

Coping with Shocks: The Role of Savings Groups in Rural El Salvador

Working Paper

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Abstract

Recent financial inclusion literature suggests that financial services may help poor households cope with shocks. I investigate the types of shocks faced by poor households in rural El Salvador, and the role of savings groups in helping members cope. Using in-depth interviews, surveys and econometric analysis, I find that nearly all households experienced a negative shock in the previous year, and that drawing on financial services like credit and savings (generally through informal channels) were the most commonly used coping strategies. Further, the presence of savings groups slightly increases coping ability by facilitating access to savings and social support. However, simple adjustments to savings group policies could additionally reduce vulnerability to shocks, particularly as the greater challenge for many households is not net income over the course of the year; it is managing cash flow so that shocks and short-term needs do not derail long-term well-being.

I. Introduction and Related Literature

Poor rural households are vulnerable to a variety of shocks: unexpected crop loss due to droughts or pests; dramatic fluctuations in the prices of food and agricultural inputs; illness, disability, or death of a family member; and natural disasters, violence, and political turmoil (Sebstad and Cohen, 2001 and others). Some families are able to ride out the shocks, by accessing informal support networks, selling assets, drawing down savings, taking loans, increasing household labor, relying on government safety nets or international relief efforts, or reducing consumption until the situation improves (Dercon, 2002).

Some of these strategies allow households to recover relatively quickly, while others cause negative long-term consequences. Families that are forced to pull children from school, sell productive assets, or take on oppressive debt loads may become trapped in poverty for generations, yet some households find they have few alternatives (Carter, et al., 2007; Dercon, 2003; Montgomery, 1996, and others).

Having reliable, prompt access to financial services such as savings, insurance, or low-interest loans can help people seek medical help, buy food, find housing, or meet other urgent needs after a shock, without resorting to such negative coping strategies (Karlan and Appel, 2011; Hulme, et al., 2009; Carter, et al., 2007; Sebstad and Cohen, 2001). However, many poor people still lack access to such services. Banks may require prohibitively high deposits, onerous paperwork, proof of collateral assets, or travel to distant cities; many microfinance institutions still lack savings services or emergency consumption loans with flexible repayment plans, and local money-lenders often charge exorbitant interest rates (Wilson, et al., 2010; Allen and Panetta, 2010).

Informal savings groups may help provide some of these financial services, acting as safety nets for poor people with limited options when faced with shocks. These groups are often modeled after traditional practices, are promoted by development practitioners, and now include almost 10 million members world-wide (SG2015). Created with the help of trained facilitators, the groups are self-managed and use no external seed capital. Members meet regularly to make small savings contributions to a group fund, which may then be used for individual loans, joint income generating activities, or simply stored. Accumulated funds are usually returned to members at the end of the cycle during a “payout”. The savings and loans facilitated by the group can provide usefully large lump sums which may be used for a wide range of purposes, including consumption smoothing, health emergencies, and income generation. How much people are able to accumulate, when they can access these funds, and how they use them might have important implications for their vulnerability and resilience.

Access to savings or loans through savings groups might reduce vulnerability by helping households enhance financial management, smooth consumption, increase food security, respond to emergencies, invest in protective or productive assets, diversify or augment income, or strengthen social

support systems. However, there are also situations in which savings group membership could *increase* vulnerability: Savings could be lost or stolen, loans could result in unmanageable debt burdens, time and money could be diverted from more profitable uses, and group activities could result in conflicts with other group members, family, or the broader community. Which situations seem to be dominating on the ground?

Most existing studies on savings groups are limited to countries in Asia and Africa that have widespread traditions of savings groups and increasing numbers of promoted ones. Some of these studies use food security as a reasonable indicator of how well families are able to smooth consumption in the face of shocks or seasonal scarcity (Gash and Odell, 2013). Randomized control trials on savings groups in Ghana and Malawi reported no significant impact on food security, while those in Uganda found evidence to suggest that adults were less likely to reduce food intake (IPA, 2012). Other studies uncovered stronger impacts: An RCT on savings groups in Malawi reported that food security improved significantly in villages with savings groups, with the number of meals per day increasing 0.13 (Ksoll et al., 2013). A study in Mali found that food insecurity was significantly lower in treatment villages, and that households there spent an additional 39 cents per adult per week on food during the hungry season (BARA and IPA, 2013). However, there is little empirical evidence indicating whether and how savings groups help members cope with shocks in the context of Central America. This research addresses this gap by investigating how poor rural households in El Salvador deal with shocks and the role of savings groups in their coping strategies.

II. Context and Data Description

The savings groups in this study were located in poor rural communities in eastern El Salvador. They were formed with the help of local development partners supported by an international non-governmental organization, Catholic Relief Services (CRS). Though the groups received assistance in the

form of facilitation and training, they were not regulated and received no outside seed capital. The groups concentrated on savings through regular deposits by members.

The households in this study rely primarily on farming and day labor as principle income sources, though the majority are net consumers as they do not produce enough to feed their families throughout the year. Day labor is unreliable and highly seasonable, paying about \$5 per day. Just under half of the households also make handicrafts (hammocks or woven mats) to supplement their incomes, and less than 20% of them receive some level of remittances from within or outside the country.

The majority of houses consist of a single room with dirt floors. Some were recently connected to electricity, though outlying areas are often still off the grid. Most families use latrines, drink untreated water from springs or wells, and cook with firewood or charcoal. Of the 278 survey respondents, 46% had a head of household with no schooling. Only 9 respondents had any schooling beyond primary school, while an additional 12 had completed an adult literacy class. Respondents included 193 women and 84 men; just under a quarter lived in female-headed households. (Families in which the male head lived elsewhere but contributed income and participated in decision-making were not counted as female-headed.) Survey respondents included 120 current and former members of savings groups, representing approximately 25 groups. Almost none of the respondents had formal bank accounts; a handful had received loans from a micro-finance institution or agricultural cooperative. None of the study communities had a bank or cooperative within a few hours on foot. Most said they did not have access to any financial services beyond occasional informal loans among friends and families.

This research is constructed as a multi-method case study. Qualitative interviews and surveys uncover the shocks faced by the households, the strategies they use to respond to shocks, the reasoning behind these choices, how members use savings groups, and what they view as the key benefits and drawbacks of such groups. Econometric analysis estimates the impact of savings group access and other variables on coping abilities and strategies.

The data consists of 198 in-depth qualitative interviews conducted in 2011, and 278 quantitative surveys conducted in 2012, in 13 communities: nine with savings groups, and four control communities.

Most of the savings groups were formed in 2010, and were thus about one year old at the time of the interviews and two years old at the time of the surveys. Communities were selected using maximum heterogeneity sampling to include a wide range on key variables, including poverty levels, inequality, isolation, indigenous populations, and livelihood strategies. Control communities were then selected to match one to two treatment communities on as many factors as possible. Within the communities, respondents were chosen randomly using a list of residents and a random number generator. Qualitative analysis focused on uncovering key trends in household financial management and seasonal cycles, understanding why and how people used particular coping strategies, and revealing why and how they used savings groups.

III. Empirical Strategy

In addition to the qualitative analysis, econometric analyses estimated the impact of savings group access on coping ability and on the strategies used. The analysis examines the abilities of households to cope with the unusually difficult hungry season of 2011, a covariate shock resulting from particularly bad harvests in 2010 throughout much of the country, combined with the global recession and high food prices.¹ A household is defined as having coped successfully with this shock if no one in the household experienced hunger in the 12 months preceding the survey.

