). The preference for food among food recipients was still stronger than that for cash recipients within each zone.

Table 5.11 Preference for 100% Food, by other characteristics

	Agricultural Zone		Agro-pastoral Zone	
100% Food	67%		51%	
	CASH	FOOD	CASH	FOOD
100% Food	58%	77%	39%	66%
Observations	686	635	493	395

	Hausa		Non-Hausa	
100% Food	67%		50%	
	CASH	FOOD	CASH	FOOD
100% Food	58%	76%	39%	66%
Observations	685	691	494	339

	Market in Village		No Market in Village	
100% Food	55%		69%	
	CASH	FOOD	CASH	FOOD
100% Food	49%	64%	53%	83%
Observations	738	534	441	496

	Female HH Head		Male HH Head	
100% Food	66%		59%	
	CASH	FOOD	CASH	FOOD
100% Food	57%	75%	49%	73%
Observations	218	239	961	791

We then look at the preference as a function of whether or not there is a market or cereal bank in the village. We find that while preferences for food still dominate, households are more likely to prefer cash if there is a market in the village. 69% of households without a market in the village express a preference for 100% food, versus 55% of those without a market, and the strongest preference for food (83% choosing 100% food) is expressed by those with no market in the village who received food. Although a majority of all ethnic groups and livelihoods, as well as those with a market in the village, still prefer food, this does suggest that the nature of livelihood and access to markets plays at least some role in food preferences.

Another key possible explanation for food preferences has to do with intra-household bargaining, and in particular that food may be more likely to be controlled by women than cash and hence be preferred by women. To provide some insight into this possibility, we examine the degree to which the gender of the household head influences this preference. While female-headed households are indeed significantly more likely than male-headed households to prefer only food, the difference is actually not very large in magnitude (66% versus 59%). When divided between cash and food, the difference in preference between male and female-headed households is even less significant, particularly

among food recipients. Roughly the same percentage of men and women also valued the foods over local market prices. Interestingly, while significantly more women put a higher value on millet, they did not on maize, which is much more difficult to prepare (a burden that falls on women).

These data suggest, though not conclusively, that livelihood activities, distance to markets or cereal banks, and gender dynamics all play a role in the preference for food. These attributes do not, however, fully explain the strongly reported preferences.

Chapter 6 - Food Security

6.1 Overview

The survey module on household food security identified which foods were consumed and the frequency of their consumption over the previous seven days. The specific items selected were based on previous survey work in this area as well as discussions with key informants. While the survey instrument did not collect information on quantities consumed, it distinguished between foods that are served as a separate item and foods that are used only as a sauce or condiment. We use these data on diet and frequency of consumption to construct three measures of household food security: the Dietary Diversity Index (DDI), the Household Dietary Diversity Score (HDDS), and the Food Consumption Score (FCS).

DDI is calculated by simply summing the number of distinct food categories consumed by the household in the previous seven days. The household questionnaire covers 25 such food categories, and thus the DDI in this survey ranges from 0 to 25. Hoddinott and Yohannes (2002) show that the DDI correlates well with both household dietary quantity and quality. Next, we aggregate these 25 food categories into eight groups: staples, pulses, vegetables, fruit, meat/fish, milk/dairies, sugar/honey, oils/fats. The HDDS is then calculated by summing the number of food groups consumed in the previous seven days.

The FCS also aggregates seven-day consumption across standardized food categories. However, the FCS weights food group consumption by both days of intake and a predetermined set of weights designed to reflect the heterogeneous dietary quality of each food group (Weismann *et al* 2009). The FCS is calculated by summing the number of days the eight different food groups were consumed by a household during the seven days before the survey, multiplying those frequencies by the appropriate weights, and summing across categories.[26]

We also collected information on the consumption of food by children aged 6-24 months. The Child Diet Score (CDS) is the frequency of the food groups consumed by a child aged 6-24 months on a 24 hour recall period (26 food groups). If the child consumes 4 groups or more the child is classified as having a sufficiently diverse diet.

Three considerations motivate our use of these outcome variables. First, the FCS is considered a "core" indicator by WFP (WFP 2008) and the success of interventions such as the one evaluated here is measured by improvements in this outcome. Second, validation studies show that the FCS is highly correlated with measures of food security that draw on more detailed food consumption data such as per capita caloric availability derived from seven day recall of food quantities consumed (Wiesmann *et al* 2009). Third, logistical constraints meant that we needed to keep the survey instrument as simple as possible. It was simply impractical to include a more detailed consumption module.

[26] Weights are: staples, 2; pulses, 3; vegetables, 1; fruit, 1; meat, poultry, fish and eggs, 4; dairy 4; sugars, 0.5; oils and fats, 0.5

Table 6.1: Food security measures and coping strategies by survey round and transfer modality

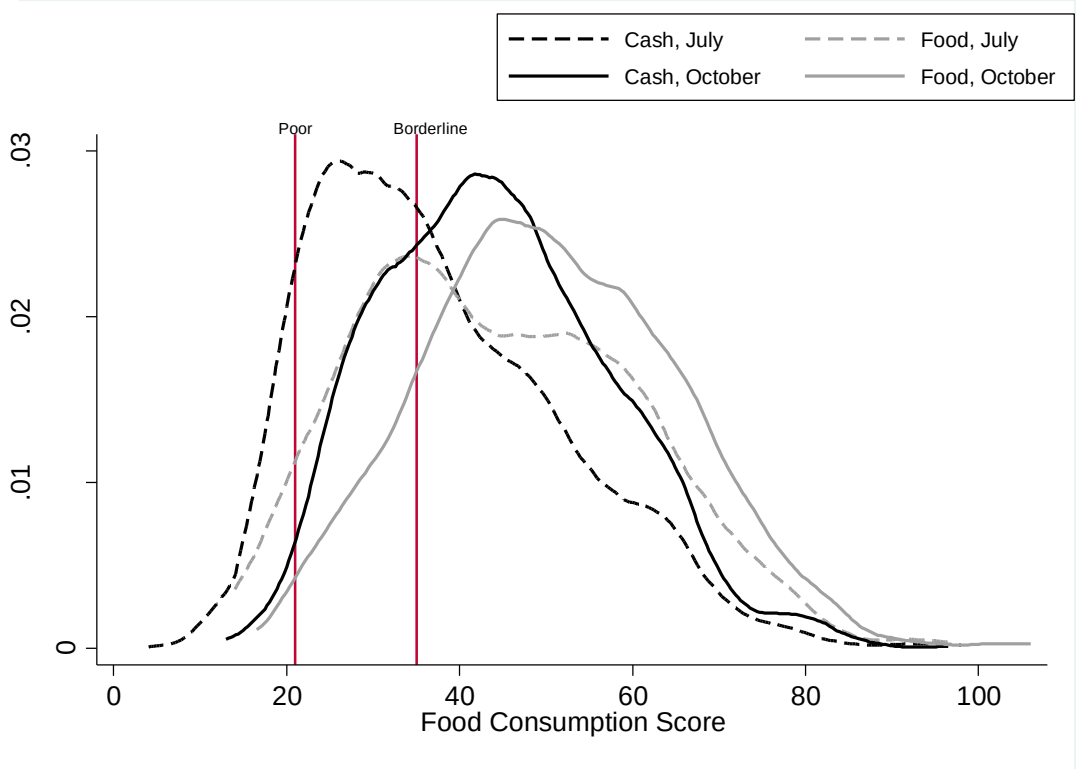
	July			October		
	Cash villages	**Food villages**	**P-value of t-test**	**Cash villages**	**Food villages**	**P-value of t-test**
HDDI	7.8	8.7	0.00	8.9	9.6	0.00
HDDS	5.2	5.6	0.000	5.9	6.1	0.012
FCS (average)	37.6	44.4	0.00	44.4	50.6	0.00
FCS categories (percentage of households)						
Poor	31.4	17.1	0.00	11.4	6.6	0.00
Borderline	34.9	31.6	0.09	34.7	23.4	0.00
Acceptable	33.6	51.3	0.00	53.9	70	0.00
CDS (average)	2.2	2.4	0.017	2.4	2.8	0.000
Children with diverse diet (percentage)	13.8	19	0.030	18.5	29.2	0.001
Food Groups Consumed (percentage of HHs)						
Cereals	100.0	100.0	.	100.0	100.0	.
Tubers	30.7	20.9	0.00	32.7	28.3	0.03
Vegetables	94.2	94.3	0.95	99.8	100	0.19
Fruit	8.6	14.2	0.00	5.9	11.0	0.00
Meat	22.7	30.4	0.00	28.8	34.5	0.00
Eggs	2.5	2.3	0.79	1.3	1.2	0.82
Fish	2.8	4.9	0.01	3.9	5.2	0.13
Pulses	76.5	85.3	0.00	96.0	99.1	0.00
Dairy	55.8	61.1	0.01	73.8	68.9	0.01
Oils	80.3	94.5	0.00	87.3	96.6	0.00
Sugars	48.0	54.5	0.00	60.2	60.2	0.99
Coping strategy index (Average)	7.3	3.1	0.00	1.0	0.6	0.02
Individual Coping Strategies (percentage of HHs)						
Relied on less preferred foods (w=1)*	28.8	18.6	0.00	6.7	6.0	0.51
Borrowed food from relatives, neighbors or friends (w=2)	18.9	8.5	0.00	6.3	5.4	0.40
Purchased food on credit (w=2)	17.4	8.5	0.00	5.1	3.2	0.03
Consumed more than usual of shortage food (w=4)	9.8	3.2	0.00	0.4	0.0	0.04
Consumed seed stock (w=3)	11.0	7.1	0.00	1.5	0.5	0.02
Had to beg (w=4)	1.8	0.7	0.03	0.1	0.3	0.25
Reduced portion sizes for adults (w=2)	16.7	6.6	0.00	2.5	0.6	0.00
Reduced portion sizes for children (w=1)	10.5	3.9	0.00	1.4	1.1	0.54
Had to reduce number of meals per day (w=2)	14.3	5.9	0.00	2.2	0.6	0.00
Had entire days without eating (w=4))	6.2	1.7	0.00	0.4	0.3	0.60
Had to cancel debt repayments to buy food	13.4	6.4	0.00	1.9	1.3	0.25
Number of households	*1198*	*1070*		*1179*	*1030*	

