The impact of the Social Cash Transfer Scheme on food security in Malawi

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ABSTRACT

The Malawi Social Cash Transfer Scheme (SCTS) was launched in 2006 to improve food security by directly providing cash transfers to the country's most destitute households. Although government-implemented cash transfer schemes have gained popularity throughout Latin America, these schemes are just emerging in Africa. While where there is evidence of the beneficial impact of cash transfers on food security from Latin American countries, there is a dearth of evidence from resource poor countries in Africa.

In order to fill this gap, we conducted a longitudinal, randomized community control study of the pilot SCTS in Mchinji, Malawi from March 2007 to April 2008. In this study, we describe the impact of approximately US$14 per month on food security among recipient households compared to control households using indicators of food consumption and expenditures and dietary diversity.

We present compelling evidence, whereby each of the tested outcomes yields large effect sizes that are highly statistically significant, demonstrating a sizeable impact of cash transfers on food security and food diversity in rural Malawi. The SCTS appears to be an effective tool within the National Social Welfare Policy for improving food security in the country's destitute households.

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Introduction

A chronic lack of food security challenges households throughout Malawi, undermining efforts to improve health and development and fueling intergenerational poverty (Republic of Malawi, 2007). Food security is defined as having physical and economic access to sufficient safe and nutritious food (Food and Agriculture Organization, 2008). In response to widespread poverty and hunger, the Malawi Social Cash Transfer Scheme (SCTS) was designed as a tool within the National Social Welfare Policy (National Social Protection Technical Committee, 2007). Government-implemented cash transfer schemes are common throughout Latin America, but are just emerging in Africa, albeit with programmatic adaptations given widespread poverty, limited infrastructure and other resource constraints in Africa. Still African cash transfer programs are based on the Latin American Conditional Cash Transfer (CCT) schemes, which were designed to reduce income poverty by providing immediate cash to families and facilitating human capital development. The Malawian scheme is one of the first transfer programs in a resource-poor country in Southern Africa.

A primary goal of the SCTS is to improve food security by targeting transfers to the country's most destitute households (Schubert and Kambewa, 2006). In contrast to Latin American schemes, in Malawi, there are no formal, monitored conditions that accompany the transfer, but recipients are urged to use the cash to purchase a variety of healthy foods, fertilizer, and farm tools, and to direct a portion of their harvest to food stores. In contrast to Mexico's CCT, where nutritional supplements are given to recipient children, there are no programmatic accompaniments in Malawi (Lagarde et al., 2007). The expectation is that cash alone will yield positive impacts.

Theoretically, cash transfers improve food security by improving access to food through regular income that increases purchasing power or agricultural production (Reilly et al., 1999). The underlying assumptions are that food is available in local markets for purchase; agricultural yields will improve with greater inputs; and that by raising income in ultra poor households, recipients will choose to purchase or grow more food with a portion of their monthly income. For food security to improve throughout the household, a further assumption is that there will be at least some equity in the intra-household allocation of food. Consequently, many of the Latin American schemes target mothers as the preferred transfer recipients, justified by evidence that suggests that women are more likely than men to use transfers to benefit the entire household (Fiszbein et al., 2009). In Malawi, women are

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not designated as preferred recipients, but female-headed households are enrolled at higher rates than male-headed households, as they are more likely to meet the eligibility criteria due to their lower economic status and tendency to shoulder caregiving responsibilities for children and adults.

Much of the existing literature on the impact of transfers on food security originates from Latin America, where CCT schemes—accompanied by a strong evaluation culture—have operated for a number of years (Fiszbein et al., 2009). In Mexico, Gertler (2005) found that, on average, cash transfer households spent about 60–70% of the transfer on food. In Nicaragua, Maluccio and Flores (2005) used double difference estimates to show the scheme's significant impact on annual per capita food expenditures and the percentage of total income spent on food. They also examined individual food categories and found that the transfer had a significant impact on dietary diversity. Expenditures on nearly all food groups increased, as did nutrient-dense foods, such as meats, fruits, and vegetables, which increased as a percentage of total food expenditures. Maluccio and Flores conclude that the scheme prevented worsened food security among the intervention group during a food crisis, compared to the control group, whose food security deteriorated.

The only data from Africa comes from South Africa, where Booysen and Van Der Berg (2005) examined income sources and food expenditures among a population of HIV affected households and non-affected controls. They found that, except for disability grant recipients, all other income grant recipients had similar food expenditures as households with employment income, indicating that grants raise households to expenditure levels of working households. However, this study does not yield insights into how food expenditures change as households become income grant recipients or compare similar households with and without grants.

Food security is essential to a decent standard of living and is a marker of household economic functioning. Food security and diversity are also necessary for adequate child health and growth, along with other factors such as child feeding practices, appetite, illnesses, and so on. Several studies link cash transfers to food security and child growth, implying that cash transfers improve food security, which in turn, impacts child growth (Lagarde et al., 2007; Duflo, 2006). In Malawi, recipient children experienced gains in height, reduced stunting, and fewer illnesses compared to children in the control group (Miller et al., 2010a) and attributed better health to greater food security (Miller et al., 2010c).