The econometric analysis uses the following regression model:

$$Y = a + bS_C + cI' + dC' + u$$

with dummy outcome variable Y indicating successful coping. S_C is a dummy variable indicating the presence of savings groups in the community (regardless of whether or not a particular respondent is a member). I' is a vector representing a set of individual or household-level variables describing the respondent (household poverty level, sex and education of the household head, sex of the respondent). C'

¹ Data was also collected on 81 idiosyncratic health shocks (illness, injury, or death), however, the sample size was too small to detect statistically significant differences.

is a vector representing two community-level variables (median poverty level and inequality). The independent variables are defined in **Table 2**. The results of this first set of regressions are shown in **Table 4**. (All tables are in the Appendix.)

A second set of regressions considers the impact of savings groups access on the choice of coping strategies during the hungry season. Again, the following regression model is used:

$$Y = a + bS_C + cI' + dC' + u$$

with multiple dichotomous outcome variables Y , indicating the type of coping strategy used by the household (i.e., use credit, draw-down savings, sell assets, mobilize labor, use remittances, receive institutional help, receive gifts of food or other items). Survey respondents were read a list of possible strategies and could select as many as applied. All of the dependent variables are defined in **Table 1**. Again, S_C is a dummy variable indicating the presence of savings groups in the community (regardless of whether the individual respondent is a member), C' is a vector representing two community-level variables (median poverty level and inequality), and I' is a vector representing a set of individual- or household-level variables (household poverty level, sex and education of the household head, sex of the respondent). The results are shown in **Table 5**. The table lists robust standard errors in parentheses and denotes results that are significant at the 10% level or smaller with asterisks. P-values and confidence intervals are indicated in parentheses in the text.

Table 3 provides a comparison of the treatment and control groups (communities with and without savings groups) in terms of the independent variables used in the econometric analysis. The communities are reasonably similar along most indicators, though savings groups communities have significantly more female-headed households (28.95% versus 13.64%, $p=0.005$) and are slightly less poor² and significantly more homogeneous in terms of poverty levels.

² Many of the poverty score indicators are unlikely to change significantly in the short term (number of children, number of rooms, large assets such as refrigerators). Given the short time period of the intervention and the fact that very few people used their savings or loans to purchase assets or generate income, it is most likely that these differences were pre-existing, rather than the result of participation in savings groups or other program activities.

IV. Key Findings

Household financial management

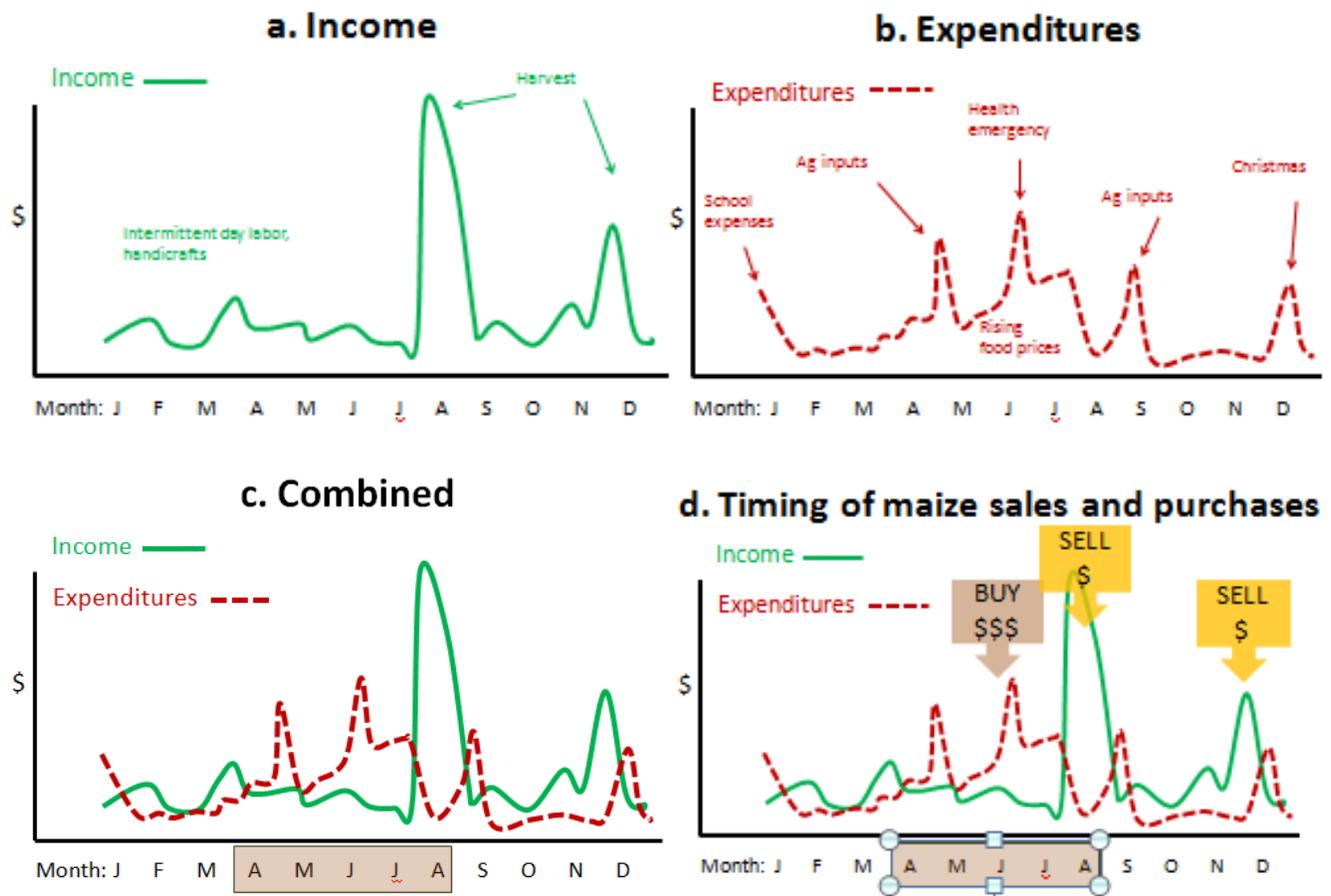
Findings suggest that the greater challenge for many of these households is not their net income over the course of the year; it is *managing cash flow* so that short-term needs do not derail long-term benefits, and *smoothing consumption* to ensure that they can meet their basic needs regardless of the season. As is typical for rural communities, primary income and expenditure flows for these rural households are seasonal and often misaligned. Most annual income is concentrated during the harvests in August and December (see **Figure 1a**). Lump sum expenditures arise throughout the year, with the largest predictable expenses occurring during planting seasons in May and August, when farmers buy fertilizer and seeds. (The median cost of fertilizer for the first planting was \$94/ household.) Food expenditures are particularly high in the months leading up to the first harvest, when prices are rising due to increasing market demand and most households have used up their own food reserves (see **Figure 1b**).

Overlaying income and expenditures in a single graph shows that even when net annual income is greater than net expenditures, households still struggle to manage cash flow and smooth consumption over the year (**Figure 1c**). The hungry season, which typically runs from about April through August, is particularly problematic, as the combination of high expenditures and scarce income leaves households especially vulnerable to shocks. Health shocks can happen at any time, but are more likely during that time period as well, when malnutrition, mosquito- and water-borne illnesses are more prevalent,

Rather than smoothing consumption over the year, household financial management practices tend to exacerbate the problem: For instance, most households purchase maize only during the hungry season, when prices are 1.5 to two times higher, income is scarcest and families are at their most vulnerable. Those who are able to sell maize usually do so during the harvest season, when prices are low, because they are temporarily strapped for cash. Some households even buy it back later in the year—at much higher prices—for home consumption (**Figure 1d**). *Simply changing the timing of sales and*

purchases of maize could potentially signify a difference of a couple hundred dollars per household in increased income or reduced expenditures annually.

