Providing Foodstuffs and Cash Loans to Improve Smallholder Farming in Zambia

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Sector(s): Agriculture, Finance

Fieldwork: Innovations for Poverty Action (IPA)

Location: Zambia

Sample: 3,139 small-scale farming households in 175 villages

Initiative(s): Agricultural Technology Adoption Initiative (ATAI)

Target group: Farmers

Outcome of interest: Employment Consumption smoothing Food security

Intervention type: Credit

AEA RCT registration number: AEARCTR-0000130

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Research Papers: Seasonal Liquidity, Rural Labor Markets, and Agricultural Production

Partner organization(s): International Growth Center (IGC), Gates Foundation, UK International Development, Growth and Labour Markets in Low Income Countries Programme (GLM|LIC)

In the absence of formal credit markets, many farming households engage in costly coping strategies to make ends meet between harvests, including reduced food consumption, informal borrowing and short-term work in local labor markets. In Zambia, researchers conducted a randomized evaluation to examine the impact of access to seasonal credit on farming households' consumption, labor allocation, and agricultural output. Results suggest that access to food and cash loans during the lean season improved agricultural output and consumption, decreased off-farm labor, and increased local wages. The largest effects were seen among households with the lowest available resources (grain and cash savings) at baseline.

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Many farming households in sub-Saharan Africa lack access to formal credit and often turn to costly coping strategies, like reduced food consumption, informal borrowing, short-term work on other farms, and selling off assets like livestock, to make ends meet between harvests. Providing credit, either in the form of food or cash, could allow farming families to increase their food security and agricultural output. Farmers would not need to supplement with income from off-farm work to feed their families between harvests, and would therefore be able to spend additional time applying fertilizer, weeding, or harvesting the crop, which may increase yields. In the long run, this gain in productivity might increase agricultural incomes by more than farmers could earn through casual labor on other farms. Can loans designed to cover basic consumption needs for farmers during the lean season improve agricultural output and labor allocation?

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Small-scale farming is the primary source of income in rural Zambia. Most rural farming households are low-income, and in Chipata District, where this evaluation took place, the average monthly expenditure was US$122–or about one third of the national average in 2010.

Zambia's long dry season allows for one harvest per year, and there is limited access to formal savings or credit markets. This creates seasonal variation in household resources, where household liquidity reserves and food consumption peak after harvest and are at their lowest in the months leading up to harvest between January and March each year, typically referred to as the "lean" or "hungry" season throughout Zambia. Low food reserves and liquidity shortages during this period push low-income farmers to engage in off-farm labor, take out high interest loans, or sell household assets in order to obtain food and access cash for emergencies. Payments for input loans and other debts are often due at the time of the harvest, making it even more difficult for households to set aside resources for the next year.

All of the households in the study were small-scale farmers (using the Government of Zambia's definition of "small scale"), growing crops on less than twelve acres of land. Credit market access for households in the study was limited: only 5 percent had access to formal cash loans. Informal borrowing channels were slightly more commonly used, including high interest loans from moneylenders or loans from friends and family, though reported interest rates of the latter were also high. Almost two-thirds of farmers in the study reported having engaged in off-farm labor during the previous agricultural season, with the largest proportion of engagement among farming households with the fewest resources.



A farmer selects onions for distribution in Zambia.

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Researchers conducted a two-year randomized evaluation to test the impact of food and cash loans on household labor allocation, agricultural productivity, and food consumption. Researchers randomly assigned 175 villages, comprising 3,139 smallholder farmers, into one of three groups in the first year:

1. *Cash loan*: Farmers from 58 villages (1,092 farms) were offered a loan of ZK 200 (US$33 in 2014), enough to purchase three bags of maize at government prices.
2. *Maize loan*: Farmers from 59 villages (1,095 farms) were offered food loans consisting of three 50 kilogram bags of maize.
3. *Comparison*: Farmers in 58 villages (1,033 farms) served as the comparison group and did not receive access to loans.

