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The Impact of Cash and Food Transfers

Evidence from a Randomized Intervention in Niger

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ABSTRACT

There is little rigorous evidence on the comparative impacts of cash and food transfers on food security and food-related outcomes. We assess the relative impacts of receiving cash versus food transfers using a randomized design. Drawing on data collected in eastern Niger, we find that households randomized to receive a food basket experienced larger, positive impacts on measures of food consumption and diet quality than those receiving the cash transfer. Receiving food also reduced the use of a number of coping strategies. These differences held both at the height of the lean season and after the harvest. However, households receiving cash spent more money on agricultural inputs. Less than 5 percent of food was sold or exchanged for other goods. Food and cash were delivered with the same degree of frequency and timeliness, but the food transfers cost 15 percent more to implement.

Keywords: cash and food transfers; food security; Niger; randomized intervention

JEL classification: D04, I38, O12

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1. INTRODUCTION

Interest in providing cash transfers for food assistance has been increasing in recent years. Cash transfers have known advantages relative to food transfers with respect to timeliness of delivery and, in most cases, cost savings (Gentilini 2007; Lentz, Passarelli, and Barrett 2013). The other potential benefits and drawbacks of each form of transfer, across a range of criteria, depend on the context and objectives of the program (Upton and Lentz 2011). It is widely supposed that—as predicted by economic theory—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. There is little *rigorous* evidence, however, on the comparative impacts of cash and food transfers on food security and food-related outcomes. There have been 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). However, as Hidrobo et al. (forthcoming) note, comparisons of those impacts are confounded by differences in program design, the magnitude of the transfer, and the frequency of the transfer.[1]

More recently, a handful of studies have begun to make progress on this issue using carefully designed randomized control trials. In randomized studies of programs in Sri Lanka and Mexico, impacts of cash and food transfers are compared, and although food is inframarginal in both programs, in Sri Lanka food leads to smaller impacts on total food expenditures, and in Mexico food and cash lead to similar impacts (Cunha forthcoming; Sharma 2006; Skoufias, Unar, and González-Cossío 2013). In urban Ecuadorian localities, Hidrobo et al. (forthcoming) find that randomly assigned cash, food, and voucher transfers all lead to improvements in the quantity and quality of food consumed. However, differences emerge in the types of food consumed, with food transfers leading to significantly larger increases in calories consumed and vouchers leading to significantly larger increases in dietary diversity. In a randomized study in the Democratic Republic of Congo, cash and coupons are compared and found to have similar impact on total food expenditures (Aker 2013). However, similar to the studies in Mexico and Sri Lanka, differences across cash and coupons (or food in the case of Mexico and Sri Lanka) emerge with respect to consumption of certain food items. Finally, Aker et al. (2011) examine how the form of cash transfers are delivered—manually or via mobile phone. They find that beneficiaries receiving transfers via mobile phone purchased a more diverse set of goods, had higher diet diversity, and suffered less asset depletion.

This paper contributes to our understanding of the impact of cash and food transfers on food security, in the context of poor rural households in the Zinder region of Niger. In response to government of Niger (GoN) findings of exceptionally high rates of food insecurity in the Zinder region, the World Food Programme (WFP) implemented a large-scale cash and food transfer program over a six-month period, April–September 2011. The primary goal was to improve household food security by facilitating access to food and reinforce the capacity of vulnerable populations to cope with shocks. The program also set out an explicit learning goal, to better understand the differential impacts of cash versus food transfers. As such, the transfers were implemented using a randomized design, allowing for identification of the differences in impacts.

This context and program are uniquely appropriate for such a study. Niger faces frequent food security challenges and, since a crisis of famine proportions in 2005, has become a significant recipient of food assistance (WFP 2012). There are also sharp seasonal dimensions to food insecurity in Niger, and our evaluation design over the extended transfer period allows us to assess whether the impact of food and cash transfers varies by season. Additionally, to date the only studies that benefit from a randomized design to compare the impacts of cash and food transfers on food security outcomes have been fielded in localities that, by developing-country standards, are relatively well off. These—for example, the Ecuador and Sri Lanka studies—show that cash transfers lead to greater dietary diversity. However, work that

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

examines the relationship between income and caloric acquisition finds that both across and within countries, poorer households have higher income–calorie elasticities than better-off households.[2] This suggests that the impacts on dietary diversity that are found in lower-middle- and middle-income countries may not be replicated in localities where income levels are much lower, as in this context.

Consistent with this hypothesis, we find that the impacts of food versus cash transfers on measures of food security do not mirror the results of prior studies. Households in villages randomized to receive the food basket experienced larger, positive impacts on measures of food consumption and diet quality than those receiving the cash transfer. The likelihood of attaining an acceptable food consumption score was 11.8 percentage points higher for food recipients in July and 9.4 percentage points higher in October. Receiving food also reduced the use of a number of food-related coping strategies. By contrast, households randomized to receive cash were more likely to make bulk purchases of grains. Households receiving cash also spent more money on agricultural inputs in both seasons examined. Less than 5 percent of food was sold or exchanged for other goods. Both food and cash were delivered with the same degree of frequency and timeliness, but the food transfers cost 15 percent more to implement.

[2] Examples of this are found in Gibson and Rozelle (2002), Hoddinott and Wiesmann (2010), Skoufias et al. (2011), and Subramanian and Deaton (1996).

2. CONTEXT AND PROGRAM DESIGN

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 (purchasing power parity dollars), 172 of 187 when ranked by life expectancy, and 186 of 187 on the Human Development Index (UNDP 2012). Poverty in Niger is endemic; 65 percent of the population falls below the national poverty line of $1.65 per day,[3] 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.[4] 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 NET 2010). Livelihoods are a mix of sedentarism and agro-pastoralism. 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 percent 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.