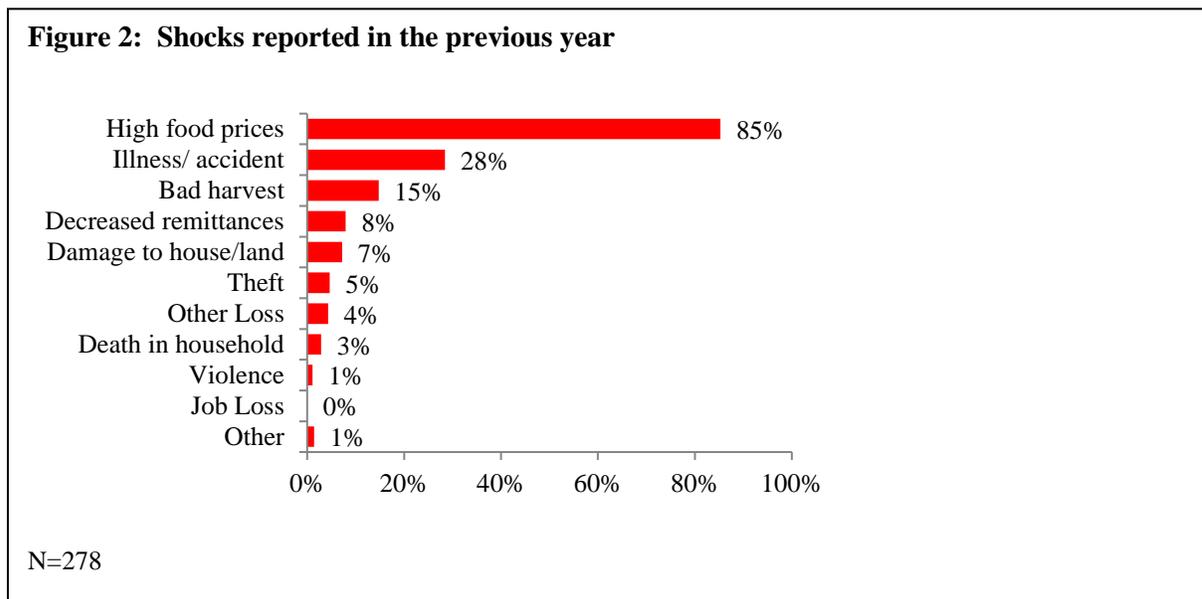
Figure 1: Seasonal Cash Flow



A stylized model of seasonal cash flow in the study communities, clearly demonstrating the lack of alignment between seasonal income and expenditures. As is typical for rural communities, income is concentrated in one or two harvest seasons (a). Expenditures are found in lump sums throughout the year (b). Of particular concern are agricultural inputs in the first planting season in May, and rising food prices in April through August, when most families have used up their own maize reserves. Overlaying income and expenditure curves clearly reveals that families are particularly vulnerable during the hungry season in April through August, when expenditures far exceed incomes and households are least likely to have cash on hand to buy food or cope with emergencies. Household financial practices exacerbate the problem: households are most likely to sell maize during the harvest season, and buy maize during the hungry season, when prices are 1.5 to two times higher (d).

Shocks and their impacts

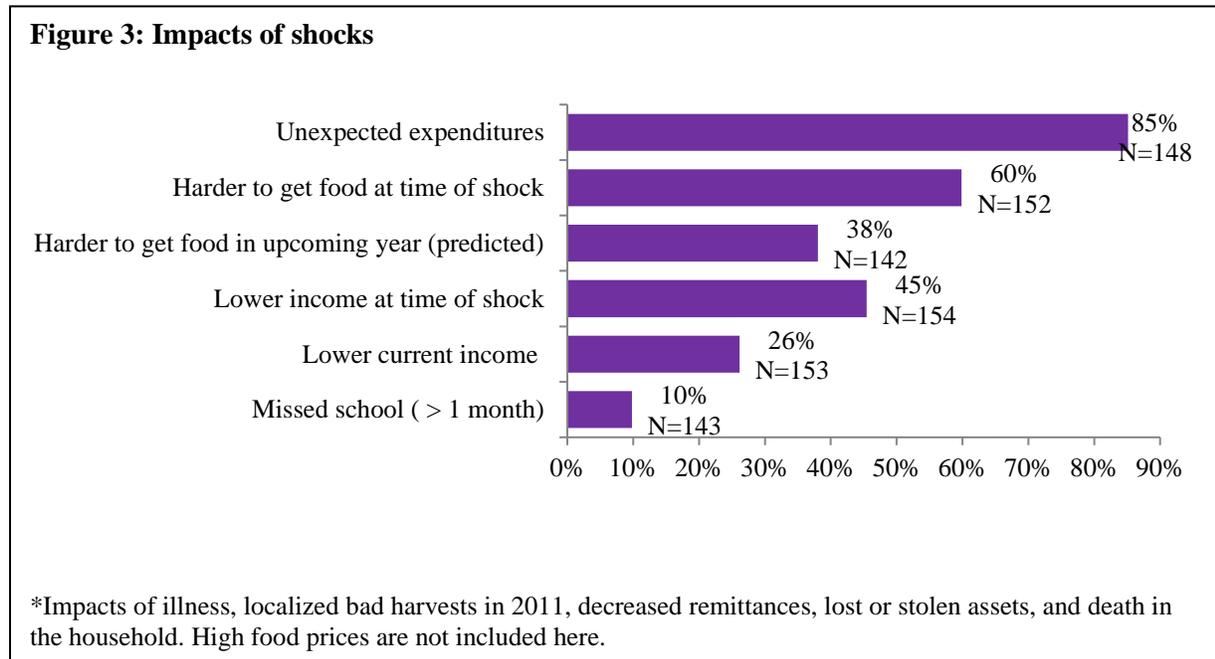
Figure 2 shows the shocks experienced during 2011. The great majority (85%) of households were negatively impacted by the high cost of basic grains, caused by high global market prices and bad harvests in El Salvador in late 2010. (Though almost all of the survey respondents were farmers, most of them remained net consumers and thus did not benefit from high market prices.) Twenty-eight percent had suffered an illness or accident in the household in the preceding year. A portion also reported that their households had been affected by localized bad harvests in 2011, a drop in remittances, property damage, theft, or other losses.



These shocks had significant impacts on households. One fifth of households had at least one member go hungry for some period of time during the previous 12 months. In most cases this occurred during the unusually difficult hungry season in April–August 2011. Because of its widespread impact, that hungry season is considered a covariate shock and is discussed in greater detail later in this section.

Besides high food prices, the surveyed households experienced a total of 157 other shocks in the preceding year. Most of these were idiosyncratic, such as illness, decreased remittances, asset loss, or theft, though about one-quarter were related to bad harvests in 2011 (more localized than the bad harvests of 2010). In 85% of cases, the shock resulted in unexpected *expenditures*, often related to transportation

