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Can Small Farmers Protect Themselves Against Bad Weather?

Severe weather conditions can undo even the best efforts of families to break free of poverty. Households that rely on subsistence or small-scale farming are especially at the mercy of severe weather. Droughts and floods wipe out crops, leaving families hungry or without anything to sell to pay for essentials such as school fees or medicines. Climate changes have made weather even more variable in many countries, exacerbating problems such as droughts, extreme temperatures and flooding. Policymakers seeking to offset the unexpected have increasingly used cash transfer programs to help families through difficult times. But what makes a difference in the long-term? Are small grants or training programs effective methods to help farm households develop non-agricultural businesses, thereby enabling them to better manage weather shocks?

To understand what might allow families to better manage risks, the World Bank supported an evaluation of a pilot program in Nicaragua to encourage rural households to diversify beyond small-scale farming. The project found that two years after the program ended, households that received vocational training or investment grants to start non-agricultural businesses were better protected against the negative effects of severe drought than families that only received conditional cash transfers. These results suggest that helping farmers develop other income-generating different businesses can be an effective and sustainable approach to reducing poverty by protecting them against the financial repercussions of severe weather and climate changes.

Context Why Weather and Why Nicaragua?

Bad weather can destroy farmers' livelihoods, propelling families deeper into poverty and hurting their children's chances of moving out of poverty. Managing the risk of droughts, severe winters, or floods and landslides isn't easy. Climate change is affecting the intensity and frequency of these already severe weather conditions, making it that much more difficult for small farmers. Adoption of new crops, different agricultural practices or weather insurance programs are approaches that some countries are testing, but these aren't focused on helping help families develop alternate, non-farming, income sources.

In Nicaragua, the second poorest country in Latin America after Haiti, poverty is compounded by weather conditions. Temperatures have increased, rainfall has become increasingly irregular, and the window for the country's two annual crop cycles has shortened, further constraining the ability of farmers to rely on subsistence farming crops to meet their needs.

Did You Know…

42% of Nicaragua's population lives in rural areas.
75% of rural families rely on agriculture for their livelihood.
2 out of every 3 people residing in rural areas are poor.
(National Institute of Statistics, Nicaragua, 2009)

The issue is critical because the majority of Nicaragua's poor—who make up almost half of the country's 5.8 million people—are concentrated in rural areas. Many are small-scale farmers who don't have irrigation systems for their crops, leaving them especially vulnerable to droughts. This impact evaluation focused on rural communities in northwest Nicaragua, where more than 90 percent of households rely on semi-subsistence agriculture. Although families in this area knew the risks of agriculture, including that of losing an entire crop to drought, relatively few had managed to develop outside sources of income.

Public Disclosure Authorized

Case Study Nicaragua

The Nicaraguan Government created a one-year pilot program targeting farming families affected by a severe drought in 2004. The program sought to help families cope with their immediate problems by giving them cash transfers. The larger goal was to give families opportunities to expand beyond small-scale farming by offering vocational training and investment grants. The longer-term question was whether households would be able to diversify their income streams so they could better protect themselves against future droughts and other severe weather conditions.

Illustration from a children's book presenting the experience of pilot beneficiaries

The program was implemented in six municipalities with very high rural poverty rates. Communities in the municipalities were grouped in blocks based on crops, microclimates and infrastructure. Out of the 44 blocks selected for the pilot, half of the communities in each block were randomly assigned to treatment groups and the other half to the control group. There were 56 treatment communities, with a total of 3002 eligible households, and 50 control communities.

Households in the treatment communities were assigned by lottery to one of three groups. The first group qualified for a conditional cash transfer program that gave them $145 if they met certain conditions including: taking children for regular growth monitoring check-ups; sending children aged 7-15 to school; attending lessons on nutrition and using at least some of the transfer to improve the nutritional content of family meals. The amount was increased by $90 if the family had school-age children, with an extra $25 per child for school supplies. The second group qualified for the same cash transfer program and also received a scholarship for vocational training to develop new marketable skills. The third group qualified for the conditional cash transfer program and also received a $200 grant to develop a non-agricultural business. Households that received the grant had to provide a start-up plan and received training and technical assistance to develop the plan. Take-up was close to 100 percent for all the groups.

The program lasted one year, and baseline data were collected in April-May 2005, right before the program was launched. There was a follow-up survey nine months into the program in July-August 2006. A second follow-up survey was carried out between August 2008 and May 2009, which allowed researchers to look at the state of households two years after the program had ended. The results discussed here are based on this later survey.

Program Participants: The program targeted the main caregivers in the households, who almost always are women. These women had on average three years of education. More than 90 percent of households were small farmers. About half worked with livestock and migrated during harvest time for work.

This policy note is based on World Bank Working Paper (6053) "Transfers, Diversification and Household Risk Strategies," by Karen Macours, Patrick Premand and Renos Vakis. The BASIS research program, a World Bank Research Support Budget grant, the World Bank's Poverty, Equity and Gender Unit for Latin America and the Caribbean, as well as the Environmentally and Socially Sustainable Development (ESSD), the Bank-Netherlands Partnership Program (BNPP) and the Spanish Impact Evaluation Fund (SIEF) provided support for the impact evaluation of the 'Atención a Crisis' Pilots. More information on this impact evaluation is available at www.worldbank.org/atencionacrisisevaluation.