Table 6.1 describes these outcomes variables by both round and modality. The DDI shows us that in July 2011 households consumed on average 8.2 foods out of the list of 25 items, and in October (following the 2011 harvest) on average 9.2. When we compare individual food groups over time, we see increases of five to 15 percentage points in the proportion of households consuming vegetables, oils, pulses, dairy, sugars, tubers and meats. There is no meaningful change in the proportion of households consuming fruit, fish or eggs.

WFP classifies households as having poor food security when the FCS falls below 21, borderline when it lies between 21 and 35, and acceptable if over 35. Loosely, a cut-off of 35 corresponds to daily per capita caloric availability of around 1950 kcal. Food insecurity is widespread in this sample in July 2011; while the full sample average is 40.8, 33 percent of households have borderline food insecurity and 24.7 percent have poor food insecurity. These figures improve significantly in October, with the full sample average FCS up to 47.3, those with borderline down four percentage points to 29 per cent and those with poor down to only 9 per cent. Figure 6.1 shows the density of FCS by transfer modality in July and October, with the rightward shifts in October indicating improvement for both cash and food households. Table 6.1 shows that households in localities that were randomized to receive food have higher mean levels of DDI and FCS.

When it comes to the food consumption of children aged 6-24 months, the vast majority of children's diets are monotonous and poor. However, children in food villages have slightly higher CDS both in July and October, and a larger share has a diversified diet.

Figure 6.1: Density function of FCS by transfer modality



We also consider a second measure of food security, household coping strategies. These actions taken by individuals or households who, under stress, restrict expenditures or generate additional resources so as to acquire basic consumption goods (food, shelter) while protecting existing asset holdings. As Devereux and others have stressed (e.g. Devereux, 1993), these exist along a continuum from those that involve relatively modest shifts in consumption patterns to more extreme behaviors such as going without food for a full day. The household survey instrument contained a set of questions on household coping strategies. We look in turn at a range of food-related coping strategies, such as not having to borrow or beg for the means to purchase food, consuming undesirable foods, or reducing portion sizes or the number of meals. We then construct a Coping Strategies Index (CSI) following Maxwell and Caldwell (2008), as an aggregate measure of food security. Each strategy is given a frequency score depending on the number of times it was used and a weight reflecting its severity. There is significant improvement in the coping strategies index over the course of the second round of intervention between July and October, from an average of 5.4 to an average of only 0.8. There are significant differences in both periods between cash and food households, but this gap closes between July and October.

We hypothesized that beneficiaries might use their transfers to buy food in bulk. Since the notion of a "bulk" purchase is somewhat subjective, in both survey rounds we asked this in an open ended fashion. For example, in the July survey this was phrased as "*Depuis avril 2011, avez-vous acheté des graines en plus grande quantité que vos achats de grains habituels*? ("Since April 2011, have you purchased grains in larger quantities than you usually purchase?") In July, 504 out of 2,263 households (22.2 percent) indicated that they had made such a purchase, 85 percent of whom were households in villages randomly assigned to

receive cash. We then asked the cash value of such purchases. We also examined non-food expenditures across a range of categories. There are some differences between cash and food households, as well as between periods, but most are small in magnitude (Table 6.2). Cash households spend more for example on wages, veterinary products, and seeds, in both July and October, while food households spend somewhat more on a few other items. Cash households do however spend significantly more on average on bulk grains; they are nearly 30 percentage points more likely to invest in 'larger quantities of grain than usual,' and spend larger sums, in both periods.

Table 6.2: Selected household expenditures by survey round and transfer modality

	July			October		
	Cash villages	Food villages	P-value of t-test	Cash villages	Food villages	P-value of t-test
Bulk Grain Purchases						
Household has purchased larger quantities of grain than usual, prior 3 mos. (percentage)	36.0	7	0	32	2	0
Average monthly purchase of lumpy grain, Apr-Jun / Jul-Sep (FCFA)	3419	644	0	3434	219	0
Non-Food Purchases (FCFA)						
Total spending, past 3 months (all households)	27349	30742	0.07	25981	27372	0.39
Firewood, charcoal/ Oil, gas, batteries/ Fuel, lubricants	518	707	0.00	746	948	0.24
Bodycare (soap, perfumes, braids)	1807	1926	0.13	1818	1899	0.30
Communication/transports	2525	3294	0.27	2576	3153	0.24
Wages, veterinary products and seeds	4413	3534	0.01	3635	2553	0.02
Health	5272	5185	0.89	5242	5595	0.51
Education	1329	975	0.05	333	234	0.20
Clothing, footwear	5346	6762	0.00	7757	8466	0.06
Ceremonials, funerals, festivities	6591	9454	0.00	5819	7007	0.07
Construction, repair, housing	2289	2000	0.39	1013	860	0.45
Number of households	*1198*	*1070*		*1179*	*1030*	

6.2 Results, food security

Table 6.3 shows the impact of residing in a village whose worksite was randomized to receive food transfers on the DDI, DDS, FCS and whether the FCS was above the WFP cut-off for a minimally acceptable diet.