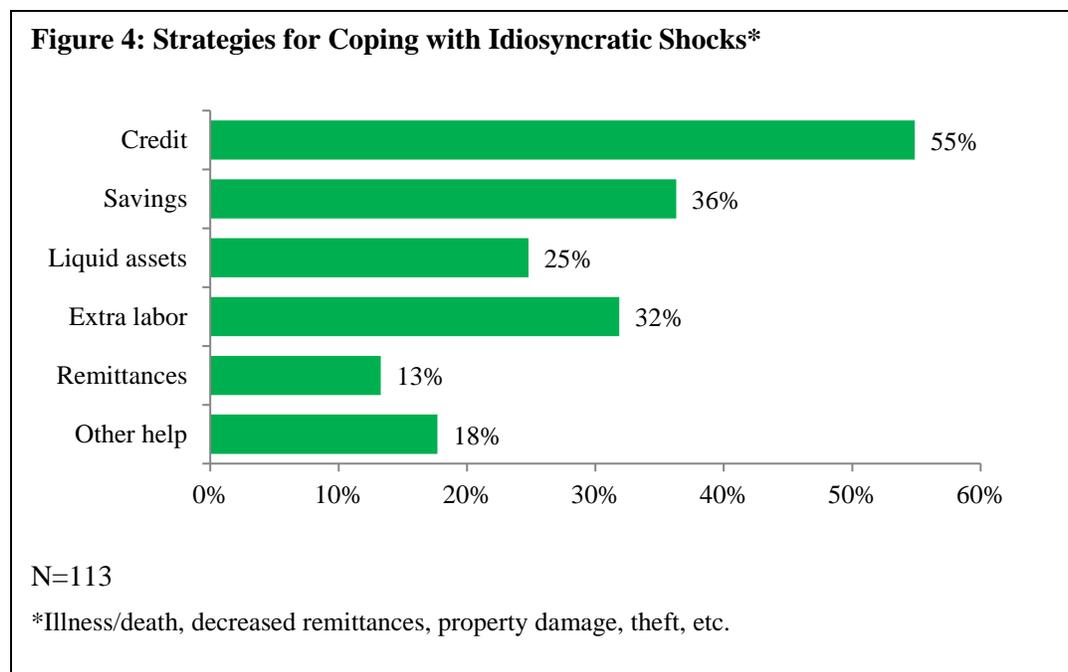
and treatment in the case of health shocks, repair or replacement of damaged or lost assets, or food to replace lost harvests (see **Figure 3**). The median expenditure for health shocks was \$75 per event per household. (For comparison, remember that average income for day labor is \$5 per day – when such work is available). Expenditures for other shocks varied widely, and most respondents found them difficult to estimate.



A total of 60% of the shocks affected the household’s ability to get *food* sometime during the previous 12 months. For 38% of them, respondents predicted that the event would affect their ability to get food for their families in the coming 12 months. Almost half of the shocks negatively impacted their household’s *income* at the time. In about a quarter of the cases, household income was still lower at the time of the survey (a month to a year later) as a result of the shock. In 10% of the cases, the shock negatively impacted a household member’s *education* (i.e., someone had to leave school or miss classes for more than a month due to illness, to care for other family members, or to earn income).

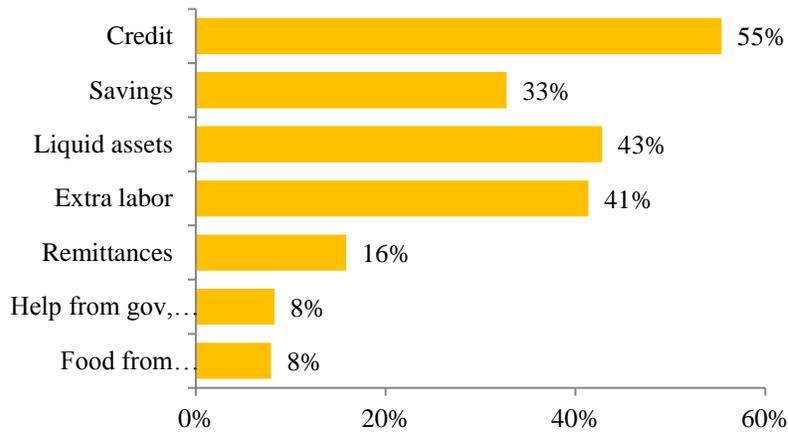
Coping strategies

Respondents used a variety of strategies to cope with shocks, including taking loans, using savings, liquidating assets, mobilizing labor, drawing on remittances, and receiving gifts. (These are defined detail in **Table 1**, see Appendix). The coping strategies reported by respondents are shown in **Figure 4** (idiosyncratic shocks) and **Figure 5** (covariate shock). Credit was the most common coping strategy for both types of shocks: more than half of respondents borrowed, usually from friends and family at no interest. About one third of respondents used personal savings (usually stored in the home).



Selling liquid assets and mobilizing labor were particularly important for the covariate shock, with more than 40% of respondents using those strategies. About a quarter of respondents sold liquid assets to cope with idiosyncratic shocks, while about a third mobilized labor. Remittances played a role in both the covariate (16%) and idiosyncratic (13%) shocks.

Figure 5: Strategies for Coping with a Covariate Shock*



N=276

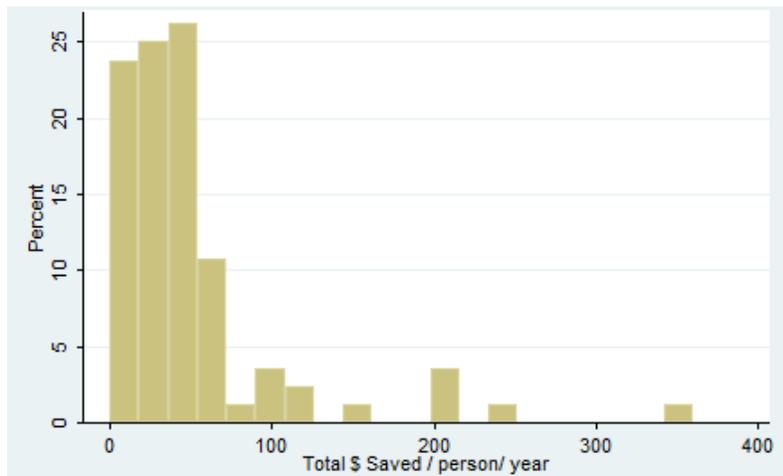
*The hungry season of April–August 2011

Use of savings groups

Did savings groups help members cope better with shocks, and if so, how? The answers depended on *how much* people were saving and borrowing in their groups, *how* they used these funds, and *when* the funds were available. The descriptive statistics summarized below illustrate the basic saving and borrowing behaviors of the 120 current and former members of savings groups included in the surveys, representing about 25 groups. Among these 120 participants, 70% indicated that at least one other household member participated in a group.

The median amount saved by individual members of savings groups was \$36 per person during the previous year (see **Figure 6**). The majority (65%) of respondents used their savings exclusively for consumption (food, Christmas, clothing, health, housing), while 10% used savings only for income generation (handicrafts materials, agricultural inputs, animals) and 7% used savings for both purposes. A break-down of specific uses of savings is shown in **Figure 7**.

Figure 6: Amounts Saved in Savings Groups*



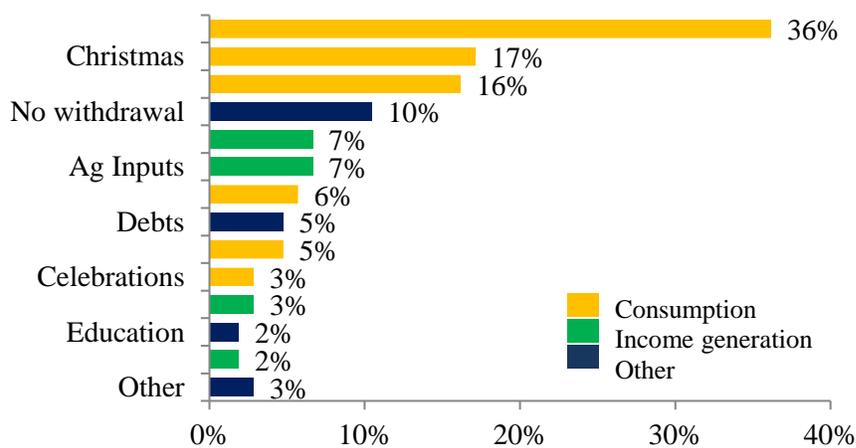
* In US dollars per person in preceding year

N=84

Median savings = \$36 per person

Almost all respondents received their payouts in December, during the second harvest season. As mentioned previously, the hungry season generally falls in April - August, and the first planting is in May. Thus, the timing of this payout is not optimal for reducing vulnerability or increasing income. It might make sense if members were using their payouts to stockpile maize at low prices in the harvest season to use or sell later when prices rise in the hungry season, but they were not: members of savings