Experimental Design

In late 2010, GoN identified the Mirriah *departement* in Zinder as a place where food 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 recipients in this area.[5]

WFP, in cooperation with GoN, identified 126 villages within Mirriah 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 primarily due to the possible difficulty and cost entailed for cash recipients to access sufficient food. 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 complicated or lead to tension, or both, 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. Prior to randomizing, we had information on whether these worksites were located in a sedentary agriculture or agro-pastoralist livelihood zone and the number of households in each worksite. We stratified by livelihood zone (agricultural and agro-pastoral), then

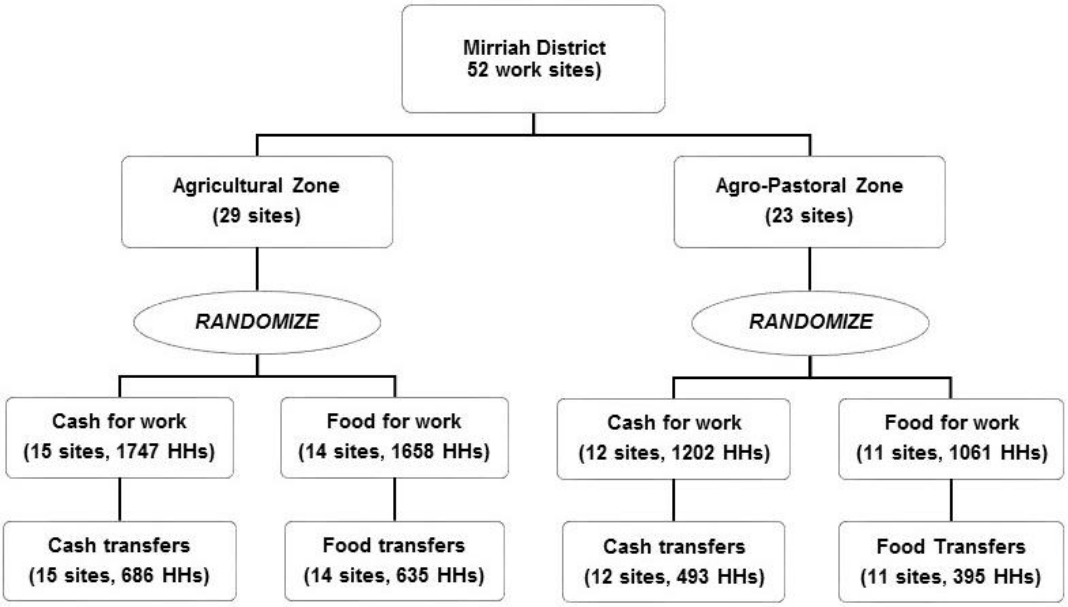
[3] Dollars expressed in terms of purchasing power parity.

[4] Outside of the capital, Niamey, Niger is divided into seven regions that in turn are divided into 36 *departements*, which are further divided into *communes*.

[5] 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.

ranked worksites from smallest to largest in terms of population. We then randomized through a procedure that ensured an approximately equal distribution of villages/worksites by zone and size receiving each transfer (Figure 2.1).

Figure 2.1 Sample sizes, by agroecological zone, transfer modality, and survey round



Source: Authors' calculations.

Intervention

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 days' work on these projects.[6] Most worksites were located near the targeted villages. Although participation in public works was voluntary, almost all households in these villages, including both male- and female-headed households, took part in work activities (98 percent in the food transfer zone and 95 percent in the cash transfer zone). Households worked the same number of days in both food and cash villages. There was no meaningful difference in women's participation in villages receiving cash relative to villages receiving food. The registered beneficiary, who was usually the household head, was paid twice monthly. In cash villages, each beneficiary received 1,000 CFA francs (FCFA) (roughly US$2) per day worked to a maximum of 25,000 FCFA per month. This transfer is relatively large; the total value of the transfer over the six-month period is equivalent to approximately 65 percent of annual gross domestic product per capita (Aker et al. 2011). 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 kilograms (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 2008–2010, the average monthly cost of this food basket to recipients was 24,000 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, making

[6] 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 value of the food basket and the cash transfer roughly equivalent. [7] However, due to the erratic food price environment in Niger, the food prices during the intervention period were somewhat different than estimated based on data from previous years. Based on monthly food price data on millet and cowpeas in Zinder and estimated values for vegetable oil and salt, the value of the monthly cash transfer (excluding transport costs incurred by beneficiaries receiving food transfers) ranged from 85 to 98 percent of the food basket.

The actual transport, storage, and distribution of food and cash payments were contracted out to two Nigerian nongovernmental 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 percent higher for food relative to the cash payments. The monthly transfer value was roughly US$55 and the modality-specific cost was US$12.91 per food transfer and only US$4.00 per cash transfer.[8]

A series of steps were undertaken to ensure that the delivery of food and cash was similar with respect to recipients' experiences and transaction costs. On payment days in villages receiving cash payments, all beneficiaries would assemble at a central point where a mobile ATM would be situated. In most cases this was the village in which public works participants resided, but residents of six villages were required to travel to a nearby village to receive the payment. Food was delivered to each food-recipient village at the beginning of the project and stored in a centrally located secure building that was constructed to ensure that the food would not deteriorate. On payment days, households queued near the granary to receive their payments. The average total time spent walking to the payment site and waiting in line to obtain transfers was the same for food and cash recipients (one hour on average). We also note that nearly all payments were made within each recipient village. Access to markets was relatively similar for cash- versus food-recipient villages (see Table 2.1). All households were roughly equally likely to have a market within their village. For those without a market within the village, which was the majority of all households, food recipients were slightly further (65 versus 57 minutes' walk away), and they were somewhat less likely to have a cereal bank or government point of purchase in or near the village (60 percent versus 78 percent of villages).

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. The work requirement was dropped out of concern that it would interfere with the planting and weeding of crops during the agricultural season. Targeting of unconditional transfer recipients was left in part to the implementing partners, with guidance from WFP on key vulnerability criteria. Implementing partners applied the key criteria using a participatory approach in each community.[9] A locality selected to receive cash (food) used cash (food) for both public works and unconditional transfer payments.