We begin with the DDS. This is the coarsest measure of household food security and there is no impact of food transfers, relative to cash, on this outcome. However, there is a small, positive impact of being in a village receiving food on the DDI, an additional 0.36 food items in July and 0.54 items in October. But these magnitudes are relatively small, corresponding to increases of 4.9 and 6.7 percent respectively. By contrast, there are large, positive and statistically significant impacts of the receipt of food on the FCS. After controlling for household and village characteristics, households in localities receiving food have an FCS on average 3.9 points higher than cash households in July and 4.6 points higher in October, relative to an over-all mean FCS in July of 40.8. The likelihood of having an acceptable food consumption score is 10.9 percentage points higher for food households in July and 12.1 percentage points higher in October.

Table 6.3: Impact of food transfers, relative to cash, on food security outcomes by survey round

Food Security Outcome	July	October
Household Dietary Diversity Score	0.131	-0.008
	(0.105)	(0.092)
Dietary Diversity Index (DDI)	0.356*	0.544**
	(0.207)	(0.229)
Food Consumption Score (FCS)	3.923***	4.647***
	(1.424)	(1.139)
Household has FCS above WFP cut-off	0.109**	0.121***
	(0.043)	(0.041)

Notes: Controls included but not reported are: age, sex, education and ethnicity of household head; household size; asset score; whether household is located in pastoral zone; infrastructure, whether village has market, health clinic, mobile phone coverage; distance to main road; livestock prices; change in millet price during period; millet price at end of period; and commune fixed effects. Standard errors, shown in parentheses, are calculated accounting for clustering at the worksite level. *, significant at the 10% level; **, significant at the 5% level; ***, significant at the 1% level. Sample sizes are 2256 for July round and 2187 for October round. Marginal effects are reported where the outcome is dichotomous.

Table 6.4 reports the impact of access to food transfers on the likelihood and frequency of consumption of selected food groups in the seven days prior to the survey. We find that relative to households receiving cash, households in villages randomly assigned to receive food consumed more of the items given to them in the food basket: cereals, pulses and oil. They also increased the frequency of their consumption of these items: increasing their consumption of oils by one day and pulses by 0.6 days. By contrast, their consumption of cheap, starchy calories from tubers declines. There is no differential effect on the frequency of consumption of meat, dairy, fruit or vegetables. This is consistent with information food recipients provided to us. Only 5 percent of food recipients reported that they sold some of the food, and 13 percent that they exchanged some of the payment for other food or non-food items. Just 1.2 percent of all food received was sold and only 3.7 percent exchanged.

Table 6.4: Marginal effects of food transfers, relative to cash, on consumption of selected food groups by survey round

	In the last seven days			
	Were items in this food group consumed		Number of days items in this food group were consumed	
Food Group	July	October	July	October
Cereals	-	-	0.093*	0.109***
			(0.051)	(0.035)
Pulses	0.064**	0.021	0.638**	0.820***
	(0.032)	(0.013)	(0.314)	(0.168)
Oils	0.106***	0.042**	0.959***	1.010***
	(0.033)	(0.017)	(0.258)	(0.186)
Tubers	-0.080***	-0.040	-0.301***	-0.106
	(0.026)	(0.030)	(0.082)	(0.069)
Meat	0.036	-0.012	0.072	0.001
	(0.031)	(0.030)	(0.098)	(0.073)
Dairy	0.013	-0.067**	0.015	-0.005
	(0.035)	(0.027)	(0.207)	(0.175)
Vegetables	-	-	0.051	0.018
			(0.112)	(0.048)
Fruits	-0.034	0.046	-0.052	0.055
	(0.037)	(0.030)	(0.107)	(0.042)
Sugar	0.030	0.006	0.008	0.197
	(0.031)	(0.026)	(0.176)	(0.138)

Notes: Consumption of items estimated using a probit. Number of days consumed estimated using a Poission model. Results are reported as marginal effects. Also see Table 6.3 notes.

Table 6.5: Marginal effects of food transfers, relative to cash, on purchase of large quantities of grain

	Did household make purchase		Expenditure on this item	
	July	October	July	Oct
Purchase of grains in bulk	-0.273***	-0.400***	-14289.4***	-25015.1***
	(0.020)	(0.034)	(1570.8)	(432.0)

Notes: Purchase of items estimated using a probit. Expenditures estimated using a tobit. Results are reported as marginal effects. Also see Table 6.3 notes.

Table 6.5 shows the results of estimating our single difference equations for the July and October survey rounds where the dependent variables are the likelihood of making a large grain purchase and the value of this purchase. In the three months prior to the July(October) survey, households in food localities were 27(40) percentage points less likely to make these purchases relative to households in cash localities. The marginal impact was a reduction in the value of such purchases of 14,289 FCFA in July and 25,015 FCFA in October. In other words, it appears that relative to households in food localities, households receiving cash used a significant proportion of their transfers to purchase the cheapest form of calories available.

One reason lies in the sharply seasonal nature of grain prices in this region. Agriculture production is characterized by volatile conditions and one fairly short growing season. The climate is hot and dry year round, but hottest in May, right before the brief but at times intense rainy season of June to August. Field preparation may start as early as April but peaks between July and September, the pre-harvest period known as the *soudure* or hungry season. Millet, the dominant food produced and consumed throughout Niger, is surplus in production throughout much of the southern part of the country, especially Zinder, where millet is sourced for much of the country. Niger often produces a deficit, however, and imports millet from Nigeria, Benin, and Burkina Faso during the hungry season. The seasonality of production patterns and trade flows leads to inter-seasonal fluctuations in the prices of key staple commodities in Zinder.

Figure 6.2a: Average longterm (2000-2010) grain prices, Zinder

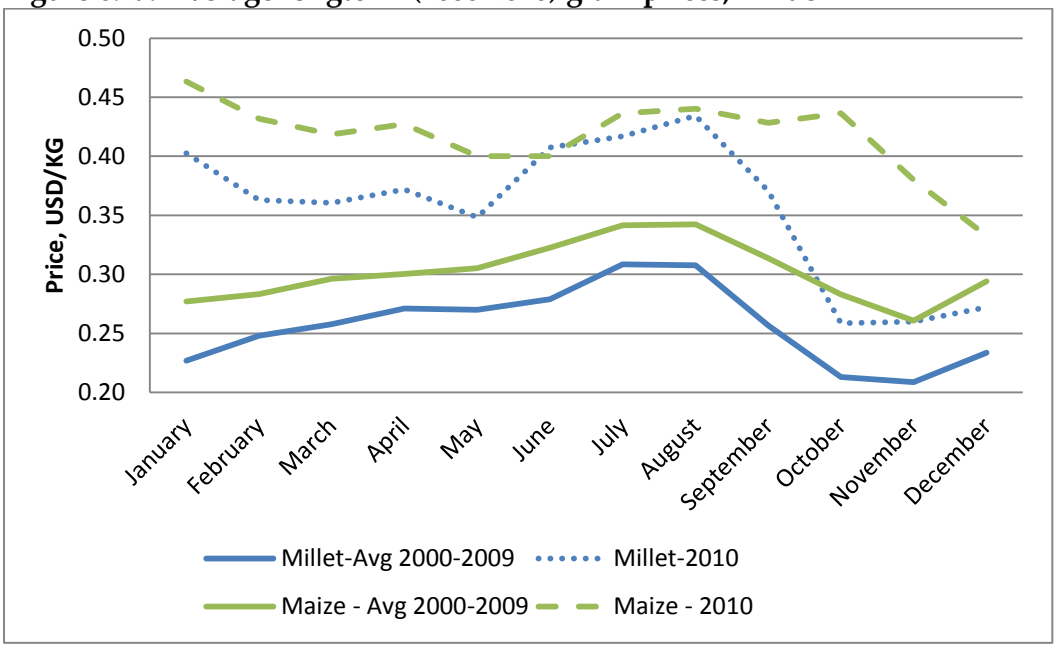
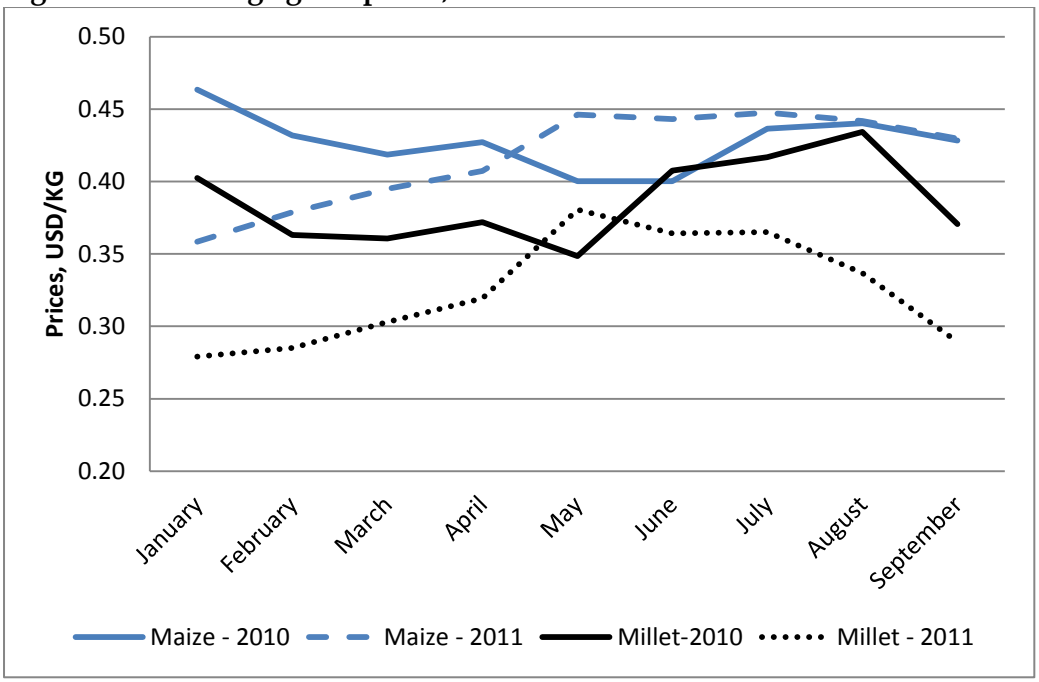