Despite promising findings, there is still a dearth of evidence on the impact of cash transfers on food security, expenditures and diversity in Africa. In order to begin to fill this evidence gap, researchers from Boston University School of Public Health and the Centre for Social Research at the University of Malawi conducted a longitudinal study of the SCTS in Mchinji Malawi from March 2007 to April 2008. In this study, we describe the impact of approximately US$14 per month on food security and diversity at the household level for cash transfer recipient and comparison households. We use measures of satisfaction with consumption, indicators of food consumption and expenditures, food stores and dietary diversity (Barrett, 2002; Ruel, 2003).

The Malawi Social Cash Transfer

In 2010, the Social Cash Transfer Scheme (SCTS) was operational in seven districts in Malawi, reaching more than 83,000 households. The SCTS relies on community based targeting whereby elected Community Social Protection Committees (CSPCs) select the poorest 10% of households that are also labor constrained to receive the SCTS. Targeted households must meet the eligibility criteria of being ultra poor (defined as being within the lowest economic quintile, having no assets, or consuming only one meal per

Table 1
Dependency ratio.

Dependency ratio	Children <19 yrs + elderly >64 yrs + chronically ill and disabled adults 19–64 yrs
	All able bodied adults aged 18–64

Table 2
Size of cash transfer for households.

Number of household members	MK per month	US$ per month
1	600	4.30
2	1000	7.14
3	1400	10.00
4+	1800	12.85

The transfer is capped at MK1800 regardless of the household size, but the majority of households contain children so receive the per-child top-up MK140 = US$1.

day) and labor constrained, which is having a dependency ratio that is undefined or higher than 3. Dependents include children under the age of 19, elderly over the age of 65, or adults aged 19–64 with a chronic illness or disability that renders them unable to work. The dependency ratio is calculated as follows (Table 1):

On average, SCTS households receive MK2000 (US$14) per month depending on the size of the household and the number of school aged children (a MK200 top-up is paid for primary school aged children and MK400 for secondary aged youth) (Table 2). Payments were made regularly as scheduled throughout the evaluation period.

Methods

The Boston University Institutional Review Board and the Malawian National Health Research Council at the Ministry of Health approved the study protocols submitted for the evaluation.

Study design

This longitudinal study to examine the impact of the SCTS consisted of three rounds of a household survey with a panel of intervention and comparison households. We collected a baseline survey in March 2007, a midline survey in September 2007 (6 months after intervention households received their first cash payment), and an endline survey in April 2008, 1 year from when the study began. Food insecurity or the 'hunger season' is typically between November and March, while the main harvest occurs from April to August or September. We interviewed households at these time intervals because the Government of Malawi was particularly interested in learning about the impact of cash both when food security is at high and low points within the poorest households. Comparison households received their transfers in May 2008, following endline data collection.

In September 2007, UNICEF financed a one-time-only food bucket valued at MK1230 (US$8.80) containing oil, sugar, tea, salt, soap and beans for all comparison households. Given the poverty in these households, we concluded that the benefits of recognizing the situation of comparison households outweighed the minimal risk of biasing results. The bucket was given before the midline data collection and 6 months before endline data collection, so it is unlikely that it biased any findings.

Sample selection

Mchinji District is divided into nine Traditional Authorities (TAs) which are further divided into village groups or clusters of

about 1000 households. By March 2007, the SCTS reached approximately 29 village groups within four out of nine TAs in Mchinji District. However, the scheme had not yet reached all village groups, which provided an opportunity to conduct an evaluation where we could collect baseline data with both an unexposed intervention and comparison group.

With oversight from the district government, the Community Social Protection Committees (CSPCs) implemented the multistage, targeting process in eight village groups, which contained 23 villages. Approximately 100 households per village group or 800 households in total were targeted as cash recipients and enrolled in the study. According to the CSPCs, each of these households met the criteria of being ultra poor and labor constrained. Four of the village groups were randomly assigned to the intervention arm and the remaining four to the comparison arm so that each village group had equal opportunity to be enrolled in the intervention group. The sampling frame was thus a district-provided roster of all cash transfer targeted households in the eight village groups.

Sample size

The sample size for this study was determined considering the wide range of expected impacts at the child and household level. We used the soft-ware package R (Version 2.11.1) to perform post hoc power calculations and confirm there was sufficient power to detect statistically significant results at or exceeding the standard 0.80 level for each analysis.

Data collection

The research team made every effort to interview all household heads by setting up appointments, meeting respondents at their homes or fields, and returning to households at least three times. In March 2007, the baseline sample size was 819 households with 411 comparison and 408 intervention households. Following these interviews and during routine monitoring activities, the District removed 17 intervention households from the scheme because they were found to not meet the eligibility criteria. Given that these households never received the cash and did not meet the eligibility criteria, we did not continue to follow them or keep them in the sample. In September 2007, 789 households were interviewed. During the final round in April 2008, 766 households were interviewed. The reasons for loss to follow-up in each category were too small to analyze statistically, however deaths were the most common reason for loss to follow-up in comparison versus intervention households (16 versus 7 deaths). The final analysis is based on 752 households that were interviewed in all three data collection rounds, yielding a 90% response rate among intervention and 94% response rate among comparison households.