[7] Respondents at the community level indicated that on average it cost 480 FCFA (roughly US$1) to transport 100 kilograms of cereals from the market to home, or otherwise 1,920 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, as reported in household surveys, was only 60 FCFA per trip.

[8] 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 US$6.00 and there were additional costs associated with writing the computer programs needed to dispense payments through the mobile ATMs. Costs such as those 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 local organizations selected to implement this intervention.

[9] 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 households, and so on. We later collected information at the community level on the vulnerability criteria used in each case to assess any systematic differences in the targeting procedure by transfer modality, and found none.

Table 2.1 Pre-intervention characteristics by transfer modality

Characteristics	Worksite level			Household level		
	Cash	Food	Difference (Cash-Food)	Cash	Food	Difference (Cash-Food)
Characteristics known before randomization						
Agro-pastoral zone (stratum variable)	44.4	44.0	0.4			
Household size (average)	7.4	7.2	0.2			
Pre-intervention village-level characteristics						
Land allocation to millet (%, average)	64.2	62.2	2.0			
Land allocation to sorghum (%, average)	17.6	16.8	0.8			
Land allocation to cowpeas (%, average)	11.9	14.0	-2.1			
Land allocation to groundnuts (%, average)	4.6	4.8	-0.2			
Time to reach main road (minutes)	57.6	52.9	4.7			
Market in village	11.1	8.7	2.4			
Time to reach market, if not in village (minutes)	56.2	68.8	-12.6			
Cereal bank in or near village	79.3	52.2	27.1**			
Cellular phone service in village	86.9	96.0	-9.1			
Pre-intervention household-level characteristics						
Polygamous household (percentage)	14.6	17.4	-2.81	14.7	17.1	-2.4
Female household heads (percentage)	23.1	20.9	2.21	21.8	24.5	-2.7
Age of head (average)	47.6	47.9	-0.26	48.4	48.5	-0.1
Heads with formal education (percentage)	6.0	5.6	0.4	7.0	7.5	-0.5
Households belonging to ethnic majority (percentage)	90.7	86.9	3.8	91.0	88.6	2.4
Hausa	54.2	64.7	-10.5	57.4	66.2	-8.7***
Tropical livestock units	1.1	1.8	-0.1	0.8	1.0	-0.2
Asset score (PCA)	-0.15	0.22	-0.37	-0.19	0.24	-0.43***
Cultivates land (%)	96.0	95.7	0.3	96.1	95.4	0.7
Land area cultivated (hectares)	1.7	1.7	0.0	1.7	1.8	-0.1
Sample sizes	27	25		1,198	1,070	

Source: Authors' calculations.

Note: PCA = Principal Component Analysis. P values are from t-tests where the null hypothesis is that the worksite means are equal.

3. DATA

Randomization and Balance

Impact evaluations usually have baseline surveys prior to the start of the intervention, though as McKenzie (2012) notes, that is not always necessary. We had planned a baseline survey, but security considerations in the intervention region at the start of 2011 prevented us from accessing the intervention sites;[10] the first survey was implemented in July, at the conclusion of the public works intervention but before the rollout of the unconditional transfer. All households in all villages were administered a basic questionnaire. A randomly selected sample of 2,268 households that had been targeted for the unconditional transfers was interviewed in greater depth. A follow-up survey was then administered to the sampled households at the conclusion of the unconditional transfers, with 2,209 being successfully traced and interviewed.

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

Table 2.1 provides selected pre-intervention descriptive statistics. Following Bruhn and McKenzie (2009), we focus on those characteristics that we believe a priori are correlated with the food security outcomes that we will consider. Results presented in the first two rows are derived from data collected by WFP in late 2010; the remainder are drawn from the retrospective components of the community and household survey instruments.[11]

We begin with worksite averages, disaggregated by whether the locality was randomized to receive food or cash. They are equally divided across sedentary and agro-pastoralist zones. Households are relatively large in both food and cash villages—7.2 and 7.4 members, respectively. We consider measures of access to food in terms of local production and access to markets. Land allocations are similar in cash and food villages with most land allocated to coarse grains, sorghum or millet, and smaller fractions allocated to cowpeas and groundnuts. About two-thirds of villages are accessible by road. It typically takes just under an 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.

Next, we consider household characteristics that affect food security: demographic, wealth, and food production. About 15 percent of all households are polygamous and about 20 percent are headed by women. Fewer than 10 percent of heads have any formal schooling.[12] All households are comparably poor. Although nearly all households own or rent farmland, and average operating sizes look large, this is not highly productive. Housing quality is poor, and the vast majority of households own little in the way of productive assets or consumer durables. We summarize these in the form of an asset index. Around 30 percent of households report that they own no livestock, and another 12 percent own only chickens or one ruminant. We convert data on livestock holdings to *tropical livestock units*, a measure that weights

[10] These security issues—a dramatically heightened risk of kidnapping of foreign nationals—prevented us from even pilot-testing the survey instruments before June 2011. However, as these were directed at foreigners, not nationals, it was possible for the intervention to start in April 2011.

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

[12] Formal education refers to the completion of at least one year of primary schooling. We exclude attendance at Koranic schools because individuals attending those do not necessarily learn to read and write.

different animals (in this case between 0.02 and 1) based on their body weight. Households own, on average, one tropical livestock unit, roughly the equivalent of a cow and a goat.

We now consider whether the sample is balanced across worksites and across households in those worksites. We note that given k number of covariates over which we assess balancing, the chance of at least one covariate showing a "significant difference" between our two treatment groups at significance level α is $1-(1-\alpha)^k$. As Morgan and Rubin (2012) point out, with a modest number of covariates, say 10, and α set equal to 0.05, there is a 40 percent chance of at least one covariate not balancing. Given this, as Bruhn and McKenzie (2009) note, we should expect in most cases to encounter at least one variable for which we reject the null of no difference between the groups over which we randomize.