The Findings

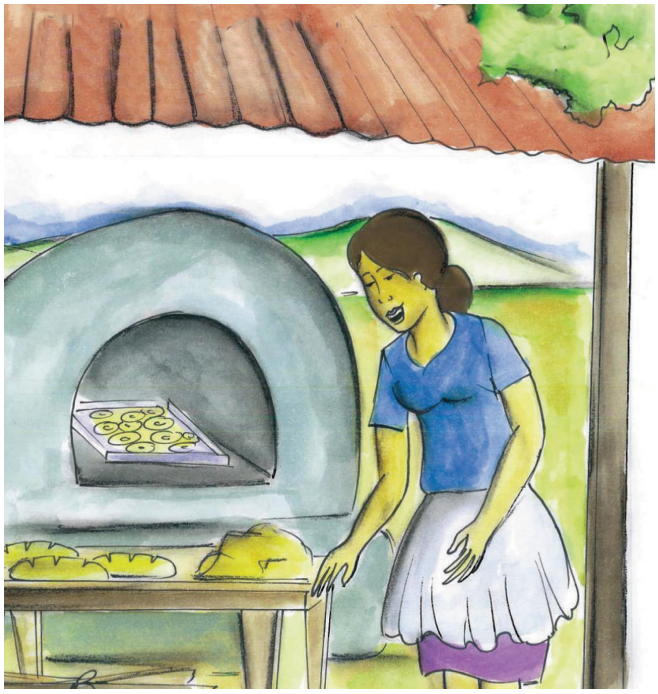

Illustration from a children's book presenting the experience of pilot beneficiaries

Two years after the program ended, families eligible for either investment grants or vocational training were better protected against weather "shocks" than families that qualified only for conditional cash transfers or didn't receive anything.

The program was designed both to help families cope with immediate difficulties, as well as help them over the long-term by giving them seed money to build a non-agricultural business or training to start a small business (like sewing) or get a non-farming job. Overall, families that received either vocational training or investment grants did develop alternate income-generating activities, reducing their dependency on crops. As a result, these households were fully protected from the effects of droughts. They were able to maintain their normal levels of consumption, instead of having to cut down on food and other expenses because of lower income from crops. The ability to maintain—or even boost consumption in some cases—was likely driven by increased incomes of the two groups. During droughts, households that qualified for either vocational training or investment grants had a higher income when compared with the control group.

In addition to being fully protected against the effects of drought, households that received grants to start small businesses also had higher consumption and incomes than the control groups during "average" weather conditions two years after the end of the program. This wasn't the case for households that qualified for vocational training.

During periods of average weather, consumption by households eligible for business grants was 8 percent higher than consumption in households that received nothing. The rise in consumption during these periods was matched by an income boost of 4 to 5 percent over the control group. However, there was no similar increase for households that got vocational training.

Families who received only conditional cash transfers didn't do as well after the end of the program.

Households that qualified only for the conditional cash transfer did consume more food and other goods during the year the program was in effect. But two years after the project ended, these households weren't able to maintain these higher consumption levels compared with the control group. Nonetheless, when broken down to look only at consumption of food, these households did better than the control group, both in the quantity and the quality of food consumed. The more nutritious food may be because of the effect of the conditional cash transfer program, which emphasized behavioral changes with respect to nutrition, as well as the spillover of having more local food for sale thanks to the investment grant that sparked creation of new businesses and stores.

One reason why the investment grant resulted in relatively higher income and consumption is that households that qualified for the grants were 13 percentage points more likely to be involved in non-agricultural self-employment.

Two years after the program ended, families that qualified for the grant were more likely than those who received vocational training or only cash transfers to be running their own small businesses, such as having a bakery, making cheese or running a corner store. Such businesses usually have small start-up costs—buying an oven for baking or goods to stock a store, for example—making the $200 investment grant critical to getting households started.

They weren't just running a business, but they were turning a good profit.

Average annual profits—measured two years after households had qualified for the grant—were about $30 higher than the control group. They also had an annual $10 return on livestock, for an average annual return rate of 15 to 20 percent on the initial $200 investment. Households running businesses said they expected profits to keep growing.

Conclusion

Helping small agricultural households manage the risks that come from climatic changes and bad weather isn't easy. Cash transfers can help families cope in the short-term, but in this case they did not offer a long term solution. The challenge is to help households successfully develop other income-generating activities to carry them through bad weather and smooth out the "shocks" to consumption that occur when crops fail.

As this evaluation showed, vocational training and investment grants can be effective in helping households manage the negative effect of severe droughts. Two years after the program ended, families that received investment grants not only better managed during bad weather, but their average income rose overall. Families that qualified for training didn't have a similar rise in average income, but their income was less variable during times of weather shocks.

This impact evaluation provides evidence that in addition to providing short-term support in times of weather shocks that can cut incomes, social protection programs that help families create new economic opportunities can have a long-term impact. They can protect households against the negative effects of droughts and other weather-related problems over the longer-term and provide opportunities for higher earnings. What this shows us is that reducing poverty, strengthening resilience and building productive opportunities can go hand in hand, a key message of the new World Bank Social Protection strategy.

The Human Development Network, part of the World Bank Group, supports and disseminates research evaluating the impact of development projects to help alleviate poverty. **The goal is to collect and build empirical evidence that can help governments and development organizations design and implement the most appropriate and effective policies for better educational, health and job opportunities for people in developing countries.** For more information about who we are and what we do, go to: http://www.worldbank.org/hdchiefeconomist

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