Figure 7: Uses of Money Saved in Groups

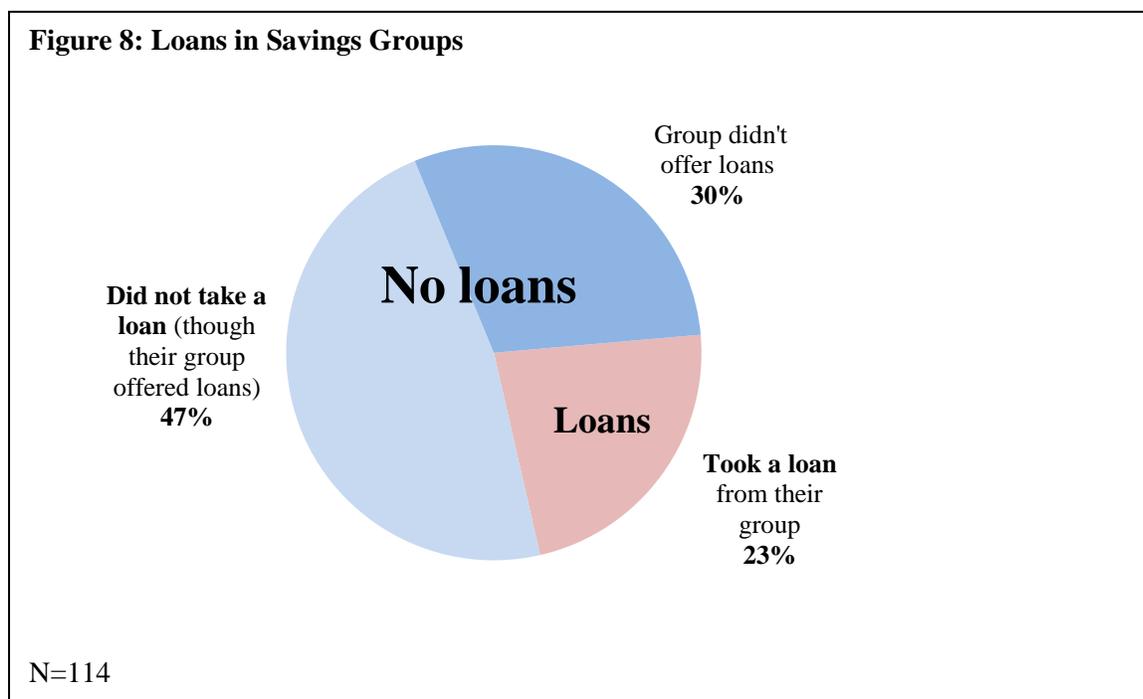


Ag, agricultural; IGA, income-generating activity. Note that respondents were able to select more than one category.

N=105

groups were just as likely as others to sell at low prices at harvest time and buy at high prices in the hungry season. After sharing the findings of this study with CRS, groups were encouraged to choose payout dates that were most helpful for them given their seasonal needs.

Only 26 of 114 respondents (23%) reported that they had taken a loan from their savings group (see **Figure 8**). Groups not giving loans, or members choosing not to take loans, cited a lack of necessity or desire to take loans, lack of trust among members, fear of indebtedness, and lack of sufficient funds in the lockbox. Nine people used their loans for health expenses, while four used them for housing. Half of those who obtained loans from their savings groups said they could have gotten the funds elsewhere if necessary, while half said they could not have gotten the money from another source. Though the number of loans is low, it is higher than in the previous year, when even fewer people had taken loans. It appears that it takes time to build the necessary savings habit and trust among group members before people feel comfortable giving and taking loans—and even then, most people avoid them. Use of loans in groups has increased in the years since the surveys were conducted.



Only 14% of respondents reported that their groups had an emergency fund (often called “social fund”) at the time of the survey, though some said they hoped to add one in the future. Again, more groups have added an emergency fund since the study period.

Impact of savings group access on coping abilities

The results of the first set of regressions (impact of savings groups access on coping ability) are shown in **Table 4** (N=276). The final column shows the basic regression with all individual- and community-level controls. The table lists robust standard errors in parentheses and denotes results that are significant at the 10% level or smaller with asterisks. P-values and confidence intervals are indicated in parentheses in the text.

Overall, living in a community with savings groups does appear to increase one’s chances of coping successfully. The presence of savings groups in a community leads to a 9.5 percentage point increase in the probability of successful coping ($p=0.095$, $CI_{95\%}=-1.7$ to 20.6). Using this model, 64.3% of people living in communities without savings groups are able to cope successfully, which increases to 73.8% when the community adds savings groups. Put another way, *introducing savings groups can reduce the proportion of households coping unsuccessfully in a community from 35.7% to 26.2%, a 26.5% reduction in households experiencing hunger*. For comparison, the effect of having savings groups in the community is only slightly smaller than the effect of having at least one year of education (an 11.5 percentage point increase in coping ability, $p=0.019$, $CI_{95\%}=1.9$ to 21.0). The qualitative research supports this finding. The majority of savings group members said that groups help them manage their household better, buy more or higher-quality food, build a cushion for emergencies, and enjoy greater peace of mind as a result (see **Box 1**).

Box 1: How savings groups can help: financial management and consumption smoothing

Better use of resources, food security, dealing with emergencies, peace of mind, income generation

I am happy because I have money safe. (P103:SM7, male, 24, current member)

There will come a time when you have nothing and then you can take out your savings to buy maize, or in case of emergency ... (P154: FM12, male, 33)

I didn't save before, and now we've learned to save. And that what you save helps you a lot. (Ro08, female, 49, 2012)

You start to analyze that savings help you for the family, and you've got it saved up for when you need it. When I wasn't in the savings group I wasted money on junk food at the soccer field and it was only for me. Now with my savings, I buy food for the whole household. (Ta09, male, 57, 2012)

The savings group is a benefit because I never saved before. And today I am going to invest it in buying fertilizer. (P180: SM25, female, 22)

Now I think about saving. I spend less. Before, I bought things that weren't necessary. (Ba09, 42, female)

Ever since I started saving, I don't buy cigarettes anymore. (Si07, male, 45, 2012)

I learned how to save, to know that it's stored for an emergency. (Ba18, female, 49)

The savings group is a benefit because we have money saved for an emergency or illness. (P77: T6, male, 73)

Living in an economically homogenous community has an even greater impact on coping abilities (a 16.0 percentage point decrease, $p=0.009$, $CI_{95\%}=-27.9$ to -4.1). The fact that community inequality is more important than both individual poverty and community average poverty is notable. The qualitative data provide some insights. People in heterogeneous communities were more likely to talk about a “patron,” or wealthier neighbor who could provide a loan, wage advance, or ride to the hospital, or a corner store that would let them buy food or medicine on credit. People in homogeneous communities were much more likely to say, “Where would we get a loan from? There’s no one to turn to here, we’re all equally poor.” Thus, even very poor respondents in heterogeneous communities might be able to rely on their less poor neighbors as a form of insurance in case of emergency.

Interestingly, despite the widespread focus on the vulnerability of female-headed households, the sex of the head of household had no significant impact on coping ability.

Impact of savings group access on choice of coping strategies

Savings

As seen in **Figure 5**, 33% of total respondents reported that their households used savings stored in the home, a bank/cooperative, or a savings group to buy food during the hungry season. The second column of **Table 5** shows the results of a regression analysis with use of savings as the outcome variable. Respondents living in savings group communities were more likely to report using savings to buy food during this time (a 16.2 percentage point increase, $p=0.009$, $CI_{95\%}=4.2$ to 28.3). In other words, adding savings groups to a community increased the use of savings to buy food by 48.8%. However, as pointed out earlier, it should be noted that most of these savings were stored in the home: Only 12 of 91 respondents reporting the use of savings to buy food during this time had that money stored in savings groups. It may be that people living in savings groups communities were more likely to save in the home as well (perhaps even if they do not directly participate in groups), suggesting broader behavioral changes as a result of exposure to the savings methodology. Alternately, people in these communities might simply have been more likely to talk about savings; however, great care was taken to be sure respondents in all communities included any money stored in the home, not just “*ahorros*,” which many locals use to describe only formal savings in a bank or savings group. One might wonder if the NGO partners selected communities that were already more accustomed to savings behavior; however, this is unlikely, as conversations about savings did not seem to take place before community selection.