At the worksite level, there is no statistically significant difference in household size or residence by agroecological zone, the two characteristics we could observe before randomizing. When we look at a wide range of household demographic, asset, or livelihood characteristics, there are no statistically significant differences between food and cash localities across most variables that we consider; further, the magnitudes of the differences are small. The one exception is the presence of a cereal bank in the village, which is higher in cash villages than in food villages.

At the household level, given the large sample size (2,256 observations in the July survey round), even small deviations from the null are likely to be rejected, as noted by Behrman and Todd (1999) in their assessment of the randomization in the evaluation of Mexico's Progresa conditional cash transfer program. We find all the same only few household characteristics where we reject the null of equality between households residing in localities randomized to receive food and those randomized to receive cash, and the magnitudes of those differences are small (Table 2.1). Households in localities randomized to receive food have similar demographic and land use characteristics as those randomized to receive food. On some measures of wealth, such as livestock, they are comparable, but on others, such as the asset index, households in food localities are wealthier. Also, households receiving food transfers were more likely to be from the largest ethnic group, the Hausa.

Outcomes

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. Although 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 to construct two measures of household food security: the Dietary Diversity Index (DDI) and the Food Consumption Score (FCS). The 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 1 to 25. Hoddinott and Yohannes (2002) show that the DDI correlates well with both household dietary quantity and quality. Next, we aggregate the 25 food categories into eight groups: staples, pulses, vegetables, fruit, meat/fish, milk/dairy, sugar/honey, and oils/fats. The FCS is calculated by summing the number of days each food group was consumed and then multiplying those frequencies by a predetermined set of weights designed to reflect the heterogeneous dietary quality of each food group (Wiesmann et al. 2009).[13]

Three considerations motivate our use of these outcome variables. First, WFP considers the FCS to be a "core" indicator (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.

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

2009). Third, logistical constraints meant that we needed to keep the survey instrument as simple as possible.

Table 3.1 describes these outcome 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 5 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.

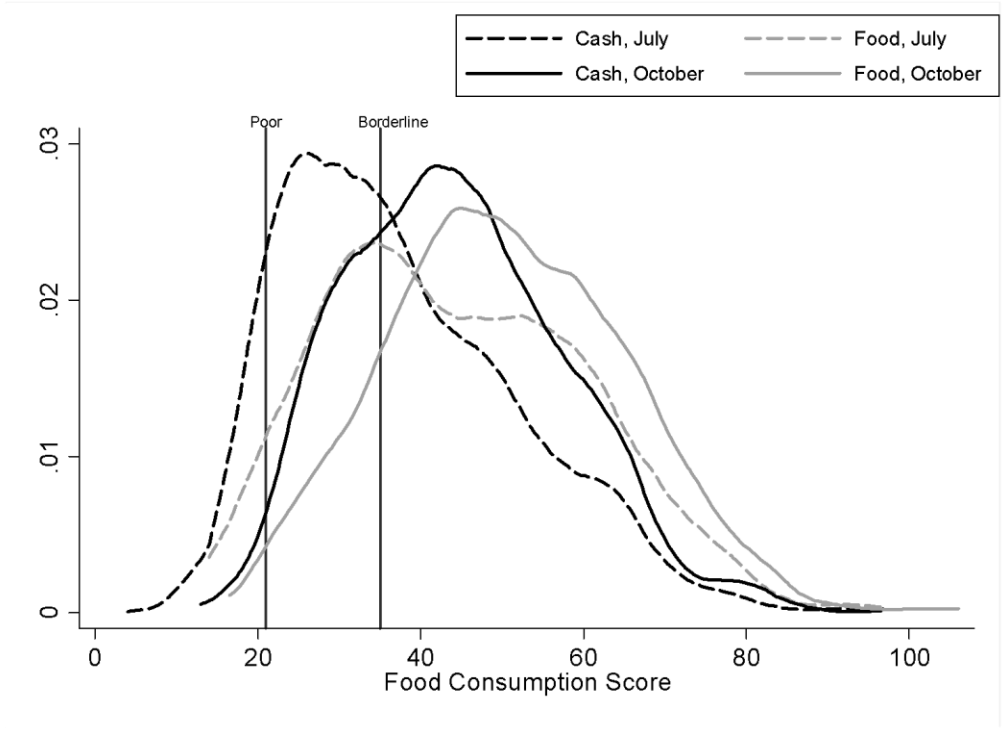
Table 3.1 Food security measures and coping strategies by survey round and transfer modality

Food security measures and coping strategies	July			October		
	Cash villages	Food villages	P value of t-test	Cash villages	Food villages	P value of t-test
Household Dietary Diversity Index	7.8	8.7	0.00	8.9	9.6	0.00
Food consumption score (average)	37.6	44.4	0.00	44.4	50.6	0.00
Food consumption score categories (percentage of HHs)						
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
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
CSI (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

Source: Authors' calculations.
Note: HH = households; CSI = Coping Strategy Index. * "w" refers to severity weight used for calculating the CSI.

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 cutoff of 35 corresponds to daily per capita caloric availability of around 1,950 kilocalories. Food insecurity is widespread in this sample in July 2011; whereas the full sample average is 40.8, 33 percent of households have borderline food insecurity and 24.7 percent have poor food insecurity. Due for the most part to the onset of the harvest and a seasonal increase in food availability and access, these figures improve significantly in October, with the full sample average FCS up to 47.3, those with borderline food security down 4 percentage points to 29 percent, and those with poor food security down to only 9 percent. Figure 3.1 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 3.1 shows that households in localities that were randomized to receive food have higher mean levels of DDI and FCS.

Figure 3.1 Density function of food consumption score by transfer modality



Source: Authors' calculations.