Quantitative household survey

We developed a structured quantitative questionnaire in English, which was translated into Chichewa and back-translated into English. The instrument was adapted from existing surveys used with similar populations throughout Malawi. We trained the team of research assistants (RAs) over 1 week prior to each round of data collection. After pilot testing, we revised the instruments and administered them to study households.

The 46-page survey included a household panel, and detailed questions on housing, assets, income, expenditures, and weekly food consumption. The food consumption and expenditure panel required respondents to recall 7 days of household food intake and expenditures and contained questions on 112 different foods. The survey asked whether households consumed the item, where

the item came from (e.g. purchased, home grown, gift, given as payment) and the cost or value of the item. We trained RAs to probe and verify that answers were consistent and plausible. When necessary, such as when respondents were elderly or chronically ill, RAs confirmed responses with other household members. RAs also observed food stores to confirm respondent reports.

Study supervisors checked surveys on a daily basis for consistency and completeness. Data was entered into the Census and Survey Processing System (CSPRO Version 3.3) database. We examined the database in batches to check for missing or outlying data. If necessary, RAs returned to the household to fill in missing data or clarify responses.

Data analysis

The CSPRO database was exported to Statistical Analysis Software (SAS 9.1) for data cleaning and analysis. For the expenditure data, we calculated weekly total expenditures, per capita total weekly expenditures, weekly food expenditures, per capita weekly food expenditures, and food shares as a percentage of total expenditures. To examine food diversity, we created dummy variables by category to determine whether the household reportedly consumed food in the following food groups: roots and tubers, pulses, fruit, meat, dairy, sugars and an indicator of the mean number of vegetables per week (Table 3). Finally, we created a composite to capture food diversity by summing the number of food groups that households consumed (Ruel, 2003). Food diversity scores ranged between one and eight depending on the variety of foods consumed in the past week, with each food group earning one point.

We systematically calculated univariate and bivariate statistics, including means and frequencies for all outcomes. Next, we computed difference-in-differences estimates using regression models to calculate the average differences between the intervention and comparison groups for each indicator at baseline, midline, and endline (Ravallion, 2003). The double difference methodology accounts for both observable and unobservable between-group differences at baseline by subtracting out existing differences from the equation (Maluccio and Flores, 2005). This double difference is reported in percentage points or monetary values and is an estimate of the program impact. Additionally, due to some observed group differences between households, we entered the following socio-demographic variables into regression models in order to obtain the average effect between groups over time: the gender and level of schooling of the household head, household size, whether the household was an elderly-only household, and whether the housing was made of burnt brick (an indicator of higher socio-economic status). The final double difference estimates provide insight into the change over time and across seasons between households depending upon intervention status. Finally, we used the proc surveyreg function in SAS 9.2 to account for

Table 3
Food groups and foods within each category.

Food group	Selected foods within each category
Roots and tubers	Cassava tubers, cassava flour, sweet potato, Irish potato, plantain
Pulses	Beans, cowpea, groundnut, groundnut flour, soybean flour
Vegetables	Onion, cabbage, rape, Chinese cabbage, tomato, cucumber, pumpkin, okra
Fruit	Mango, banana, citrus, papaya, guava, wild fruit, apple, other fruits
Meat	Eggs, dried fish, fresh fish, beef, goat, pork, chicken, other poultry, small animals
Dairy	Fresh milk, powdered milk, margarine, butter, soured milk, yoghurt, cheese
Sugar/oil	Sugarcane, cooking oil

village level clustering. While the eight village groups used for SCTS targeting are largely administrative units, they contain 23 villages. These villages are homogenous however; and as was expected, simple OLS regression and regression models that account for village level clustering yielded nearly identical effect sizes and standard errors.

Results

Household characteristics and demographics

Overall, intervention and comparison households are indeed demographically and economically vulnerable given the average age, gender, and level of schooling among household heads, the proportion of households with high or incalculable dependency ratios, as well as the percentage of households with orphans, chronically ill or disabled members (Table 4). All families live in mud or grass housing, the majority without any sanitation facility, and less than 1% of all households reported receiving any other safety net support within the previous year.

While each group was demonstrably vulnerable, there were some statistically significant differences between the two groups, which most likely resulted from differences in the prioritization of either elderly-only households or households with orphans,

which we observed during the targeting process (Miller et al., 2010b). Still, CSPCs can independently select recipients out of the pool of eligible households and variations are possible given that more than 10% of households meet the scheme's eligibility criteria (Miller et al., 2010b). Despite the demographic differences, the outcome variables of interest were statistically similar between study households at baseline, so that these groups generally experienced the same level of food insecurity.