Figure 6.2b: Average grain prices, 2010 and 2011



This seasonality, as is shown in Figures 6.2a and 6.2b, provides clues as to why we may be observing these bulk purchases of grains by households in cash villages. Figure 6.2a shows that historically grain prices in the survey area, both millet and maize, rise between January and August. They fall sharply during the harvest period before starting to rise again in November. Figure 6.2a also shows that this pattern was somewhat different in the year prior to the intervention. Not only were grain prices significantly above historical averages, millet prices rose faster than the historical average. Figure 6.2b shows that in the four months prior to the start of the intervention, both millet and maize prices were again rising, with April 2011 prices already equal to or higher than the highest price typically observed during the peak of the hungry season. Given this historical experience, it is understandable that may

cash households may have felt compelled to buy large grain quantities rather than risk exposure to uncertain food price changes.

6.3 Coping strategies and non-food expenditures

Table 6.6 examines the coping strategy index (CSI) and individual coping strategies used by households to acquire food. Recall that the higher the CSI, the more severe the coping strategies used. Households in food localities have a lower CSI than cash households in July and October. In July, food households were less likely to report that they consumed less preferred foods, were less likely to report that they reduce portion sizes served to children or that household members went to be hungry. While the marginal effects look small, they are relatively large compared to the mean values reported in Table 3. However, these effects on more severe coping strategies are less marked in October as the harvest period begins.

Table 6.6: Impact of food transfers, relative to cash, on coping strategies by survey round

	July	October
Coping Strategies Index	-3.708*	-3.168***
	(1.916)	(0.411)
Selected coping strategies		
Relied on less preferred foods	-0.039*	0.024
	(0.022)	(0.020)
Borrowed food from relatives, neighbors or friends	-0.082***	-0.022
	(0.024)	(0.021)
Purchased food on credit	-0.058***	-0.027
	(0.018)	(0.019)
Had to rely on aid from outside the household	0.003	0.030
	(0.015)	(0.020)
Had to cancel debt repayments	-0.038**	0.057***
	(0.017)	(0.009)
Consumed seed stock	-0.006	0.052
	(0.020)	(0.036)
Had to ask other households for food to feed the children	-0.007	0.002
	(0.017)	(0.011)
Reduced portion sizes for adults	-0.025	-0.046***
	(0.025)	(0.014)
Reduced portion sizes for children	-0.038**	-0.023
	(0.018)	(0.016)
Had to reduce number of meals per day	-0.025	-0.036**
	(0.024)	(0.015)
Had entire days without eating	-0.030*	0.007
	(0.016)	(0.010)
Had to go to bed hungry	-0.023*	0.005
	(0.013)	(0.010)

Notes: See Table 6.3.

We considered whether households in food and cash villages had different patterns of expenditures on non-food items (Table 6.7). Across all items, the marginal impact of being in a food village is to raise monthly expenditures on all non-food items by 1874 FCFA in July. This is equivalent to about eight percent of the value of the monthly transfer. There is no statistically significant impact on all non-food items in October. Across the individual items, it is difficult to discern consistent patterns. Only eight of the 18 coefficients are statistically significant at the 10 percent level or higher and the magnitude of two of these (firewood and other fuels; soap, perfumes and hair products) is small, less than 500 FCFA. The most noteworthy finding is that households in cash villages spent more on agricultural inputs in both the lead up and during the main cropping season and the magnitude of this effect especially in October (5819 FCFA or just over 20 percent of the monthly transfer) was large.

Also, households in cash villages spent some of their transfers on repairing their dwellings in the three months prior to the July survey, in advance of the rains.

Table 6.7: Marginal effects of food transfers, relative to cash, on non-food expenditures

	Did household make purchase	Expenditure on this item	Did household make purchase	Expenditure on this item
	July	October	July	Oct
Total monthly non-food expenditures	-	-	1874.7***	-592.0
			(502.0)	(1010.7)
Firewood, charcoal, gas, batteries, lubricants	0.035	-0.087***	245.28	-223.2
	(0.032)	(0.021)	(129.2)	(288.5)
Bodycare (soap, perfumes, braids)	-0.010	-0.002	257.7***	80.2
	(0.008)	(0.008)	(87.4)	(125.2)
Communication and transport	-0.059**	-0.036	-1909.8	-1140.1
	(0.025)	(0.028)	(1818.3)	(1576.6)
Wages, veterinary products and seeds	-0.105***	-0.090***	-1778.8**	-5819.3**
	(0.035)	(0.029)	(816.2)	(2604.0)
Health	-0.056**	-0.049*	547.2	-957.6
	(0.022)	(0.027)	(920.2)	(852.6)
Education	0.081**	-0.025*	3642.1***	-3253.0*
	(0.033)	(0.014)	(253.7)	(1953.9)
Clothing, footwear	-0.025	-0.006	738.2	48.5
	(0.021)	(0.018)	(665.1)	(616.9)
Ceremonials, funerals, feasts	0.028	-0.013	3424.3**	68.3
	(0.028)	(0.026)	(1551.1)	(1125.2)
Construction, repair, housing	-0.034*	0.002	-2870.8*	495.2
	(0.021)	(0.016)	(1686.3)	(403.9)

Notes: Purchase of items estimated using a probit. Expenditures estimated using a tobit. Results are reported as marginal effects. Also see Table 4 notes.

6.4 Additional results

We considered whether there were larger changes over time in households residing in localities assigned to receive food. To do so, we also estimated models of the following form:

$$y_{iwOctober} - y_{iwJuly} = \alpha + \beta X_i + \delta food\ village_i + \varepsilon_{iw} \quad (3)$$

Generally, across the outcomes we consider, δ is not statistically significant when we estimate (3), that is, we do not reject the null hypothesis that changes in outcomes over time are different in food and cash villages. The exception to this are the results for specific coping strategies where δ is negative and significant for a number of the more severe coping strategies such as reducing children's portion sizes and going a whole day without eating.