Households in homogeneous communities were less likely to report using savings to buy food (12.8 percentage point decrease, $p=0.057$, $CI_{95\%}=-26.0$ to 0.4). Interestingly, respondents living in wealthier communities were *less* likely to report using savings; a 10-point increase in median poverty score led to a 7.4 percentage point *decrease* in likelihood ($p=0.262$ $CI_{95\%}=-20.3$ to 5.5), though this was not significant at the 10% level. Individual-level factors did not have significant impacts on the use of savings as a coping strategy.

Credit

Fifty-five percent of total respondents reported that their households used credit (loan from a friend, family member, patron, bank/cooperative, or savings group; or store credit) to buy food during the hungry season. Most variables did not have statistically significant effects, as presented in **Table 5**. *People living in communities with savings groups were no more or less likely to use credit as a coping strategy.* This is perhaps not surprising given that this was a long-lasting covariate shock; it is very unlikely that the group fund would be sufficient to provide loans to many members. However, wealthier households were somewhat less likely to use credit as a coping strategy, with a 10-point increase in poverty score leading to a 4.6 percentage point decrease in the probability of using credit ($p=0.068$, $CI_{95\%}=-9.5$ to 0.3) when including individual- and community-level controls. Female-headed households were no more or less likely to report using credit, though female *respondents* were somewhat more likely to say that their households used credit (a 7.5 percentage point increase in probability, $p=0.280$, $CI_{95\%}=-6.2$ to 21.2), though this was not significant at the 10% level. This gender difference may reflect the fact that women are more likely than men to be the ones purchasing and preparing food, securing loans or store credit to do so if necessary. The men may not be aware of these measures or may be more hesitant to admit to them.

Gifts of food from friends/family

Eight percent of respondents reported that their households received gifts of food from friends or family during the hungry season. Interestingly, being in a savings groups community (whether or not the respondent was personally in a savings group) led to an 8.7 percentage point increase in the probability of receiving such gifts ($p=0.006$, $CI_{95\%}=2.6$ to 14.8). This supports the idea that savings groups help create solidarity, though it is also possible that partners (intentionally or not) chose to work with communities that were already more cohesive and likely to support each other. The qualitative findings support this hypothesis, as respondents cited non-financial benefits of savings groups such as greater friendship, trust, and solidarity (see **Box 2**). These closer social ties could decrease vulnerability, as people enjoyed stronger support networks to draw on in case of need.

Box 2: How savings groups can help: social and human capital

Greater friendship, trust, and solidarity; more involvement in community life; higher self-esteem ...

[It feels] good [to be in the group], because we are united to deal with anything. (P184:R12, female, 64)

I have learned to listen and give ideas. We share new ideas. (Si07, male, 45, 2012)

I feel good [in the group]. It is better to be united. In a group you think better—because alone, one person might think of one thing and another person thinks of another. (P111:R10, female, 39)

I've got closer relationships—more friendships and more trust. (Ba12, female, 17, 2012)

I used to be afraid of standing up in front of people—now I like it. (Ro01, female, 40, 2012)

I learned to participate with other communities. We support each other to be more united to be organized in the community. (Ta09, male, 57, 2012)

There's more companionship and trust among the men. (Si07, male, 45, 2012)

Female respondents were more likely than male respondents to report receiving food gifts, with a 7.3 percentage point increase in probability ($p=0.036$, $CI_{95\%}=0.48$ to 14.1). As discussed above, this may be due to the fact that women are generally responsible for obtaining and preparing food for their families and may be more likely than their husbands to ask for or receive gifts of food. Men may not be aware of these gifts or may be less likely to admit to them. Though not significant at 10%, female-headed households were 4.8 percentage points *less* likely to receive food gifts ($p=0.256$, $CI_{95\%}=-13.0$ to 3.5), suggesting that such households have weaker social ties.

Help from government or NGOs

Eight percent of respondents indicated that their households received help from governmental institutions or NGOs to get food during the hungry season. Not surprisingly, savings groups communities were more likely to report this help, with a 6.1 percentage point increase in probability ($p=0.099$, $CI_{95\%}=-1.2$ to 13.3). This is consistent with the qualitative findings; some savings group members said they were more involved in community life, and a few women mentioned having higher self-esteem and a greater ease in speaking out and voicing their concerns in public. These factors might increase the chances that participants could effect positive changes in their lives and communities outside of their groups.

Though we tried to select comparison communities in which NGOs were also active, NGOs in the treatment communities may have been more committed or involved in the community. Alternatively, knowing that the enumerators were affiliated with a particular partner organization may have prompted respondents to report such help more readily, though if present, this bias was quite small given the low numbers of people reporting this coping strategy.

Other coping strategies

Living in a savings group community did not have a significant impact on the other important coping strategies considered: selling liquid assets, mobilizing labor, or using remittances.

Discussion: Factors influencing coping strategies for covariate shock

In summary, access to savings groups does appear to increase the ability of households to cope with a covariate shock, and the analysis of coping strategies reveals a causal mechanism that is consistent with this idea. People with access to savings groups were more likely than those in other communities to use savings to buy food or to receive gifts of food from friends: Both strategies support the hypothesis that savings groups help members increase consumption smoothing through personal savings and greater solidarity among neighbors. Self-insurance through inter-temporal transfers (i.e., saving now in order to consume later) may be one of the more feasible methods of protection against covariate shocks in these communities. Savings groups could further facilitate this by allowing members to roll over their savings past the payout date and continue to accumulate towards such events (assuming that this money can be safely stored or invested) and timing the payout to coincide with the hungry season.

On the other hand, the increase in help from government and NGOs within communities that have savings groups hints that these groups may function partly as a means of attracting help from the outside, or that such groups form in areas with closer ties to NGOs. This is not surprising: Partner organizations that regularly visit communities because of their savings groups are more likely to help out in emergencies and choose to deliver food aid in these communities first rather than in communities where

they have no such ties. Alternately, this finding could lend support to the idea that members of savings groups feel more empowered to apply for help from institutional sources.

People in savings group communities are no more or less likely to use credit to buy food during the hungry season. This may be a reflection of the low loan rates among groups discussed earlier. Furthermore, it is unlikely that groups could provide a large number of loans to help their members during this time period: Presumably all members were affected by this covariate shock. With limited funds, perhaps emergency loans (when available) were reserved for circumstances that affected individual members at different times, such as health emergencies. More mature groups may eventually decide to roll over and continue accumulating some of their emergency funds to protect their members against more widespread covariate shocks. People in communities with savings groups are no more or less likely to sell liquid assets, mobilize labor, or use remittances to purchase food during this time period.

Other factors beyond savings groups contribute to choice of coping strategies. Overall, poorer households are more likely to use credit or mobilize labor and less likely to use remittances. More educated respondents are less likely to sell liquid assets. Female-headed households are less likely to mobilize labor and more likely to use remittances, while female respondents are more likely to report receiving gifts of food from friends. People in homogenous communities are less likely to use savings or remittances.

Yes, savings groups seem to be helping people cope, and yet they could be much more effective. Of 91 respondents who said they used savings to buy food during the hungry season, only 12 of them had those savings stored in a savings group. This is a clear reflection of the timing problem – most people did not have access to their savings until December, months after the end of the hungry season. The low use of loans and emergency funds also limited the ability of groups to help their members. While the availability of loans and grants might be limited during a widespread covariate shock, they could still make a difference in the most acute cases.