Food availability and reported hunger

At baseline, intervention and comparison households were chronically food insecure and statistically similar on various indicators of food insecurity (Table 5). In both groups, a high percentage of households reported that they did not consume enough food per day and more than half took fewer than two meals per day. Respondents also reported that there was hunger in the household after meals and there was insufficient food for more than 8 days per month. Between the baseline and midpoint surveys, as expected, there were improvements in intervention and comparison households for all of these indicators (Figs. 1–4). However, intervention and comparison households had a 63 percentage point difference in the proportion reporting that food consumption over the past month was less than enough ($p < 0.0001$). For each of these indicators, the percentage point difference between

Table 4
Baseline characteristics of the comparison (C) and intervention groups (I).

	C $n = 386$	I $n = 366$
Characteristics of household head		
Age of household head	63	61
Gender: Female headed	66%	63%
Level of education of HH		
No schooling	65%	44%[***]
Some primary schooling	35%	45%
Some secondary schooling	0%	1%
Marital status of household head		
Single	2%	2%
Married	26%	27%
Divorced	15%	17%
Widowed	57%	54%
Characteristics of the household		
Dependency ratio incalculable (no healthy adult 19–64)	62	55[~]
Dependency ratio greater than 3 (one adult provides for more than 3 dependents)	16	23[*]
Household size	3.5	4.7[***]
Households with at least one chronically ill member	35%	42%
Households with at least one disabled member	28%	30%
Households with one or more orphans	68%	74%[~]
Elderly-only households (no HH member <65 years)	22%	12%[**]
Had a death in the household in the past 5 years	26%	35%[~]
Housing characteristics		
Outer walls		
Grass	2%	4%[***]
Mud	41%	71%
Mud or burnt brick	56%	26%
Type of toilet		
Pit latrine with no ventilation	35%	35%
None	64%	65%
Access to safety nets		
Fee food maize distribution	<1%	<1%
Food for work program or inputs for work	0%	0%
Supplementary inputs for malnourished children	<1%	1%
Agricultural inputs (seed fertilizer for rainy season) or other	<1%	1%

C = comparison, I = intervention.
[~] $p < 0.05$.
[*] $p < 0.01$.
[**] $p < 0.001$.
[***] $p < 0.0001$.

Table 5
Double difference impact estimates for reported household expenditures (weekly).

	Main models	
	C $n = 386$	I $n = 366$
Weekly total expenditures (MK)		
Baseline	234	231
After 6 months	241	1211[***]
After 1 year	275	1326[***]
Difference between baseline and midpoint	973[***]	
Difference between baseline and endline	1054[***]	
Weekly per capita total expenditures (MK)		
Baseline	41	45
After 6 months	39	298[***]
After 1 year	52	330[***]
Difference between baseline and midpoint	254[***]	
Difference between baseline and endline	274[***]	
Weekly food expenditures (MK)		
Baseline	122	129
After 6 months	101	834[***]
After 1 year	132	896[***]
Difference between baseline and midpoint	726[***]	
Difference between baseline and endline	757[***]	
Weekly per capita food expenditures (MK)		
Baseline	18	24
After 6 months	8	212[***]
After 1 year	20	229[***]
Difference between baseline and midpoint	198[***]	
Difference between baseline and endline	203[***]	
Percent of total expenditures spent on food		
Baseline	52%	56%
After 6 months	42%	69%[***]
After 1 year	48%	68%[***]
Difference between baseline and midpoint	23[***]	
Difference between baseline and endline	12[***]	

C = comparison, I = intervention. *Note*: Double difference regression models are adjusted or the gender and school level of the household head, household size, type of housing, and whether household is elderly only. All double difference estimates are significant at $p < 0.0001$. MK140 = US$1.
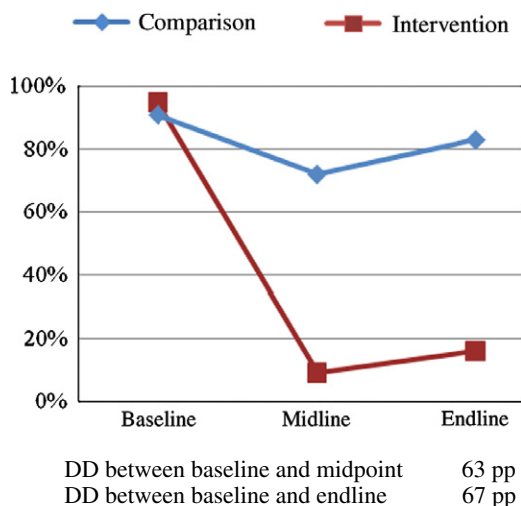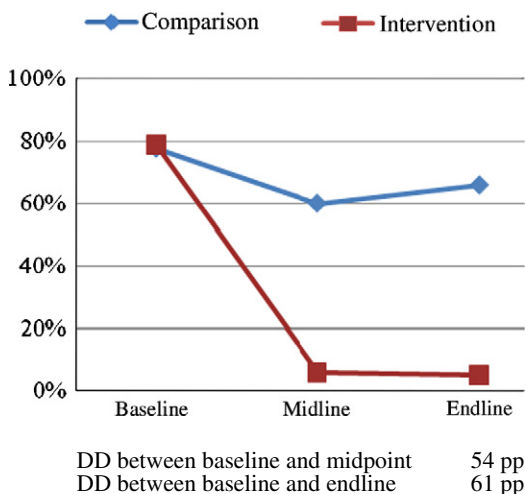[~] $p < 0.05$.
[*] $p < 0.01$.
[**] $p < 0.001$.
[***] $p < 0.0001$.