We looked for evidence of heterogeneous impacts along two dimensions, household wealth and the gender of the household head. Across all outcomes we consider and across

both survey rounds, we do not find any evidence that the interaction terms between gender of head and residing in a village receiving food are statistically significant. Across all outcomes measured in the July round, the interaction terms between wealth (measured in tertiles, quartiles or quintiles) and residing in a village receiving food are not statistically significant. In the October round, households in the lowest quartile and in food villages obtained greater improvements in the FCS measure and were less likely to have poor food security status. Overall, however, we found little evidence of heterogeneous impacts across wealth categories and gender of head.

6.5 Summary

In this chapter, we have used a randomized design to inform assessment of the use of cash and in-kind transfers as a means of improving household food security. With respect to the short term food security objectives of this intervention, the food basket had clear advantages. Households in localities randomized to receive the food basket experienced larger, positive impacts on measures of food security and dietary diversity than those receiving the cash transfer. One reason that the cash recipients had less diverse diets lies in their choice of purchasing grains in bulk, a reflection we perceive of both the extreme poverty found in this area and uncertainty regarding future food prices. While these differences held in both periods, other outcomes showed greater variation by season. Households receiving food resorted to fewer coping strategies, and this effect was more pronounced during the height of the lean season than during the growing season. Food recipients did not trade their transfers to any large extent; less than five percent of food was sold or exchanged for other goods. Households receiving cash spent more money repairing their dwellings during the lean season, prior to the start of the rains, but spent more on agricultural inputs during the growing season. Both food and cash were delivered with the same degree of frequency and timeliness, but the food transfers cost 15 percent more to implement. Finally, note that while food recipients experienced greater food security benefits in the short term, we cannot assess the relative benefits in the long term; the fact that beneficiaries receiving cash spent more on agricultural inputs may mean that these households have higher incomes in the future.

Chapter 7 – Transfers and credit

7.1 Introduction

In many developing countries, informal social safety nets co-exist with more formalized interventions such as this cash and food intervention. These informal safety nets are pervasive in much of west Africa and include both resource sharing across households in the form of cash or goods. Credit is also a component of the informal social safety net. As Udry (1990) writes, the repayment terms of these loans can be remarkably elastic, varying based on the circumstances of the borrower and the lender and depending on these, may morph into transfers that do necessarily need to be repaid. Given their importance, both the July and October survey rounds collected detailed data on informal transfers and credit.

7.2 Informal transfers, redistribution of resources and sharing of assistance

Due to social networks within the villages and between neighboring villages, households tend to redistribute resources and are therefore likely to share some of the assistance that they receive. This aspect was built into the evaluation by asking households if they had made any transfers to other households before the project started, during the two phases of the project and right after the project.

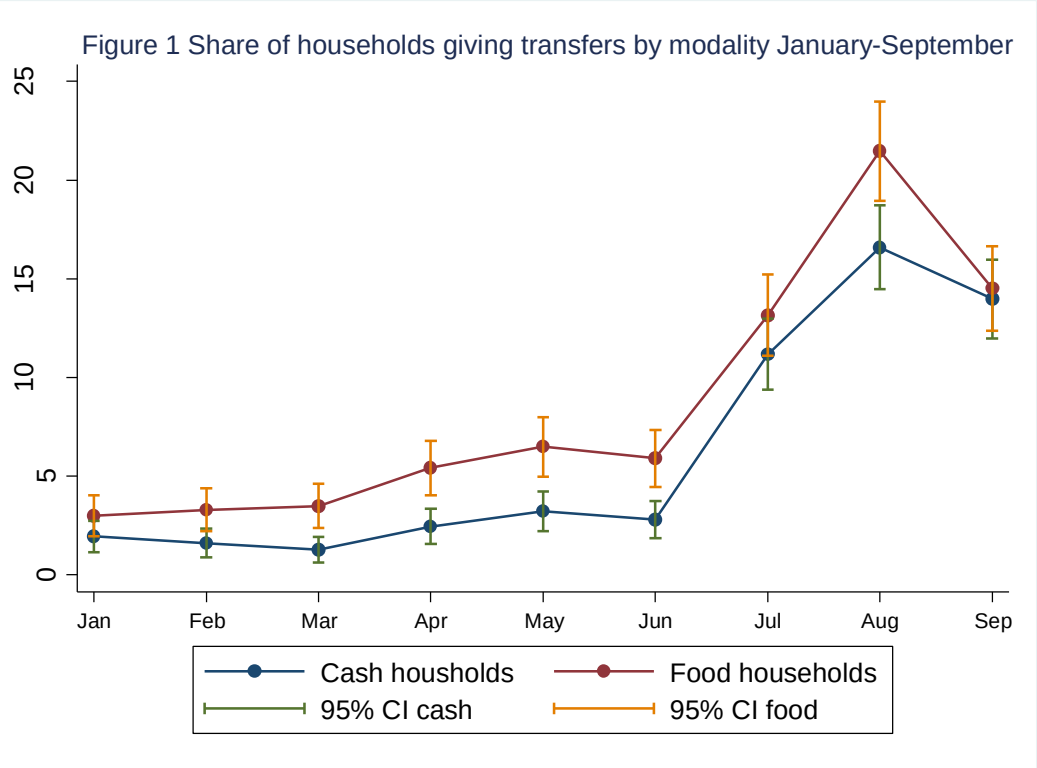
Two sets of variables are used to assess the transfer behavior of households: transfers given to other households and transfers received by other households. In the first survey round, households were inquired about transfers given and received during the months before and during the first phase of the intervention. In the second survey round they were asked about transfers during the second part of the intervention. As a result we have monthly transfer data from January to September during the intervention year. Households were asked to give details about the five most important transfers including their type (detailed list including cereals, other food items, non-food items and cash), the relationship to the person giving or receiving the transfers and the location of this person. Details about the amount of each transfer and its value in cash were also inquired. Households were also asked to indicate who in the household gave or received the transfer and if the households had exchanged transfer with the same person or household before.

Figure 7.1 shows the percentage of households reporting transfers given by month and modality. The share of households giving transfers is higher during the project months April-September[27], and particularly high during the unconditional transfers from June to September. During this period there are three aspects that may have increased the transfers: (1) it was the peak of the lean season so the most vulnerable households are in great need (2) only half of the households within a village received transfers and (3) the assistance form WFP was unconditional (work requirements may make households share less as they feel that they deserve the transfer).

Generally a larger percentage of food households give transfers than cash households. There is some difference between cash and food households already before the intervention but this difference is not statistically significant in January and February. For the project months the difference is statistically significant in April, May, June and August.

[27] Note that the interviews took place from October 6-21 so the whole month of October is not covered.