We also consider a second measure of food security, household coping strategies. Those are 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 noted (for example, Devereux 1993), such actions 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. 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 CSI 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 about this in an open-ended fashion. For example, in the July survey we phrased the question 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 which were households in villages randomly assigned to receive cash. We then asked the cash value of such purchases. We also examined nonfood expenditures across a range of categories. There are some differences between cash and food recipients, as well as between periods, but most are small in magnitude (Table 3.2). Cash households spend more, for example, on wages, veterinary products, and seeds, in both July and October, whereas food households spend somewhat more on a few other items. Cash recipients 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 3.2 Household expenditures by survey round and transfer modality

Household expenditures	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 months (percentage)	36.0	7.0	0.00	32.0	2.0	0.00
Average monthly purchase of lumpy grain, April–June / July–September (FCFA)	3,419	644	0.00	3,434	219	0.00
Nonfood purchases (FCFA)						
Total spending, past 3 months (all households)	27,349	30,742	0.07	25,981	27,372	0.39
Firewood, charcoal/oil, gas, batteries/fuel, lubricants	518	707	0.00	746	948	0.24
Body care (soap, perfumes, braids)	1,807	1,926	0.13	1,818	1,899	0.30
Communication/transports	2,525	3,294	0.27	2,576	3,153	0.24
Wages, veterinary products, and seeds	4,413	3,534	0.01	3,635	2,553	0.02
Health	5,272	5,185	0.89	5,242	5,595	0.51
Education	1,329	975	0.05	333	234	0.20
Clothing, footwear	5,346	6,762	0.00	7,757	8,466	0.06
Ceremonials, funerals, festivities	6,591	9,454	0.00	5,819	7,007	0.07
Construction, repair, housing	2,289	2,000	0.39	1,013	860	0.45
Number of households	*1,198*	*1,070*		*1,179*	*1,030*	

Source: Authors' calculations.
Note: FCFA = CFA francs.

4. METHODS

Ideally, we would estimate either a double-difference model or a single-difference model with controls for the stratification variable and baseline outcomes. Because we do not have a baseline survey, however, that is not possible. Instead, following Bruhn and McKenzie (2009), we estimate a single-difference model that contains the treatment variable, the stratification variable, and the pre-intervention characteristics that are correlated with the outcomes we consider and over which we tested the balancing properties of our sample:

$$y_{iw} = \alpha + \beta stratum_{iw} + \delta food\ village_{iw} + \theta X_{iw} + \varepsilon_{iw}, \quad (1)$$

where y_{iw} is the outcome of interest for household i at worksite w, *stratum* is the variable (agroecological zone) over which the randomization was stratified, $food\ village_{iw}$ is a dummy variable equal to 1 if a household lives in a village receiving food (and 0 otherwise), and X_{iw} is a vector of household baseline covariates and village characteristics correlated with the outcomes being considered and over which in Table 2.1 we assessed the balancing properties of our data. 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 allow for the error terms to be correlated by clustering at the worksite (randomization) level. The randomization of the modality ensures that E(*food village*$_i$ ε_{iw}) equals 0 and thus that δ is an unbiased estimate of impact. We estimate equation (1) separately for outcomes measured in July and in October. We use ordinary least squares 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 0. Estimates of δ are transformed into marginal effects where the estimator is nonlinear. Standard errors are calculated accounting for clustering at the unit of randomization.

5. RESULTS

Food Security

Table 5.1 shows the impact of residing in a village whose worksite was randomized to receive food transfers on the DDI and FCS and whether the FCS was above the WFP cutoff for a minimally acceptable diet.

We begin with the DDI. There is a small, positive impact of being in a village receiving food on the DDI—an additional 0.56 food items in July and 0.38 items in October. But those magnitudes are relatively small, corresponding to increases of 7.2 and 4.4 percent, respectively. By contrast, the receipt of food translates to large, positive, and statistically significant impacts 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 those receiving cash in July and 3.5 points higher in October, relative to a mean FCS in July for cash recipients of 37.6. The likelihood of having an acceptable FCS is 11.8 percentage points higher for food recipients in July and 9.4 percentage points higher in October.

To understand what differences in food consumption are driving these DDI and FCS results, we examine the impact of access to food transfers on the likelihood and frequency of consumption of individual food groups in the seven days prior to the survey, as reported in Table 5.2. We find that relative to households receiving cash, households in villages randomly assigned to receive food were more likely to consume the nongrain items given to them in the food basket: pulses and oil. They also increased the frequency of their consumption of these items—increasing their consumption of oils by 1 day and pulses by 0.6–0.7 days. By contrast, their consumption of cheap, starchy calories from tubers declines in July. There is no differential effect on the frequency of consumption of meat or fruit. These results imply that the differences in dietary diversity, as measured by the DDI and FCS, are driven primarily by increased consumption by food recipients of the legumes and oil received in the food basket, relative to cash recipients who consume almost exclusively inexpensive grain. 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 nonfood items. Just 1.2 percent of all food received was sold and only 3.7 percent exchanged.

We now turn to an examination of cash purchases over the transfer period. Table 5.3 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 that purchase. Although the type of grain purchased was not specified, it was most likely to be one of the core local staples, either millet or sorghum. Households that received cash ate few other grains, as reported toward the end of the transfer period; 96 percent (100 percent) ate millet and 60 percent (36 percent) ate sorghum, whereas 17.5 percent (6 percent) ate maize and 4 percent (50 percent) ate rice in the July (October) round. In the three months prior to the July (October) survey, households in food localities were 27 (37) 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 15,377 FCFA in July and 23,756 FCFA in October. In other words, relative to households in food localities, households receiving cash used a significant proportion of their transfers to purchase the cheapest form of calories available.