Fig. 1. Food consumption is less than enough. Double difference (DD) estimates for reported food insecurity with various measures. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.
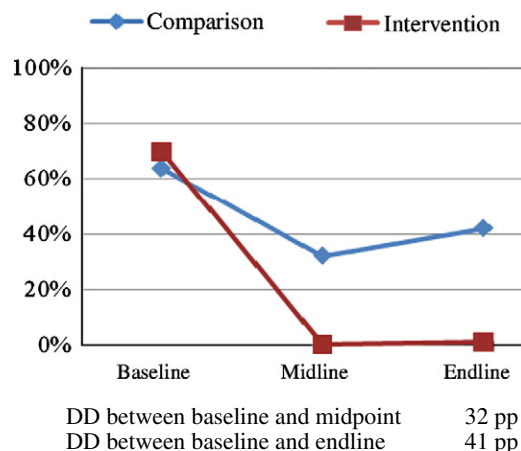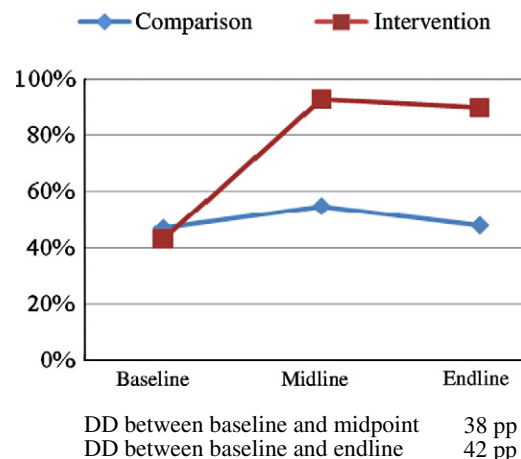
DD between baseline and midpoint	63 pp
DD between baseline and endline	67 pp

Fig. 3. HH members go more than 8 days per month without adequate food. Double difference (DD) estimates for reported food insecurity with various measures. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.

DD between baseline and midpoint	32 pp
DD between baseline and endline	41 pp

DD between baseline and midpoint	54 pp
DD between baseline and endline	61 pp

Fig. 2. HH members are still hungry after meals. Double difference (DD) estimates for reported food insecurity with various measures. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.

DD between baseline and midpoint	38 pp
DD between baseline and endline	42 pp

Fig. 4. HH members consume at least two meals daily. Double difference (DD) estimates for reported food insecurity with various measures. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.

intervention and comparison groups was more than 32 points at midline and even higher at the endline assessment. While comparison households returned to a high level of insecurity by endline, intervention households maintained their gains throughout the 1-year study period.

Food expenditures

Between baseline, midline, and endline, a trend is apparent whereby households reported higher expenditures during the rainy season (baseline and endline), when stores were low and food must be purchased, than during the midline (September), when households consumed food from their main harvest. At baseline, weekly total expenditures and weekly food expenditures were significantly higher in intervention households (Table 5), although the differences disappeared when per capita total expenditure and

per capita food expenditure variables accounted for household size (Fig. 5). By midpoint, the study groups had dramatic and statistically significant differences in all expenditure measures and in the share of expenditures dedicated to food, indicating that cash improves access to food in poor households. Moreover, the size of the difference between intervention and comparison households represents a striking difference in the food purchasing power between groups. Weekly total expenditures increased, on average, by 15% in comparison households and 83% in intervention households between 2007 and 2008. Total food expenditures increased by almost 8% in comparison households and by 86% in intervention households.