Additionally, it should be noted that a handful of respondents reported negative impacts from participating in savings groups (see **Box 3**). Of special concern are instances where savings were lost or

stolen (< 5% participants), or where participation led to conflicts with other members, outsiders, or family (about 10% of participants). In almost all of these cases, the problems mentioned could have been avoided by following the established safety and transparency guidelines more carefully, though it is worth trying to understand *why* the guidelines were not followed. Poor accounting practices are often linked with the low literacy rates and might be improved by adapting and simplifying record-keeping methods, as suggested below. Incidents such as opening the box without all members present and keeping the box and key in the same house may simply be careless disregard of safety guidelines or may result from logistical difficulties of assembling many people in disperse communities. Deeper community power dynamics might also play into those incidents, as well as into conflicts about loan allocations, joint business activities, and other group policies. Missing money and family pressures may partially reflect the high rates of crime, alcoholism, and domestic violence in the region.

Box 3: How savings groups can hurt: loss and conflict

Lost or stolen money, fear, interpersonal problems, opportunity costs, reduced consumption ...

\$300 were stolen from the box—I lost \$7 and my mom lost \$32. (FM03, female, 63, 2012)

I'm afraid someone will come and steal [our savings box]. I couldn't sleep at night for thinking about it. (P31:A3, female, 50, current member)

We had \$200-\$300 in the box in December. But some money was missing - we had to replace it ourselves. (P50:R1.5, female, current member)

[We left the group because] there were some problems and we wanted to stay out of the problems ... for example, sometimes we did [joint income generation] activities and some worked more than others. (SA, female, former member)

The neighbors criticize us and say we have money. (Si09, male, 44, 2012)

I've got problems with my family because they say I waste time when I go. (Si13, female, 35, 2012)

I didn't have time to go to meetings. I neglected my house a lot. (P65: SA1, female, 52, former member)

Occasionally, people reported forgoing needed expenditures in order to make savings deposits, and in the end, the benefits gained may not outweigh those sacrifices. It was challenging to pinpoint the nuances of this counterfactual question – money is fungible, and it was difficult for people to say what

they would have spent it on had they not been depositing it with the group. Some claimed they were simply cutting back on sodas or cigarettes, but others indicated that at times they were making uncomfortable cutbacks on things they needed, such as food or medicine. Some members also complained of wasting time and walking long distances to meetings. In those situations, group policies could be adapted to better fit member needs.

Addressing attribution concerns

It should be noted that most communities with savings groups also participated in other NGO project activities related to agriculture and marketing, and it can be difficult to tease out the impacts of savings groups versus those of other project benefits. However, not all households participating in savings groups also received agriculture benefits, and in most cases, project participants received only a small portion of the fertilizer and seeds they needed for the year. Most of the project benefits consisted of agricultural training rather than handouts that would have immediate effects on household financial management and coping abilities. While people in savings groups communities did report more participation in such training activities, people in non-savings communities were just as likely to report receiving free fertilizer from an NGO or local government.

In particular, the case of San Miguelito suggests that attribution may not be such a great concern. This community had savings groups but no other NGO project benefits. It is the poorest community in the sample, has very low inequality (a disadvantage as discussed earlier), is especially isolated, and has particularly high rates of female-headed households, alcoholism, and domestic abuse. However, despite this long list of negative indicators, the respondents of San Miguelito have a successful coping rate of 80.6%, significantly higher than the average coping rate among respondents in wealthier communities without savings groups (75.0%). While hardly conclusive, this finding is certainly suggestive of the idea that savings groups themselves are having a positive effect.

V. Lessons and Recommendations

Advocates of the savings group model point to the flexible guidelines that give members control over their own rules. However, it appears that many groups are not taking advantage of this flexibility; most current policy choices seem to be default options initially suggested by the promoters. **In general, participants could use their savings groups much more strategically.** There is often a disconnect between the stated or implied goals of participants and the policy decisions they make. For instance, groups often withdraw their money during the harvest season when food and money are most abundant; instead, groups could decide to time their payouts to coincide with the hungry season or the planting season, when income is low and expenditures are high. NGOs could facilitate conversations regarding strategically designing policies.

The greater challenge for many households is not net income over the course of the year; it is managing cash flow so that short-term needs do not derail long-term benefits, and smoothing consumption to ensure that they can meet their basic needs regardless of the season. Rather than smoothing consumption over the year, household financial management practices tend to exacerbate the problem: For instance, most households purchase maize only during the hungry season, when prices are 1.5 to two times higher, while net producers sell maize at low prices during the harvest season because they are temporarily strapped for cash. (Some of those sellers even buy back maize later in the year—at much higher prices—in order to eat.) Savings groups might help households manage their cash flow better so that farmers could hold on to their harvest for family consumption or wait to sell at higher prices later in the season, thus providing a net benefit in the long run, possibly increasing income or reducing expenditures as much as a couple hundred dollars annually per family. (For those members who have no place to store grain securely, using savings or loans to buy airtight silos could also facilitate this.) During the period of this research, groups did not seem to be serving this function.

Groups will be more effective if members are encouraged to identify and clearly articulate their personal goals, and then carefully mold their own group policies to facilitate meeting them.

Under the right conditions, savings groups can help members in a number of ways, via increased food security, income generation, informal health insurance, peace of mind, accumulation of lump sums for

larger life cycle expenditures, increased social ties in the community, and other benefits. Any of these goals can be valuable—and all have been cited by members as motivations for joining groups or benefits of participation. Furthermore, the use of savings and loans will likely vary over time, as people’s needs, environments, and opportunities change.

Strategic choices such as the timing of payouts, the minimum deposit amount, the use of loans, or the creation of an emergency fund can all affect the degree to which savings groups help—or don’t help—their members. Members should be encouraged to consider the range of needs the savings groups might help address, identify their personal priorities, and then carefully consider the pros and cons of individual policy decisions and how those impact the feasibility of meeting their goals.

VI. Conclusion

Savings groups show potential as an important component of a portfolio of coping strategies: improving food security and providing informal insurance for people with few viable alternatives, while strengthening social ties and possibly facilitating investment in protective and productive investments. Participants have shown that they can save, and that they appreciate having another way to do so. Group members in this study self-report better household financial management, use of savings to buy food, ability to build cushions for emergencies, and greater community solidarity as a result of participation. Econometric analysis suggests that people living in communities with savings groups are more likely to cope successfully with shocks, and to use strategies associated with savings groups.

However, savings groups could be used much more effectively. Given that seasonal cash flow is a bigger challenge than net income, current savings group policies are not optimal for reducing vulnerability or increasing income. The groups in this study could have greater positive impacts if the participants designed policies to better meet their needs and take into account seasonal cash flow. It is hoped that this research will contribute to reflection and action among practitioners, partners, promoters,

and participants so that these groups can more effectively serve the people who stand to gain—or lose—the most.

Acknowledgements

This research was partially supported by a grant through Catholic Relief Service's Agriculture for Basic Needs (A4N) project, with funding from the Howard G. Buffett Foundation. The thoughts expressed in this paper do not necessarily represent the views of CRS or the donor.