Figure 7.1: Share of households giving transfers by modality January-September

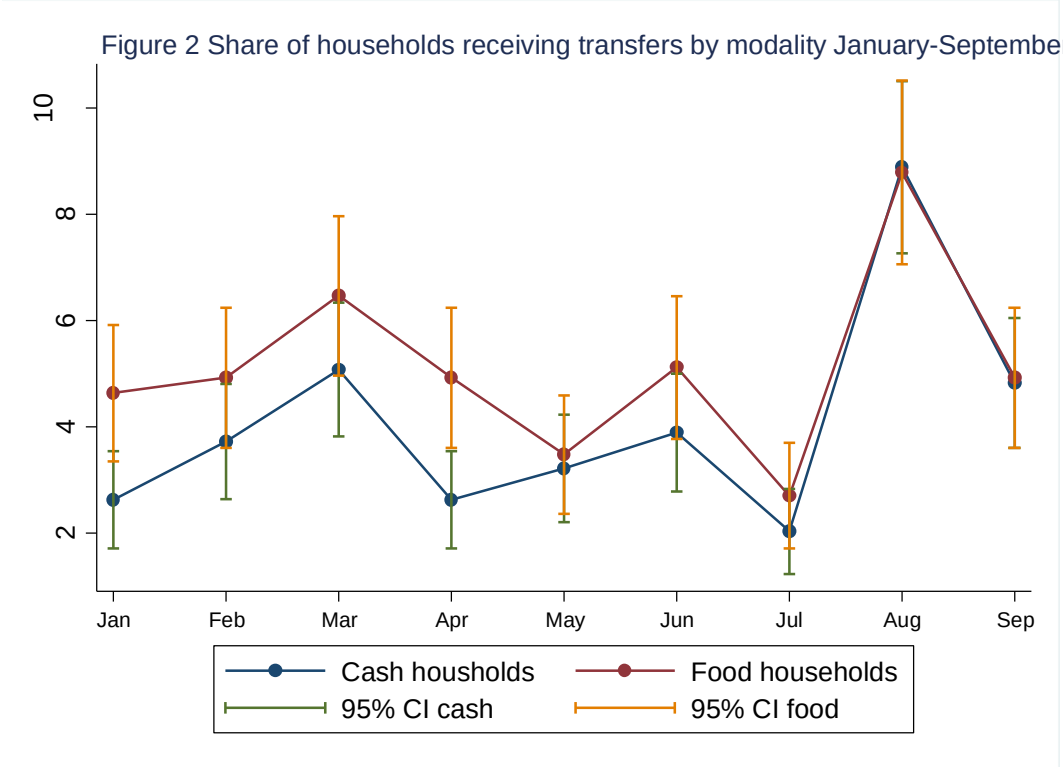


A fairly small share of the households report that they share resources. Only a couple of percent say they share resources before the project and approximately 20 percent at the peak in August. We are able to cross-check this information with other information collected in the survey. In the second survey households were asked if they shared any of the food/cash assistance that they received in July[28]. Of the cash households, 33 percent report that they shared some of their July assistance and as much as 84 percent of the food households. On average cash households shared 8 percent of the assistance they received whereas food households shared 18 percent. Thus, it appears that households tend to underreport their transfers. One reason maybe that people forget to mention that they shared assistance received when responding to a general question about resource sharing. Another is that people probably do not want to give the impression that they have extra resources in order to ensure future assistance.

Figure 7.2 shows the percentage of households reporting transfers *received*. The difference between cash and food households is significant only in April, right after the start of the intervention, when the transfers received by cash households drop more than for food households.

[28] The July transfer was chosen over the ones in August and September. In August the end of Ramadan is celebrated so unusual spending on celebrations are likely. The interviews took place in early October so the September transfer might not have been fully spent at the time of the interview.

Figure 7.2: Share of households receiving transfers by modality January-September



In Table 7.1 in the upper panel we examine who people give transfers to, where the recipients of these transfers live and the type of transfer given by period. We pick up a few trends: before the project begins and during the first phase of the intervention a majority of the resources are shared with relatives. During the second phase when only half of the households are eligible for transfers there is a big increase in the share of transfers given to friends and neighbors, from 21 percent to 47 percent in both cash and food villages. Before the intervention a majority of the recipients (56 percent) of these inter-household transfers live in the same village or in another village in the region (35 percent). During the first phase of the intervention when all households are eligible for transfers, the share of transfers shared within the village goes down to 45 percent while the share to other villages in the region goes up to 48 percent. In the second phase of the project, however, the share going to people within the same village goes up to 78 percent while the share going to other villages is at 20 percent. In other words, the sharing behavior changes due to the intervention but also with the type of intervention.

When it comes to the type of transfers shared, most transfers are in cash before the intervention (76 percent) but changes when the intervention starts. In the first phase 44 percent of the transfers are in cash and in the second phase 40 percent.

Similar trends are uncovered for transfers received in the lower panel of Table 7.1. Before the intervention, most transfers were received from non-resident household members living far away. As the intervention progresses, the share of transfers received from friends or neighbors in the village increases. What is obvious though, when comparing transfers given and received from within the village, is under-reporting of transfers received. Thus, the reporting of transfers given and received are to some extent different types of transfers.

Households mostly report transfers received as remittances from other places in Niger or abroad but under- report transfers received from within the village[29]. This motivates our choice for studying transfers given and received separately rather than studying net transfers.

Table 7.1: Informal transfers given and received by period

	Before project: January-March	First phase: April-June	Second phase: July-September
Transfers given			
Transfer given to			
a non-resident household member	11.5%	13.2%	6.8%
a relative	73.3	62.7	44.8
friend/neighbor	12.1	21.7	47.4
Recipient lives in			
the village	56.3	45.1	78.4
other village in the region	34.5	47.8	19.8
other place in Niger/abroad	9.1	7.1	1.9
Type of transfer			
in-kind	24.2	56.2	60.2
Cash	75.7	43.7	39.8
Number of transfers	*165*	*295*	*1087*
Transfers received			
Transfer received by			
a non-resident household member	57.5	46.6	31.6
a relative	35.8	45.1	37.0
friend/neighbor	5.4	6.5	21.2
Person giving transfer lives in			
the village	10.7	12.3	32.3
other village in the region	14.4	19.5	18.4
other place in Niger/abroad	74.8	68.2	49.3
Type of transfer			
in-kind	33.0	38.3	60.1
Cash	67.0	61.7	39.9
Number of transfers	*318*	*277*	*424*

Source: Household surveys, July, October 2011.

[29] Underreporting of transfers received appears to be fairly common in data on transfers (Cox *et al* 2004).

Table 7.2 reports descriptive statistics of households that give or receive transfers or do not report any transfers at all. The most striking difference in the characteristics of the households is that those both giving and receiving on average are much better off in terms of wealth status, as measured by the asset score and the TLU, than those not reporting any transfers at all.

Table 7.2: Characteristics of households by transfer status

	Giver	Receiver	No transfers
Zone			
Food Transfer Zone	0.55	0.51	0.45
Pastoral	0.59	0.48	0.37
Demographics			
Household Size	7.26	6.89	7.10
Age of HH Head	46	47	48
Female HH Head	0.26	0.39	0.29
HH Head with handicap	0.06	0.09	0.08
HH Head with formal education	0.09	0.07	0.08
HH Head Migrated	0.11	0.17	0.10
Ethnicity, status			
Member of Ethnic Majority	0.90	0.90	0.90
Hausa	0.46	0.49	0.66
Peulh	0.09	0.03	0.05
Kanuri	0.34	0.38	0.22
Touareg	0.10	0.10	0.08
Toubou	0.01	0.00	0.00
Hh head has an official role in village	0.29	0.26	0.28
Father of hh head has an official role in village	0.24	0.26	0.32
Mother of hh head has an official role in village	0.15	0.16	0.26
Wealth			
Score for ownership of durables, April	0.53	0.57	-0.11
TLU, April	1.39	1.18	0.83
Area Cultivated (ha)	5.13	4.97	4.76
Details on transfers			
Transfers given	11148	3975	-
Transfers given, food	2700	894	-
Transfers given, cash	8032	2945	-
Transfers received	6291	19581	-
Transfers received, food	283	1768	-
Transfers received, cash	5487	16097	-
Observations	895	795	5269

Source: Household surveys, July, October 2011.

7.3 Credit

Formal and (in this case, predominantly) informal credit is also an important aspect of the rural safety net. It is common to take out debts, in the form of both cash and food, for food and other needs, particularly among households with insufficient food production and limited cash resources. Receiving transfers is likely to impact the nature of debt behavior and perhaps even access to informal credit. The evaluation considered this, in asking households detailed questions about their debt behavior both before and during the intervention.