Food consumption

We found dramatic differences in reported consumption of various food groups between baseline and the endline surveys. For example, we observed gains in the consumption of complex proteins among intervention households. This is evidenced by a 22 percentage point difference in the consumption of pulses
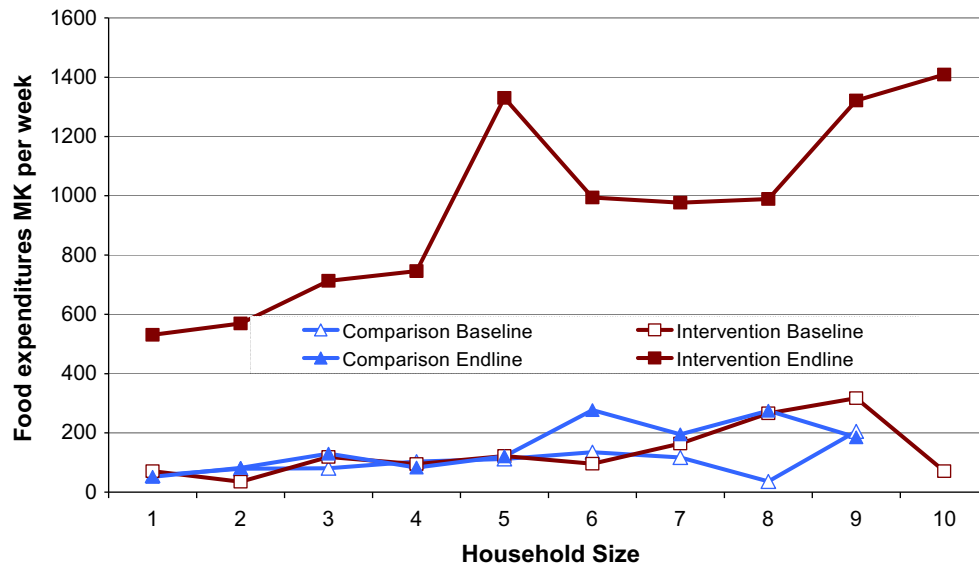
Fig. 5. Food expenditures according to household size for comparison and intervention households at baseline and endline. MK140=US$1.
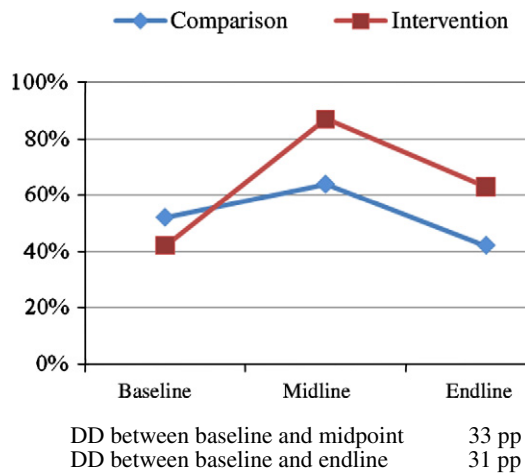

Fig. 6. Percent eating roots and tubers. Double difference (DD) estimates for reported food consumption by food group. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.

Fig. 7. Percent eating pulses. Double difference (DD) estimates for reported food consumption by food group. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.

($p < 0.0001$); a 25 percentage point difference in the consumption of dairy ($p < 0.0001$); and a 61 percentage point difference in the consumption of meat or fish ($p < 0.0001$) between baseline and midline in intervention versus comparison households (Figs. 6–11) The increased consumption of pulses, dairy, and meat and other foods were observable at endline as well. The largest double difference impact estimate was in the consumption of meat and fish, with dried fish as the most commonly purchased item; followed by goat, chicken, and fresh fish.

In addition to purchased foods, unlike comparison households, intervention households were able to increase agricultural productivity and, in turn, consume cowpea, beans, groundnuts, sweet potato, Irish potato, green maize, and normal, fine, and bran flour from their own gardens.

We also found that recipients had purchased livestock such as chickens for the consumption of eggs, as well as poultry. In fact, at endline, 27% of intervention versus only 2% of comparison households consumed eggs; 9% of intervention compared to 0.5% of control households consumed eggs from their own
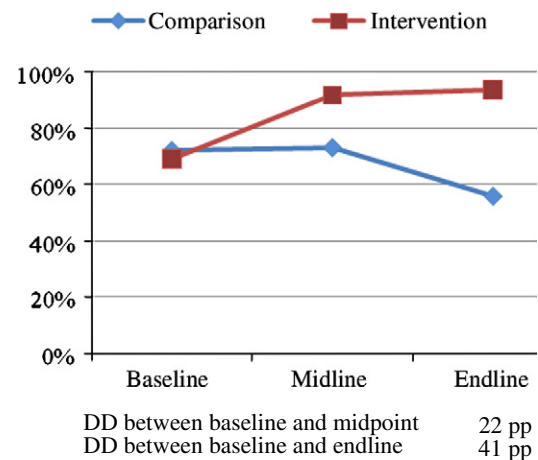
chickens. Similarly, at endline, 17% of intervention and only 1% of comparison households consumed chicken in the past week, but 11% of intervention and only 0.3% of control households consumed their own chickens.

Dietary diversity

The food diversity composite score was identical between groups at baseline (Table 6). By the midpoint however, intervention households were consuming food from seven different groups per week versus a reduction from five to four food groups per week in the comparison group. While food diversity may have declined in comparison households from baseline to endline, the gains in intervention households were sustained throughout the study period.