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Appendix: Tables

Table 1: Dependent Variables

Dependent Variable	Definition
<i>Coping strategies</i>	<i>Dummy variable = 1 if someone in the household used the following strategy in response to a shock...</i>
Credit	...take a loan from a friend, family member, patron, bank/cooperative, or savings group; purchase goods with store credit
Savings	...use money saved up at home, in a bank/cooperative, or in a savings group
Sell liquid assets	...sell liquid assets such as maize, chickens, or other small livestock (respondents could also report selling land, vehicles, or other large assets, but no one did)
Mobilize labor	...work extra hours, migrate to seek work elsewhere in the country or abroad, increase the labor of children and the elderly
Remittances	...draw on existing remittances or request additional remittances, from within El Salvador or abroad
Organizational help	...receive gifts of money, food, transportation, etc., from an NGO, a church, the government, or another institution
Food gifts	...receive informal gifts of food from friends and family

Table 2: Independent Variables

Independent Variable	Definition	Descriptive Statistics (N=278)
<i>Individual/Household-level characteristics</i>		
Household poverty level	Continuous variable indicating the household's adjusted poverty score, which can range from 0 (extremely poor) to 90 (less poor or non-poor). Derived from Mark Schreiner's 10-question poverty score card for El Salvador (which was administered to all survey respondents) but omits indicator #5.	Mean: 18.77 Median: 18 Range: 0–82 SD: 12.94
Female-headed household	Dummy equal to 1 if the head of household is female and there is no male head of household. Households in which the male head lives elsewhere but contributes income and helps make household decisions are not counted as female-headed.	24.1%
Female respondent	Dummy equal to 1 if the respondent is female	69.42%
Head of household education	Dummy equal to 1 if the head of household has at least one year of primary school or adult literacy.	54.0%
<i>Community-level characteristics</i>		
Savings Group community	Dummy equal to 1 if there are savings groups within the community (regardless of whether or not the respondent is a member). Of the 13 communities sampled, 9 have savings groups.	68.35%
Median poverty level of community	Continuous variable indicating the median adjusted poverty score for all respondents in a particular community	Mean: 17.19 Median: 20 Range: 10–26 SD: 5.34
Homogeneous community	Dummy equal to 1 if the community has low inequality, with SD of adjusted poverty scores ≤ 11.0 . Five of the 13 communities are considered homogenous. Among the six poorest communities, three are homogeneous and three are heterogeneous.	35.97%

Table 3: Demographic Comparison of Treatment and Control Groups

Independent Variable	Descriptive Statistics (N=278)	Savings Groups Communities (9) (N=190)	Non-savings Groups Communities (4) (N=88)	p-value (t test)
<i>Individual/household-level characteristics</i>				
Household poverty level ³	Mean: 18.77 Median: 18 Range: 0–82 SD: 12.94	Mean: 19.25 Median: 19 Range: 0–82 SD: 13.48	Mean: 17.73 Median: 16 Range: 0–51 SD: 11.69	0.3633
Female-headed household	24.1%	28.95%	13.64%	0.005
Female respondent	69.42%	72.11%	63.64%	0.154
Head of household education	53.96%	53.68%	54.55%	0.893
<i>Community-level characteristics</i>				
Savings group community	68.35%	100%	0%	0.000
Median poverty level of community	Mean: 17.19 Median: 20 Range: 10–26 SD: 5.34	Mean: 17.96 Median: 20 Range: 10–26 SD: 5.47	Mean: 15.52 Median: 11 Range: 11–20.5 SD: 4.66	0.0004
Homogeneous community	35.97% (5 of 13 communities)	43.16% (4 of 9 communities)	20.45% (1 of 4 communities)	0.0002

SD = standard deviation

³ Many of the poverty score indicators are unlikely to change significantly in the short term (number of children, number of rooms, large assets such as refrigerators). Given the short time period of the intervention and the fact that very few people used their savings or loans to purchase assets or generate income, it is most likely that these differences were pre-existing, rather than the result of participation in savings groups or other project activities.

Table 4: Linear Probability Models—Ability to Cope with Covariate Shock

	Basic Regression (Savings Group Communities)	Basic Regression + Individual-level Controls	Basic Regression + Community-level Controls	Basic Regression + Community- + Individual-level Controls
Savings groups community	0.0691	0.0647	0.0922	0.0946
	(0.0542)	(0.0545)	(0.0553)*	(0.0565)*
Other community-level variables				
Median adjusted poverty score†			0.00504 (0.00500)	0.00437 (0.00534)
Homogeneous (low inequality)			-0.153 (0.0602)***	-0.160 (0.0605)***
Individual-level variables				
Household's adjusted poverty score†		0.00275 (0.00151)*		0.000608 (0.00166)
Household head has ≥1 year of schooling		0.0992 (0.0492)**		0.115 (0.0485)**
Female-headed household		0.00548 (0.0590)		0.00813 (0.0592)
Female respondent		0.00421 (0.0572)		-0.00404 (0.0560)
Constant	0.750 (0.0463)***	0.644 (0.0744)***	0.703 (0.0995)***	0.643 (0.107)***
N	276	276	276	276
R2	0.00640	0.0315	0.0521	0.0733

Notes: OLS regressions. Robust standard errors in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10%. Dependent variable is a dummy equal to 1 if the respondent reported that no one in the immediate household experienced hunger in the previous 12 months. Coefficients indicate the increase in percentage points of the probability of coping successfully (not experiencing hunger).

† Adjusted poverty scores can range from 0 (extremely poor) to 90 (less poor or non-poor).

Table 5: Linear Probability Models—Different Coping Strategies for Covariate Shock

Strategies used to buy food during the hungry season (April–August 2011)

	Credit	Savings	Sell Liquid Assets	Mobilize Labor	Remittances	Help from Govt., NGO	Food from Friends
Savings groups community	-0.0139 (0.0686)	0.162 (0.0613)***	-0.0211 (0.0693)	0.0139 (0.0697)	-0.0332 (0.0504)	0.0607 (0.0367)*	0.0865 (0.0309)***
Other community-level variables							
Median adjusted poverty score†	-0.00450 (0.00682)	-0.00737 (0.00655)	-0.00694 (0.00657)	-0.00180 (0.00637)	0.00394 (0.00435)	-0.00631 (0.00445)	-0.00175 (0.00324)
Homogeneous (low inequality)	0.0134 (0.0704)	-0.128 (0.0670)*	0.0527 (0.0726)	-0.00933 (0.0701)	-0.0744 (0.0410)*	-0.0185 (0.0495)	-0.000379 (0.0384)
Individual-level variables							
Household's adjusted poverty score†	-0.00460 (0.00250)*	0.00180 (0.00250)	0.000244 (0.00246)	-0.00535 (0.00248)**	0.00526 (0.00209)***	-0.000965 (.00135)	0.000840 (0.00125)
Household head has ≥ 1 year of schooling	-0.00106 (0.0605)	0.0462 (0.0572)	-0.0859 (0.0603)	-0.00567 (0.0592)	0.0246 (0.0434)	0.0390 (0.0322)	-0.0227 (0.0318)
Female-headed household	0.0105 (0.0786)	-0.0341 (0.0707)	-0.0453 (0.0749)	-0.130 (0.0732)*	0.0912 (0.0581)	-0.00000238 (0.0411)	-0.0476 (0.0418)
Female respondent	0.0752 (.0695)	0.00908 (0.0665)	-0.0810 (0.0708)	-0.0698 (0.0705)	0.0107 (.0477)	-0.0162 (0.0404)	0.0727 (0.0345)**
Constant	0.668 (0.130)***	0.332 (0.128)***	0.652 (0.130)***	0.622 (0.129)***	-0.00147 (.0762)	0.165 (0.0920)*	0.00769 (0.0527)
N	278	278	278	278	278	278	278
R2	0.0288	0.0327	0.0279	0.0450	0.0859	0.0270	0.0377

Notes: Respondents could report more than one strategy. OLS regressions. Robust standard errors in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10%. Dependent variable is a dummy equal to 1 if the respondent's household used that particular strategy to obtain food during April–August 2011. Coefficients indicate the increase in percentage points of the probability of using this strategy to obtain food during this time period. † Adjusted poverty scores can range from 0 (extremely poor) to 90 (less poor or non-poor).