Table 5.1 Impact of food transfers, relative to cash, on food security outcomes by survey round

	Dietary diversity index		Food consumption score (FCS)		Household has low FCS	
Variables	**July**	**October**	**July**	**October**	**July**	**October**
Household residing in village receiving food transfers	0.563***	0.379*	3.905***	3.532***	0.118***	0.094**
	(0.186)	(0.203)	(1.153)	(1.292)	(0.04)	(0.043)
Household resides in agro-pastoral zone	0.402	1.305***	2.846	8.797***	0.141**	0.320***
	(0.342)	(0.302)	(1.925)	(2.02)	(0.063)	(0.076)
Age of household head	0.000	-0.002	0.081***	0.03	0.002***	0.001**
	(0.004)	(0.004)	(0.024)	(0.022)	(0.001)	(0.001)
Household head is female	-0.261	-0.224*	0.918	-0.149	0.024	-0.016
	(0.163)	(0.119)	(0.561)	(0.606)	(0.019)	(0.021)
Household head has formal schooling	-0.161	0.154	-1.087	-0.718	-0.029	-0.060**
	(0.211)	(0.198)	(1.273)	(1.006)	(0.034)	(0.028)
Household size	-0.079***	-0.055***	-0.514***	-0.292*	-0.010***	-0.007
	(0.023)	(0.017)	(0.148)	(0.151)	(0.004)	(0.005)
Polygamous household	-0.355**	-0.224	-0.186	1.14	-0.055**	-0.012
	(0.163)	(0.161)	(0.973)	(1.146)	(0.026)	(0.035)
Household belongs to ethnic majority in village	-0.12	-0.317	-0.601	-2.293*	0.001	-0.065
	(0.255)	(0.204)	(1.114)	(1.208)	(0.037)	(0.04)
Household belongs to Hausa ethnic group	0.019	0.133	-1.341	-1.567	-0.091***	-0.086**
	(0.19)	(0.169)	(1.042)	(1.036)	(0.035)	(0.034)
Asset ownership index	0.410***	0.220***	1.913***	0.924***	0.046***	0.025***
	(0.053)	(0.034)	(0.272)	(0.174)	(0.007)	(0.005)
Total livestock units owned	0.009	-0.038**	0.292	0.114	0.008	0.001
	(0.035)	(0.016)	(0.217)	(0.198)	(0.006)	(0.004)
Food market is present in village	0.431**	0.486*	0.001	-0.214	-0.025	0.014
	(0.186)	(0.258)	(1.252)	(1.76)	(0.05)	(0.059)
Time to reach food market if not in village	0.001	0.002	0.013	0.003	0.000	0.000
	(0.002)	(0.003)	(0.012)	(0.014)	(0.000)	(0.000)

Table 5.1 Continued

	Dietary diversity index		Food consumption score (FCS)		Household has low FCS	
Variables	**July**	**October**	**July**	**October**	**July**	**October**
Cereal bank in or near village	0.279	-0.118	-3.001**	-4.271***	-0.058	-0.125**
	(0.227)	(0.212)	(1.327)	(1.573)	(0.04)	(0.057)
Village has mobile	-0.113	0.158	-1.133	0.03	0.015	-0.073
	(0.322)	(0.317)	(1.938)	(1.764)	(0.064)	(0.065)
Time to reach main road	-0.015***	-0.012***	-0.063***	-0.036	-0.002**	-0.002**
	(0.004)	(0.004)	(0.022)	(0.025)	(0.001)	(0.001)
% of village land allocated to millet	0.012	-0.024	0.421***	0.106	0.010**	0.005
	(0.023)	(0.024)	(0.125)	(0.135)	(0.004)	(0.004)
% of village land allocated to sorghum	-0.007	-0.023	0.353***	0.119	0.008*	0.003
	(0.024)	(0.026)	(0.122)	(0.136)	(0.004)	(0.004)
% of village land allocated to cowpeas	0.012	0.007	0.399***	0.222)	0.008*	0.007*
	(0.025)	(0.022)	(0.122)	(0.139)	(0.004)	(0.004)
% of village land allocated to peanuts	-0.054	-0.036	0.404*	0.078	0.01	0.004
	(0.038)	(0.049)	(0.209)	(0.219)	(0.006)	(0.007)
R squared	0.328	0.324	0.309	0.221	-	-
Number of observations	2,267	2,208	2,263	2,208	2,263	2,208

Source: Authors' calculations.

Notes: Commune fixed effects are included but not reported. 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. Marginal effects are reported where the outcome is dichotomous.

Table 5.2 Marginal effects of food transfers, relative to cash, on consumption of selected food groups by survey round

Food group	In the last seven days:			
	Were items in this food group consumed?		Number of days items in this food group were consumed	
	July	October	July	October
Cereals	-	-	0.104*	0.093***
			(0.053)	(0.036)
Pulses	0.093***	0.018	0.656**	0.739***
	(0.031)	(0.015)	(0.27)	(0.147)
Oils	0.121***	0.059***	0.983***	0.994***
	(0.034)	(0.02)	(0.274)	(0.194)
Tubers	-0.055*	0.036	-0.220**	-0.072
	(0.032)	(0.032)	(0.084)	(0.074)
Meat	0.031	0.039	0.069	-0.12
	(0.032)	(0.026)	(0.091)	(0.078)
Eggs	-0.008	0.024**	-0.012	0.037
	(0.008)	(0.01)	(0.016)	(.)
Dairy	-0.007	-0.094***	-0.118	-0.134
	(0.043)		(0.230)	(0.215)
Vegetables	-	-	0.037	0.081*
			(0.151)	(0.042)
Fruits	0.032	0.028	0.043	0.035
	(0.038)	(0.024)	(.)	(0.032)
Sugar, sweets	0.053**	0.020	0.050	0.218
	(0.024)	(0.023)	(0.146)	(0.142)

Source: Authors' calculations.

Notes: Each cell represents the impact of being randomized to receive food transfers on the likelihood or frequency of consumption of a particular food group. Consumption of items estimated using a probit. Number of days consumed estimated using a Poisson model. Results are reported as marginal effects. See Table 5.1 and its notes for controls included but not reported here, sample sizes, and construction of standard errors.

Table 5.3 Marginal effects of food transfers, relative to cash, on purchase of large quantities of grain

Outcomes	Did household make purchase?		Expenditure on this item	
	July	October	July	October
Purchase of grains in bulk	-0.265***	-0.368***	-15377.3***	-23756.9***
	(0.021)	(0.036)	(1595.6)	(478.2)

Source: Authors' calculations.