Food stores

We did not collect baseline information on food stores. However, at midline, following the end of the main harvest, 96% of
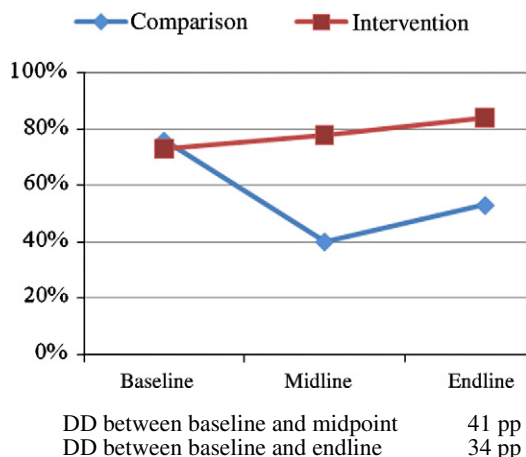
Fig. 8. Percent eating fruit. Double difference (DD) estimates for reported food consumption by food group. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.
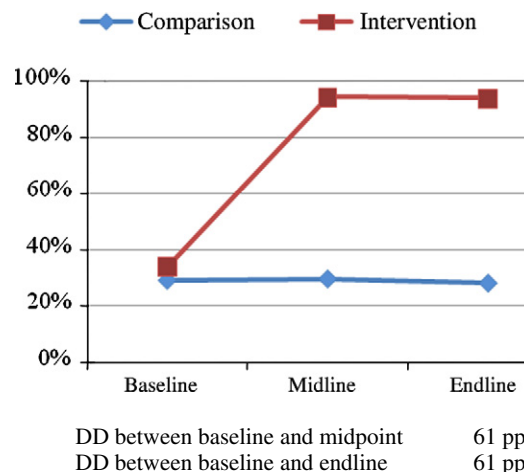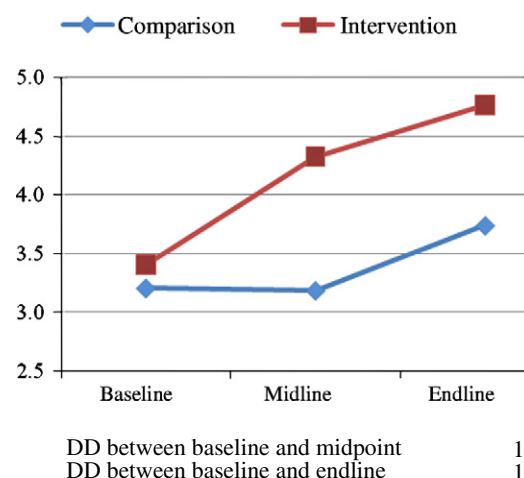

Fig. 10. Percent eating meat/fish. Double difference (DD) estimates for reported food consumption by food group. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.
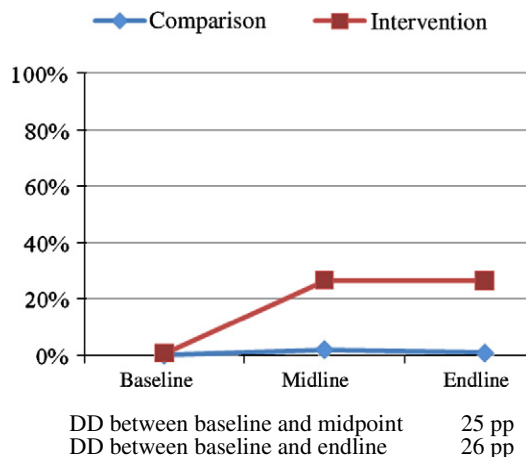
Fig. 9. Percent eating dairy. Double difference (DD) estimates for reported food consumption by food group. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.

Fig. 11. Mean number of vegetables per week. Double difference (DD) estimates for reported food consumption by food group. Figures are based on regression models adjusted for the gender and school level of the household head, household size, type of housing, and whether it is an elderly-only household. All DD estimates are significant at $p < 0.0001$. *pp = percentage points.

intervention and 65% of comparison households reported having food stores ($p < 0.0001$) with 59% of intervention and 23% of comparison households possessing stores that would last more than 1 month. Similarly at endline, following the end of the hunger season, 88% of intervention and 56% of comparison households had stores, but only 28% of intervention and 10% of comparison households had stores that would last for 1 month or more ($p < 0.0001$).

Conclusions and implications

This study presents evidence that the Malawi cash transfer provides the income necessary for households to increase food expenditures and increase the share of expenditures dedicated to food. In a separate analyses (Miller, 2009), we find that cash recipients also purchase livestock and other productive assets, such as farming equipment and fertilizer coupons, which increase agricultural yield that, in turn, can be consumed or sold for income. Thus directly and indirectly, the SCTS allowed households to smooth their food consumption throughout the year, sharply reducing hunger and food

Table 6
Double difference impact estimates of food diversity composite score. Food consumed during the past week.

	C $n = 386$	I $n = 366$
	Non-adjusted models	
Food diversity score		
Baseline	5	5
After 6 months	5	7***
After 1 year	4	7***
Difference between baseline and midpoint	2.1***	
Difference between baseline and endline	2.4***	

C = comparison, I = intervention. *Note*: Double difference regression models are adjusted or the gender and school level of the household head, household size, type of housing, and whether household is elderly only. All double difference estimates are significant at $p < 0.0001$.
~ $p < 0.05$.
* $p < 0.01$.
** $p < 0.001$.
*** $p < 0.0001$.

shortages during the rainy season. The evaluation was short-term, conducted over the course of 1 year. But during that time, the majority of recipients reported an acceptable level of food consumption by the midline survey and maintained these gains through the endline assessment. Conversely, households not receiving the transfer continued to experience food shortages. By endline, 81% of comparison households reported that food consumption was less than enough compared to 13% of intervention households ($p < 0.0001$).