In the second year of the evaluation, twenty villages from the comparison group who had not received loans in the previous year were provided either cash or maize loans (ten each). Additionally, 29 villages that received cash loans and 28 villages that received maize loans in year one did not receive loans during the second year of the study. This rotation was designed to measure the persistence of results for villages after just one year of receiving loans and isolate these effects from the impact of receiving loans both years.

Eligible villages were offered the loans at the start of the lean season in January 2014 and January 2015. Farmers had the option to repay ZK 260 in cash or with four bags of maize after harvest each year (in July), although farming households from a few villages were randomly selected to repay the loan in cash only. Researchers conducted follow-up surveys predominantly during the lean season each year to measure outcomes related to labor allocation, daily earnings, agricultural output, and food consumption.

Participation in the evaluation was voluntary and if farmers were unable to repay their loans, three attempts were made to request repayment, but no penalties were levied for defaults on the loans. Loan details, including size of the loans, interest rates and timing of both delivery and repayment, were designed through focus groups and vignettes that invited input from farmers in the study region.

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Overall, increasing access to credit during the lean season helped farming households allocate labor more efficiently, leading to improvements in productivity and well-being.

Take-up and repayment: Households had high demand for both cash and maize loans; 99 percent of farmers offered the loans took them up in the first year and 98 percent in the second year. Similarly, the repayment rate was 94 percent for both types of loans the first year, and 80 percent in the second. High take-up and repayment suggest that farmers were not only interested in seasonal loans, but were also willing and generally able to repay them with interest. Researchers speculate that the decline in second year repayment rates may have been driven by volatile rainfall patterns and lower overall agricultural output in 2015.

Labor supply and wages: Households that had access to a loan in the first year were 4.8 percentage points (14 percent) less likely to do any casual, off-farm labor, and sold 1.14 fewer hours (a 24 percent decrease) of casual labor per week during the lean season on average. Household members also spent more time working in their own fields: family labor invested on the farm increased by about 4.9 additional hours (10.6 percent) per week, on average. As a result of the reduced supply of casual laborers and increase in hiring, daily wages increased by 17 to 19 percent in loan villages in year one.

Agricultural output: In villages with access to loans, farming households increased agricultural output by around 9 percent on average relative to households in comparison villages. The impact on agricultural output was substantially larger in the first year of the program when the rains were good. Researchers suggest that the reallocation of family labor, from casual labor to the family farm, contributed to most of the increase in agricultural output and harvest value several months later. Households that

had the fewest resources and reported high interest rates before the program had the largest increases in agricultural output after the first year of receiving loans.

Food consumption: When offered food or cash loans, households had a 5 percent increase in the number of months with adequate food, experienced an improvement of 0.3 standard deviations in an index of households' perceived food security (whether they were worried about food or felt that they had enough food during the hungry season) , and consumed more meals relative to the comparison group. Further, there was no effect of loan access on consumption outcomes at harvest. This lack of consumption effect in the harvest period, along with the increase in food consumption during the hungry season indicates an overall increase in consumption and reduction in consumption seasonality. Households with the fewest resources at baseline experienced the largest increase in food consumption.

The results of this study suggest that offering farmers even small loans during the lean season can improve food security, increase wages, and raise agricultural output through a lower dependence on piecewise labor. The largest effects were seen among households with the lowest available resources (grain and cash savings) at baseline, consistent with a reduction in inequality and a more efficient allocation of labor across farms. Similar improvements might be achieved with improved saving mechanisms or better storage technologies that also alleviate seasonal liquidity constraints and decrease reliance on family labor.

The findings have led to a number of follow up engagements including a three year scale up partnership with a private sector organization in Zambia, that ultimately reached over 13,000 farmers, and new projects to investigate alternative approaches to smoothing consumption through savings.

Fink, GÌ_nther, B. Kelsey Jack, and Felix Masiye. ‰ÛÏSeasonal Credit Constraints and Agricultural Labor Supply: Evidence From Zambia.‰Û NBER Working Paper No. 20218, June 2014.