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A Loan for Lean Season

For farmers in rural Zambia, payday comes just once a year, at harvest time. This fact impacts nearly every aspect of their lives, but until now researchers hadn't realized the true extent.

Economist Kelsey Jack, an associate professor at UC Santa Barbara, sought to investigate how this extreme seasonality affects farmers' livelihoods, as well as development initiatives aimed at improving their condition. She and her coauthors conducted a two-year experiment in which they offered loans to help families through the months before harvest.

The researchers found that small loans in the lean season led to higher quality of life, more time invested in one's own farm, and greater agricultural output, all of which contributed to higher wages in the labor market. The study, which appears in the American Economic Review, is part of a new wave of research re-evaluating the importance of seasonality in rural agricultural settings.

Jack came to this research topic through her personal experience working with communities in rural Zambia over the past 12 years. She would often ask folks what made their lives harder, and she kept hearing the same story. These farmers rely on rainfall, rather than irrigation, for their crops. So their harvest follows the seasons. This means that all of their income arrives at once, during harvest time in June.

"Imagine if you got your paycheck once a year, and then you had to make that last for the remaining 11 months," Jack said. This leads to what's referred to locally as

the hungry season, or lean season, in the months preceding harvest.

When households find themselves low on food and cash, they rely on selling labor in a practice known as ganyu to make ends meet. Instead of working on their own farms, family members work on other people's farms, essentially reallocating labor from poor families to those of better means – though it's not always the same people in these positions from year to year.

When Jack spoke about this with her collaborator Günter Fink at the University of Basel, in Switzerland, he mentioned hearing the same story during his work in the region. They contacted another colleague, Felix Masiye, chair of the economics department at the University of Zambia, who said that while this was a known phenomenon in Zambia, no one had researched it yet. The three decided to validate the farmers' story and quantify its effects.

"This is basically the farmers' paper," said Jack. "They told us to write it and we did. And it turned out to be a really interesting story."



A rural village in eastern Zambia.

Photo Credit: NICK SWANSON

Before even launching this project, the researchers met with communities and conducted a full 1-year pilot study across 40 villages. They designed the experiment around the input they received, including loan sizes, interest rates, payment timeframes and so forth. Throughout the project the team worked with village leadership and the district agricultural office, and had their proposal evaluated by institutional review boards in both the United States and Zambia.

The experiment consisted of a large randomized control trial with 175 villages in Zambia's Chipata District. It essentially spanned the whole district, Jack said. The project lasted two years and comprised over 3,100 farmers.

The researchers randomly assigned participants to three groups: a control group in which business proceeded as usual, a group that received cash loans, and a group that received loans in the form of maize. The loans were designed to feed a family of

four for four months and were issued at the start of the lean season in January, with payments due in July, after harvest.

“They were designed to coincide with people’s actual income flows,” Jack said. She contrasted this with most lending and microfinance in rural areas, which doesn’t account for the seasonality of income.

The project provided loans to around 2,000 families the first year and about 1,500 the second year. Some of the households were assigned to different groups in the second year to measure how long the effect of the loan persisted.

In addition to collecting data on metrics like crop yield, ganyu wages and default rates, the team conducted thousands of surveys over the course of the study to learn about behaviors like consumption and labor.



Farmers participating in the study carry their maize loans home.

Photo Credit: RACHEL LEVENSON

Overall, the results affirmed the importance of seasonal variability to the livelihoods of rural farmers and the impact of any economic interventions. “Transferring money to a rural agricultural family during the hungry season is a lot more valuable to that family than transferring money at harvest time,” Jack said.

The experiment’s most striking result was simply how many people took the loan. “The take-up rates that we saw were absolutely astounding,” Jack exclaimed. “I don’t think there’s an analogue for it in any kind of lending intervention.”

A full 98% of eligible households took the loan the first year, and more surprisingly, the second year as well. “If the only measure for whether this intervention helped people was whether they wanted it again, that alone would be enough to say people were better off,” Jack stated.

For the most part farmers were able to repay their loans. Only 5% of families defaulted in the first year, though this rose a bit to around 15% in year two. Though she can’t be certain, Jack suspects poorer growing conditions in the second year may have contributed to this increase.

Of course, loan uptake was far from the only promising sign the researchers saw. Food consumption in the lean season increased by 5.5% for households in the treatment groups, relative to the control, which essentially bridged the difference between the hungry season and the harvest season.

Families that received loans were also able to devote more energy to their own fields. These households reported a 25% drop in total hours working ganyu, which translated to around 60 hours of additional labor on their own land over the course of the season. This saw agricultural production rise by about 9% in households eligible for the loan, which was more than the value of the loan itself.



Farmers working in the fields during the rainy season.

Photo Credit: NICK SWANSON

With fewer people selling their labor, those who did choose to do ganyu saw their wages increase by 17 to 19% in villages where the program was offered. This was buoyed by a 40% rise in hiring from those who received loans, which helped address economic inequality in the community.

What's more, Jack and her colleagues found little difference in the outcomes between families in the cash group versus those who received shipments of maize. It was a welcome finding, since cash is much cheaper to deliver than sacks of corn, though by no means inexpensive.

In fact, a huge challenge the researchers faced was simply the cost of delivering and collecting the small loans. In rural Zambia people are spread out, financial institutions are rudimentary, and infrastructure like roads are underdeveloped.

"If it was profitable to get these farmers loans then people would be giving them loans," Jack said. "But loans for things like food, school fees, and other basic needs just don't exist at reasonable interest rates."

To account for the large transaction costs, a lender could simply increase the size of their loans. That way the same interest rate yields more money to cover the fixed costs. But according to Jack, most families don't want to take on the burden of a

large loan.

The alternative is to charge higher interest on small loans. Interest rates for the loans in the study were 4.5% per month over the course of half a year, which worked out to a 30% interest rate over the six-month loan. This is steep compared to most lenders in countries like the United States; however, it was vastly lower than the 40-100% monthly interest rates otherwise available in these communities.

Several other factors contribute to these sky-high interest rates in addition to the transaction costs, including high risks and the difficulty of enforcing contracts. What’s more, the low availability of creditors makes it essentially a lender’s market. Economists continue to search for solutions to these challenges.



A granary where people store food.

Photo Credit: KELSEY JACK

Until recently, economists had largely written off seasonality as an important factor in rural development, Jack explained. But the results of this study underscore how everything — from grain prices to wages to labor allocation — fluctuates around the fact that everyone is poorer at one time of year and better off at another.

“As a result, there are potentially large gains for interventions that help people smooth their very infrequent income over the rest of the year,” she said. These can take many forms in addition to loans, from irrigation and new crops to bank accounts and farmer cooperatives — basically anything that helps smooth out resources or enables income to arrive more frequently.

The upshot is that governments and NGOs can increase their impact by incorporating seasonality into their interventions. Making better use of resources is particularly critical in light of budget cuts and economic hardships caused by the COVID-19 pandemic.

In fact, many of Jack’s current projects have been disrupted by the pandemic, including another randomized control trial that sought to build on the understanding gleaned from this experiment. She hopes to resume these studies, as well as discussions with different governments, as conditions improve.

Nevertheless, this study has provided a wealth of insights in its own right. “Crucially, the value of a dollar depends a lot on how many dollars you have,” Jack said, “so you want to direct assistance to those times of the year when they will be most helpful.”

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