SCTS households also experienced significant improvements in dietary diversity and in the regular consumption of a wider variety of complex proteins. While we did find some seasonal differences in the consumption of food items among intervention households; essentially, recipients were able to maintain similar food expenditure and consumption levels throughout the year and eat from seven different food groups per week versus five food groups among comparison households. These outcomes also confirm that food is available for purchase in local markets, albeit with some seasonal variations.

The magnitude of the findings in this study substantial for several reasons: At baseline we encountered households that were literally living separate from the cash economy. Respondents reported surviving by limiting how much, how often, and the types of foods they ate. They relied on their own meager production, handouts from their neighbors and food they found in the bush. Once intervention households received the cash, they were able to purchase food. Additionally, some intervention households were able to purchase fertilizer, which meant they could yield a greater harvest and increase their food stores or they could sell a portion of the harvest for added income. Moreover, some households also purchased chickens and goats, allowing them to eat animals' eggs and milk, or the actual meat of the animal. Compared to Latin American countries, where the transfer amounts to about 7% of per capita expenditures in Chile, 20% of per capita expenditures in Mexico, and 27% in Nicaragua (Fiszbein et al., 2009), in Malawi, the transfer (which ranges from $4.29 to $22 per month) accounts for, on average, 60% of per capita expenditures.

Improved food security and diversity within cash transfers households may be one mechanism by which child health improved in intervention households. Elsewhere we have documented child reports of increased food consumption because of the SCTS (Miller et al., 2010a), which were likely associated with gains in height, reduced stunting, and fewer reported illnesses. Adults and children partially attribute these health impacts to greater food consumption (Miller et al., 2010c). Although we have not directly measured the allocation of food within households, these findings suggest that once households receive transfers, they purchase food for the entire household.

This study was conducted with the specific purpose of evaluating the impact of the SCTS. Consequently, we were able to establish relationships with respondents and other villagers by visiting households repeatedly, confirming data, and observing households and communities over multiple months, which yielded high quality data. Still, although unlikely, it is possible that these findings are deflated or biased towards the null given that food buckets were given only to the comparison group due to resource limitations.

Additionally, when comparison households were told in March 2007 that they would receive cash transfers in April 2008, they may have borrowed against the future transfer and changed their consumption behavior in anticipation of the cash. We analyzed credit data as a partial check on this possibility and found that 15% of comparison households reported borrowing money at baseline and endline. At baseline, comparison households borrowed, on average, MK413 (US$2.95) per year versus MK826 (US$5.90) per year at endline. While the loan doubled in size from baseline to endline, the value is small, and the same percentage of households borrowed at each time point suggesting that an anticipation effect, although not widespread, may have moderately inflated comparison household spending. Again this is only a partial check and comparison households may have indeed changed consumption behavior knowing they would receive the transfer. If this happened, our estimates would be biased downward.

Furthermore, another potential bias is that respondents from intervention households may "overstate" their food expenditures or variety, in order to appear as if they are behaving in a socially desirable manner to ensure their continued receipt of the transfers. While this is possible, we were unable to estimate how much this bias affected our results. However, our research assistants were trained to observe food stores and the situation of the household to make sure that reports were accurate and consistent. Our research assistants often conducted interviews as meals were prepared and consumed so they could observe firsthand what families were eating. If they found discrepancies, they were trained to probe further.

This study measured short-term impacts on food security over the course of 1 year. In Malawi and throughout Africa, cash transfers may improve long-term food security by reducing predictable, yet chronic food shortages and their associated sequelae, which contribute to and perpetuate the cycle of poverty. In this study, we establish that in cash transfer households, recipients consume their own agricultural production, food expenditures increase based on the size of the household, recipients share food with families, food is available in local markets, and transfers increase both the likelihood of having and the quantity of food stores.

Despite these encouraging findings, long-term sustainability of impacts, their associated outcomes, and the SCTS itself is unclear. First, it is not known whether impacts will be sustained over time or whether the purchase of other items may crowd out spending on food. This is unlikely however, and it is more likely that households will continue to improve agricultural production as they acquire farming tools and livestock, and are able to hire day laborers to assist with land cultivation. Second, it is unclear whether improved food security and diversity, and perhaps increased agricultural production, will influence the longer term outcome of reducing the persisting cycle of poverty. While necessary, improved food security and diversity may not be sufficient to interrupt intergenerational poverty. Finally, it is also unclear whether the cash transfer scheme is a sustainable Social Protection tool. The SCTS is currently funded by international donors with a small fraction of the cost coming from the Government of Malawi. While there were no interruptions in the delivery of the cash transfer during the study, there have been considerable interruptions in payments since the study due to operational constraints. Although stakeholders in Malawi are optimistic about the future of the SCTS as it is scaled up countrywide, there is no guarantee that it will continue as development assistance fluctuates and priorities shift, particularly given the SCTS's reliance on donor funding.

Nevertheless, we present compelling evidence, whereby each of the tested outcomes yields large effect sizes that are highly statistically significant, demonstrating the impressive impact of cash transfers on food security and diversity in rural Malawi. The Social Cash Transfer Scheme is a tool within the Government of Malawi's National Social Welfare Policy that appears to yield impressive impacts within the country's most destitute households.

Financial disclosures

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