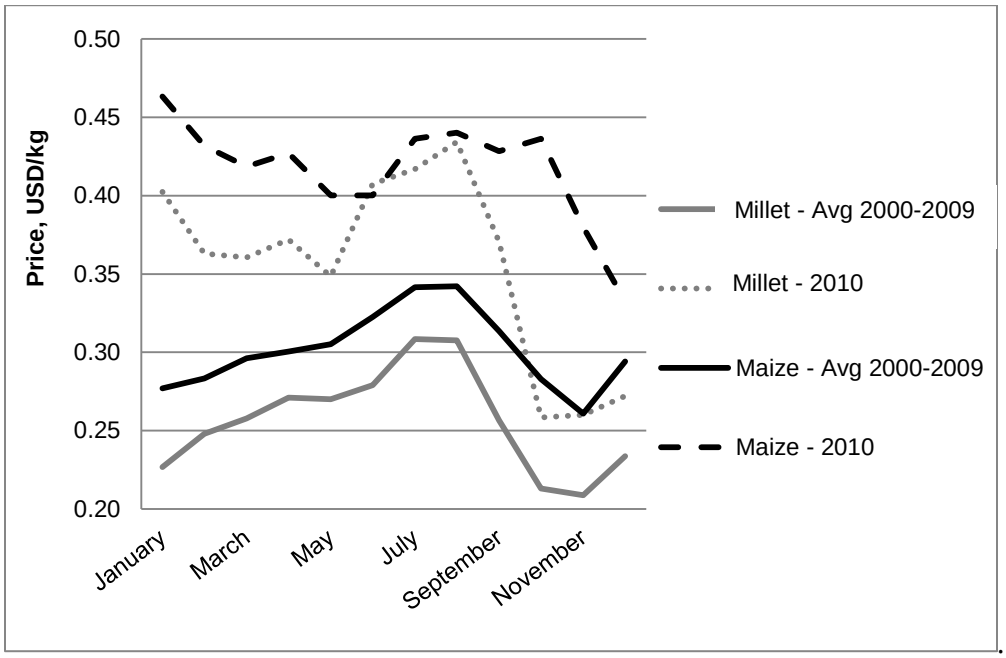
Notes: Purchase of items estimated using a probit. Expenditures estimated using a Tobit. Results are reported as marginal effects. Also see Table 5.1 notes.

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 preharvest 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 interseasonal fluctuations in the prices of key staple commodities in Zinder.

This seasonality, as is shown in Figures 5.1a and 5.1b, provides clues as to why we may be observing these bulk purchases of grains by households in cash villages. Figure 5.1a shows that historically grain prices in the survey area, for both millet and maize, rise between January and August. They fall sharply during the harvest period before starting to rise again in November. Figure 5.1a also shows that this pattern was somewhat different in the year prior to the intervention. Not only were grain prices significantly above historical averages, but millet prices rose faster than the historical average. Figure 5.1b 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 many cash households may have felt compelled to buy large grain quantities rather than risk exposure to uncertain food price changes.[14]

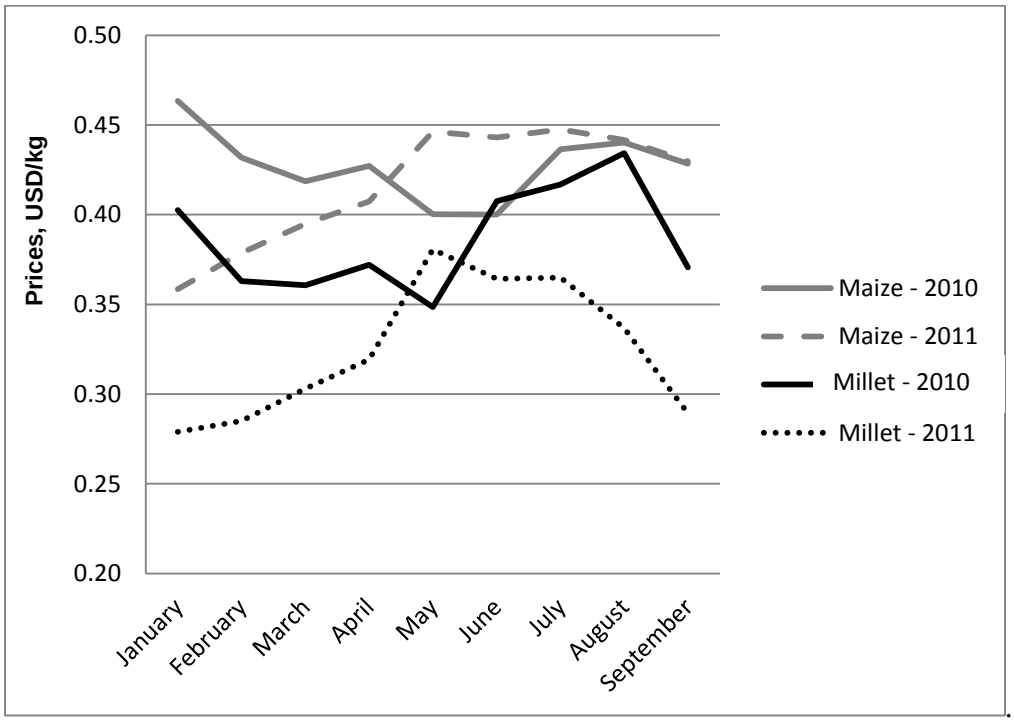
Figure 5.1a Historical grain price patterns



Source: Authors' calculations.
Note: USD = US dollars; Avg = average.

[14] As a robustness check, we re-estimated the results found in Tables 5.1, 5.2, and 5.3 with food (millet, maize) prices included as additional controls. Doing so did not affect our results.

Figure 5.1b Grain prices in 2010 and 2011



Source: Authors' calculations.
Note: USD = US dollars; kg = kilogram.