The Survey and Variables

All respondents in the first round were asked about debts taken out prior to the invention ("before the beginning of the public works") as well as those initiated since the public works started. During the second round survey, unconditional transfer recipients were asked about debts initiated after the conclusion of the public works ("since the last survey"). In each of these cases, respondents were asked how many different debts were initiated, and then to provide detail on the five most significant of these. These five debts provided the vast majority of all debt initiated. Only two households reported that they had initiated more than five debts prior to the public works, only one household during, and none during the unconditional transfers. The majority (80-82%) reported only one major debt, and less than 1% of households reported all five.

The details provided for each debt included who in the household took out the debt (the household head, his spouse, another man, or another woman), when (month), from where (in the village, a neighboring village, a village outside the region, the capital city, or another specific city), from whom (a family member, neighbor/friend, lender, public or private organization, etc.), the reason for taking out the debt, its form (cash, grain, other food, etc.), its value in cash, and the percentage of the debt still unpaid at the time of the interview. From these details we constructed variables for the initiation of debt, the total number of debts initiated, the total value of the largest five debts initiated, and the value of current outstanding debt (or debt stock), across a range of different debt categories of interest. For example, debts are divided along the lines of their form, such as in cash or in kind (typically in the form of food). We also distinguish debts initiated for food needs versus for other needs and uses. The sources of debts are distinguished both by the provider and his or her location, and in some cases combinations of both, such as sources likely to have more (anyone within the village, or family members in all locations) or less (non-family members from outside of the village) information about the borrower. These variables are constructed both at the household and village levels. For example, we can look at the total numbers of debts initiated by members of the village (across categories), and total, average, and median values of debt, in each period.

Minimal information was gathered about loans given by respondents to other households. The survey asked merely whether or not such loans were granted, that were still outstanding at the beginning of the transfer period. If such debts were granted, they were asked in turn if the value in cash exceeded 1000 or 25,000 FCFA, in food exceed the value of a 50 kg bag of grain, or in the form of an animal exceeded the value of a goat.

Debt Analysis

We begin by examining the change in the frequency and values of debts initiated prior to the intervention relative to during the transfer periods. As shown in Table 7.3, the frequency and amount of debts initiated by all households declined on average during the public works relative to the prior period, but increased again somewhat during the unconditional transfer period. While 55% of all households reported having initiated debts prior to the public works (60% in cash villages and 51% in food villages), only 22% (27% and 17% in cash and food villages, respectively) did so during the public works, and 36% (33% and 40% in cash and food villages, respectively) did so during the unconditional transfers. The likelihood of taking out debts decreased across most debt categories, but there was a fair amount of variation for different categories of debt. Most notably, the percentage of households taking out debt for food needs feel by 29 percentage points (from 47% to 18%) during the public works relative to before the intervention, then rose up by three percentage points during the unconditional transfers. Debts for all other (non-food) needs, however, fell from 11% to 4% during the public works but then rose to 17% of households during the unconditional transfers. While households were always more likely to take out debt from sources within the village than from outside the village, households became more likely to initiate debts from outside of the village, from merchants or lenders, and in cash during the unconditional transfers than during the public works.

Table 7.3: Debts initiated by period, all households

	APRIL	JULY	P-value, rel to April	OCTOBER	P-value, rel to April
Initiated Any Debts (%)	0.55	0.22	0	0.36	0
Debts initiated with family/neighbors (%)	0.34	0.13	0	0.24	0
Debts initiated with merchants/lenders (%)	0.18	0.08	0	0.09	0
Debts initiated from outside the village (%)	0.16	0.05	0	0.1	0
Debts initiated from within village (%)	0.42	0.18	0	0.27	0
Debts initiated for food needs (%)	0.47	0.18	0	0.21	0
Debts initiated for non-food needs (%)	0.11	0.04	0	0.17	0
Debts initiated for productive purposes	0.02	0.01	0	0.03	0.003
Debts initiated in form of food (%)	0.15	0.08	0	0.07	0
Debts initiated from outside of village, in cash (%)	0.13	0.03	0	0.09	0
Debts initiated from outside of village, in food (%)	0.04	0.02	0	0.02	0
Debts initiated from within the village, in cash (%)	0.34	0.13	0	0.23	0
Debts initiated from within the village, in food (%)	0.12	0.06	0	0.05	0
Debts initiated from within the village and/or from family (%)	0.47	0.19	0	0.31	0
Debts initiated from outside of village AND not from family (%)	0.1	0.04	0	0.07	0

Number of Debts, Average per household	1.27	1.27	0.87	1.24	0.179
Number of Debts, Average per village	50.41	8.12	0	12.57	0
Total Value of Debts, average per households (CFA)	31650.88	18544.97	0	20688.45	0
Total Value of Debts, average per village (CFA)	1236788	117608	0	209241.4	0
Number of Households	5668	5668		2209	
Number of Villages	79	79		79	

Source: Household surveys, July, October 2011.

The average number of debts taken out at the household level was not significantly different before and during the interventions, but there were differences at the village level: an average of 50 debts were taken in each village before the public works, but only 8.12 during the public works, and 12.57 during the unconditional transfers. The total value of debt initiated likewise declined, both on average per household and at the village level. Prior to the public works, households reported 31,651 F CFA in debt on average, summing at the village level to an average of over a million CFA (1,236,788) at the village level. During the public works these values were only 18,544 F and 117, 608 F, respectively, and during the unconditional transfers only 20,590 F and 167,910 F, respectively.

Debt behavior was not concentrated in the same households across periods; a good proportion of households took out debt in some periods but not others. 43% initiated debt prior to the public works but not during, and only 9% initiated debt during the public works who had not before. 35% of households, 28% in cash villages and 42% in food villages, didn't take out debts either before or during the public works. Between transfer periods, 12% of households (16% of cash recipients and 7% of food recipients) took out debt during the public works but *not* during the unconditional transfers, and 26% (21% of cash recipients and 31% of food recipients) took out debt during the unconditional transfers but not during the public works. 11% of all households (12% of cash recipients and 9% of food recipients) took out debt in both periods, and 52% (no difference between cash and food recipients) didn't take out debt in either period.

There were several interesting differences in debt behavior between cash and food recipients, during both periods. Table 7.4 shows these differences, both during the public works and during the unconditional transfers. The sources and motives for taking out debt changed between transfer period divergently between cash and food recipients. While, as noted above, all households were less likely to take out debts during the transfers than before, cash recipients were significantly more likely than food recipients (27% versus 17%) to take out debts once the transfers started. The bulk of this difference was in debts for food needs, with 24% of cash recipients still taking out debts for food needs during the public works, relative to only 12% of food recipients. Only 4% of all households took out debt for other needs during the public works. This turned around during the unconditional transfers, with 40% of food recipients taking out debts relative to 33% of cash recipients. Still more cash recipients took out debts for food needs, however (23% versus 19%), and many fewer cash households recipients debt for productive purposes (2% versus 5%).

Table 7.4: Debt Initiation and Values by form of transfer (during each transfer period)

During Public Works (July)						
	Initiated Debt			Avg. Value Initiated		
	Cash	Food	P-Value	Cash	Food	P-Value
All Debts	27%	17%	0	19733	16352	0.103
Debts in the form of food	10%	5%	0	7286	22500	0.092
Debts with family/neighbors	17%	10%	0	16331	15428	0.663
Debts with merchants/lenders	10%	6%	0.001	21448	15982	0.183
Debts from outside of the village	7%	3%	0	26323	21621	0.5
Debts from outside of the village, in cash	4%	2%	0.001	29404	21488	0.437
Debts from outside of the village, as food	3%	1%	0.001	20014	21900	0.752
Debts from within the village	21%	14%	0	16770	15018	0.313
Debts from within the village, in cash	15%	10%	0.001	15369	15786	0.825
Debts from within the village, in food	8%	4%	0.001	14784	11201	0.207
Debts from within the village and/or from family	23%	15%	0	17048	15128	0.243
Debts from oustide of the village AND not from family	5%	2%	0	30327	23545	0.486
Debts for food needs	24%	12%	0	18524	13879	0.034
Debts for productive purposes	1%	1%	0.618	27450	23143	0.62
Number of Households	2268					
Debts Initiated During the Unconditional Transfers (October)						
	Initiated Debt			Avg. Value Initiated		
	Cash	Food	P-Value	Cash	Food	P-Value
All Debts	33%	40%	0	20502	20864	0.834
Debts in the form of food	8%	5%	0.014	10882	10400	0.914
Debts with family/neighbors	22%	27%	0.002	18084	18336	0.899
Debts with merchants/lenders	8%	10%	0.023	21345	18980	0.412
Debts from outside of the village	11%	9%	0.087	24094	24984	0.799
Debts from outside of the village, in cash	9%	8%	0.35	23575	25762	0.584
Debts from outside of the village, as food	3%	1%	0.009	21913	17458	0.291
Debts from within the village	23%	32%	0	17161	18736	0.388
Debts from within the village, in cash	19%	29%	0	17353	18542	0.561
Debts from within the village, in food	5%	4%	0.242	13523	13791	0.933
Debts from within the village and/or from family	27%	35%	0	18219	19664	0.442
Debts from oustide of the village AND not from family	7%	6%	0.504	25729	23265	0.454
Debts for food needs	23%	19%	0.039	19279	17040	0.132
Debts for productive purposes	2%	5%	0	19545	31455	0.356
Number of Households	2209					

Source: Household surveys, July, October 2011.

Among indebted households, debt taken out during the public works was higher for cash recipients (19,733 F versus 16,352 F for food recipients), but during

the unconditional transfers became higher for food recipients (20,864 F versus 20,502 F for cash recipients). The values of debt vary by the purpose and source of debt. The value of debt initiated for food needs was 17,128 F (18,524 F and 13,879 F for cash and food recipients, respectively) on average during the public works, while debts for productive purposes were 25,677 F (27,450 F and 23,143 F for cash and food recipients, respectively). The value of debts taken out in the form of food during the public works was the lowest on average, only 10,667 F, with a significant difference between that for cash recipients (7,286 F) and food recipients (22,500 F). These value differences were very similar during the unconditional transfers.

Lastly, we consider the extent to which households make loans (Table 7.5). Households were asked if they had made loans to other households that were still unpaid at the beginning of the Public Works (July) / Unconditional Transfers (October) periods. The sub-questions are the percentages of each form of loan among *those who said they made loans.* We see on the whole that only 10-11% of households made any loans. Prior to the public works, food recipients were more likely to have made loans generally by a small but statistically significant margin (12% versus 10%). These loans were more likely to be as a large amount of food. During the public works, cash and food recipients were equally likely to make loans, but of those made cash recipients were more likely to loan small sums of cash and food recipients were more likely to loan livestock.

Table 7.5: Loans to other households

	Prior to Public Works				Prior to Unconditional Transfers			
	Mean	Cash	Food	P-value	Mean	Cash	Food	P-value
Made a loan to another HH	11%	10%	12%	0.017	10%	9%	10%	0.163
Loan in cash, >= 1,000 CFA	65%	65%	65%	0.974	74%	80%	69%	0.092
Loan in cash, >= 25,000 CFA	29%	31%	27%	0.256	16%	15%	17%	0.676
Loan in food, >= 50kg of grain	19%	16%	21%	0.097	8%	9%	6%	0.538
Loan of livestock, >= a goat	9%	9%	10%	0.492	3%	1%	6%	0.064
Number of observations	5668				2209			

Source: Household surveys, July, October 2011.

References

Cunha, J. M., G. De Giorgi, and S. Jayachandran (2011). The Price Effects of Cash Versus In-Kind Transfers. NBER Working Paper No. 17456.

Department for International Development (2011). Cash Transfers – Literature Review. Policy Division, Department for International Development.

Devereux, S. (1993). Goats before Ploughs: Dilemmas of Household Response Sequencing During Food Shortages. *IDS Bulletin*, 24(4): 52-59.

Eilerts, G. (2006). Niger 2005: Not a Famine, But Something Much Worse. *Humanitarian Exchange Magazine*, Issue 33, April.

Famine Early Warning System (2010). Rapport Spécial : Fonctionnement des marchés et sécurité alimentaire en 2010 dans le département de Zinder.

Fiszbein, A., N. Shady, F.H.G. Ferreira, M. Grosh, N. Keleher, P. Olinto and E. Skoufias (2009). *Conditional Cash Transfers: Reducing Present and Future Poverty.* Washington, DC: World Bank.

Gentilini, U. (2007). Cash and Food Transfers: A Primer. Occasional Papers No. 18. World Food Programme.

Grober-Tanner, C. (2006). Understanding Nutrition Data and the Causes of Malnutrition in Niger: A Special Report by the Famine Early Warning Systems Network. USAID/FEWS.

Harvey, P. (2007). Cash-based Responses in Emergencies. HPG Report 24. Overseas Development Institute.

Hidrobo, M., J. Hoddinott, A. Peterman, A. Margolies, and V. Moreira (2012). Cash, Food, or Vouchers? Evidence from a Randomized Experiment in Northern Ecuador. Mimeo. International Food Policy Research Institute.

Hoddinott, J. and Y. Yohannes (2002). Dietary Diversity as a Food Security Indicator. FCND Discussion Paper No. 136. Food Consumption and Nutrition Division, International Food Policy Research Institute.

Kennedy, G., T. Ballard and M.C. Dop (2011). Guidelines for Measuring Household and Individual Dietary Diversity. Nutritional and Consumer Protection Division, Food and Agriculture Organization.

Lentz, E.C., S. Passarelli, and C.B. Barrett, (forthcoming). The Timeliness and Cost Effectiveness of the Local and Regional Procurement of Food Aid. *World Development*.

Margolies, A. and J. Hoddinott (2011). Mapping the Impacts of Food Aid – Current Knowledge and Future Directions. WIDER Working Paper 2012/34. World Institute for Development Economics Research.

Maxwell, D. and R. Caldwell (2008). The Coping Strategies Index: Field Methods Manual. Second Edition.

McKenzie, D. (2012). Beyond Baseline and Follow-up: The Case for More T in Experiments. *Journal of Development Economics* 99 (2012): 210-221.

Reza, A., B. Tomczyk, V. Aguayo, N. Zagré, K. Goumbi, C. Blanton, and L. Talley (2008). Retrospective Determination of Whether Famine Existed in Niger, 2005: Two State Cluster Survey. *BMJ* 337:a1622.

Sharma, M. (2006). An Assessment of the Effects of the Cash Transfer Pilot project on Household Consumption Patterns in Tsunami-affected Areas of Sri Lanka. International Food Policy Research Institute.

United Nations Development Program (2012). Human Development Index. Available on line at: http://hdr.undp.org/en/statistics/.

Upton, J. and E. Lentz (2011). Expanding the Food Assistance Toolbox. Chapter 5 in Barrett, C.B., A. Binder and J. Steets (Eds). *Uniting on Food Assistance: The Case for Transatlantic Policy Convergence*. London: Routledge.

Wiesmann, D. L. Bassett., T. Benson, and J. Hoddinott (2009). Validation of the World Food Programme's Food Consumption Score and Alternative Indicators of Household Food Security. IFPRI Discussion Paper 00870. International Food Policy Research Institute.

World Food Programme (2012). Integrated Food Aid Information System. Available on line at www.wfp\interfais.org.

World Food Programme (2010). Draft Terms of Reference: EMOP 200170: Saving Lives and Improving Nutrition in Niger. Evaluation and Quality Assurance System, WFP, 5 November 2010.

World Food Programme (2008). Calculation and Use of the Food Consumption Score in Food Security Analysis. Vulnerability Analysis and Mapping Branch, World Food Programme.