Coping Strategies and Nonfood Expenditures

Table 5.4 examines the 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 those in cash localities in July and October. The July results are driven by changes in credit behavior by households receiving food payments: these households were less likely to borrow from relatives, friends, or neighbors, to purchase food on credit, or to cancel a debt repayment. In both rounds, food recipients were less likely to report that they reduced portion sizes served to children or that household members went to bed hungry. Although the marginal effects look small, they are relatively large compared with the mean values reported in Table 3.2.

We considered whether households in food and cash villages had different patterns of expenditures on nonfood items (Table 5.5). Across all items, the marginal impact of being in a food village is to raise monthly expenditures on all nonfood items by 2,542 FCFA in July. This is equivalent to about 10 percent of the value of the monthly transfer. There is no statistically significant impact on all nonfood items in October. Across the individual items, it is difficult to discern consistent patterns. Only 7 of the 18 coefficients are statistically significant at the 10 percent level or higher, and the magnitude of two of those (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 to and during the main cropping season, and the magnitude of that effect was especially large in October (6,188 FCFA or just over 24 percent of the monthly transfer).

Table 5.4 Impact of food transfers, relative to cash, on coping strategies by survey round

Outcomes	July	October
Coping strategies index	-4.235**	-4.310***
	(1.911)	(0.370)
Selected coping strategies		
Relied on less-preferred foods	-0.040	-0.002
	(0.030)	(0.023)
Borrowed food from relatives, neighbors, or friends	-0.092***	-0.028
	(0.025)	(0.020)
Purchased food on credit	-0.052**	-0.025
	(0.020)	(0.015)
Had to rely on aid from outside the household	0.004	-0.006
	(0.017)	(0.021)
Had to cancel debt repayments	-0.050**	0.021
	(0.019)	(0.015)
Had to ask other households for food to feed children	-0.023	0.003
	(0.017)	(0.012)
Reduced portion sizes for adults	-0.038	-0.070***
	(0.023)	(0.013)
Reduced portion sizes for children	-0.055**	-0.039**
	(0.022)	(0.018)
Reduced number of meals per day	-0.031	-0.037***
	(0.023)	(0.014)
Went to bed hungry	-0.031**	-0.002
	(0.013)	(0.017)

Source: Authors' calculations.

Notes: Each cell represents the marginal effect of being randomized to receive food transfers on the likelihood of using a particular coping strategy or on the level of coping strategies used. Also see Table 5.1 for additional notes.

Table 5.5 Marginal effects of food transfers, relative to cash, on nonfood expenditures

Outcomes	Did household make purchase?		Expenditure on this item	
	July	October	July	October
Total nonfood expenditures	-	-	2542.1***	-225.5
			(694.7)	(927.9)
Firewood, fuels, batteries	0.088***	-0.078***	352.2***	-160.3
	(0.030)	(0.021)	(111.1)	(231.8)
Personal care (soap, perfumes, braids)	-0.005	-0.002	414.3***	126.3
	(0.009)	(0.009)	(115.7)	(135.9)
Communication and transport	-0.069***	-0.036	-2050.5	-928.4
	(0.023)	(0.030)	(1908.5)	(1321.1)
Wages, veterinary products, seeds	-0.095***	-0.093***	-1577.7**	-6188.2***
	(0.034)	(0.032)	(796.9)	(2135.9)
Health	-0.030	-0.024	1869.1	-286.4
	(0.028)	(0.029)	(1187.9)	(896.5)
Education	0.098***	-0.012	3696.3***	-1393.6
	(0.023)	(0.017)	(218.7)	(2300.8)
Clothing and footwear	0.001	-0.013	1727.1***	248.6
	(0.022)	(0.014)	(660.3)	(580.4)
Ceremonies, funerals, feasts	0.033	0.043*	3301.5*	393.0
	(0.025)	(0.026)	(1809.5)	(1351.0)
Construction, repair, housing	-0.020	0.015	-1501.6	2434.3***
	(0.022)	(0.012)	(1730.1)	(305.4)

Source: Authors' calculations.

Notes: Purchase of items estimated using a probit. Expenditures estimated using a Tobit. Results are reported as marginal effects. Each cell represents the marginal effect of being randomized to receive food transfers on the likelihood or level of nonfood expenditures. Also see Table 5.1 notes.

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:

$$y_{iwOctober} - y_{iwJuly} = \alpha + \beta stratum_{iw} + \delta food\ village_{iw} + \theta X_{iw} + \varepsilon_{iw}. \quad (2)$$

Generally, across the outcomes we consider, δ is not statistically significant when we estimate equation (2)—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 find no evidence that the interaction terms between gender of household 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 by tertiles, quartiles, or quintiles of the asset index) 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 household head.

6. CONCLUSIONS

In this paper, we use a randomized design to inform debates regarding 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. Households receiving food also resorted to fewer coping strategies. While this was the case, households receiving cash spent more money on agricultural inputs. All of these findings held true in both seasons examined. Despite the seasonal dimensions of food insecurity in Niger, the relative impact of food and cash transfers did not vary to any considerable degree by season on the outcomes we consider. Food recipients did not trade their transfers to any large extent; less than 5 percent of food was sold or exchanged for other goods.

With respect to delivery logistics and cost, both food and cash were delivered with the same degree of frequency and timeliness. The food transfers, however, cost 15 percent more to implement, as the monthly transfer value was roughly US$55 and the modality-specific cost was US$12.91 per food transfer and only US$4.00 per cash transfer. This implies that had all transfers been provided in cash, coverage could have been increased by 15 percent. Given the scale of this program, that could have meant providing cash assistance to 741 additional households (roughly 5,041 people).

Although food recipients experienced greater food security benefits in the short term, we cannot assess the relative benefits in the long term; that households receiving cash spent more on agricultural inputs may mean that such households have higher incomes in the future. Finally, the specific context of this study is important. Our results are informative about the relative impacts of food and cash transfers in an extremely poor, rural setting, which is important for a number of food assistance and safety net programs. Caution should be exercised, however, in extrapolating these results to settings much different than those found in rural Niger.

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