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ACTIVATION OF FOOD MARKETS AND FOOD SECURITY

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How to reduce poverty, vulnerability and food insecurity in remote areas is a complex issue that has not been settled till today. In order to mitigate the food access problem in rural areas of Sahelian countries, many aid organizations and governments have supported programs of cereal banks. This policy brief presents the results of a study aimed at evaluating the impact on food security of such a community- and market-based intervention. The positive and large impact found on food access and nutrition – especially in more remote areas – confirms that well-functioning food markets are crucial for food security and nutrition. The study also highlights that food reserve interventions like cereal banks can play an important role in activating local food markets in the Sahelian context.

INTRODUCTION

It is a well-established fact that food insecurity tends to be concentrated in remote areas of the developing world, leaving fragile states aside. By definition, these areas have scattered populations that are physically isolated. From their remoteness, it follows that they are characterized by pervasive market imperfections associated with high transaction costs. **How to reduce poverty, vulnerability and food insecurity in such deprived regions is a complex issue that has not been settled till today.**

Food security is imperilled as a result of either absent local food markets or of natural monopolies. The outcome in both cases is the same: in the first situation, villagers have to walk long distances to reach a marketplace, implying high food effective prices (that include transport costs), while in the second situation, they can buy locally supplied cereals but at excessively high nominal prices. Whichever the situation, **villagers typically face poor market conditions. Their predicament is particularly serious in times of seasonal food stress, which occurs during the lean season.**

In order to mitigate the food access problem, **in the late 1970s, many aid organizations and governments have widely promoted the creation of local community organizations aimed at activating local food markets.** Cereal banks are a typical example of these community-based interventions allowing to reduce market risks understood as either the availability risk (food supply becomes less reliable in times of need) or the price risk (food price rises in times of need). They consist in village cooperatives that buy, store and sell food grains on local markets. The expected effect is that households will buy closer to their dwellings, at lower prices and more according to their needs.

However, most of the 4000 cereal banks that were inventoried in Sahelian countries in 1991 collapsed in the late 90s. Mismanagement, embezzlement of funds, and lack of trade opportunities explain this widespread failure (for a review of the problems, see World Bank, 2011). **Many of these banks have proved unable to sustainably manage their activities, being obliged to discontinue them as external supports started decreasing.**

While there is limited evidence of their impact (e.g. Basu and Wong, 2015; Mwamfupe, 2015; Jatta, 2015; Bhattamishra, 2008), **cereal banks and their derivatives benefited from a resurgence of interest over the last decade.** The World Food Program, the European Union (through ECOWAS), donor governments, Non-Governmental Organizations and local authorities, started to support again thousands of initiatives designed to promote food security through the building of local food reserves in Sahelian countries (Oxfam, 2013).

A particularly interesting example is the program of Food Security Granaries (FSG) undertaken in 2002 in Northern Burkina Faso and financed by the Belgian Fund for Food Security (FBSA). The idea was **to revitalize a network of about 400 former cereal banks** while paying a stronger attention to financial viability considerations.

The precise **features of the intervention** are as follows:

1) To set up a local, informal storing and marketing organization whose function is to buy food grains, then store and sell them along the agricultural year,
2) To grant (gradually scaled up) annual credit to each village organization in the form of a revolving fund,
3) Through the network of such cooperatives, shift grain from surplus to deficit village communities so that the latter can complement local supplies with external ones, and
4) To provide training and capacity-building for local management teams, as well as monitoring and multi-level technical assistance on a continuous basis.

A longer-than-ten year experience with the program appears to show that many of the local FSGs have indeed been able to sustain their operations. In no small measure, this may be reasonably attributed to the well-established presence, in Burkinabe villages, of the antennas of the National Federation of Farmer Organizations known as Naam groups (FNGN), itself assisted by the Belgian NGO SOS Faim in charge of implementing the program. However, **very little was known about the impact of this program on food security and nutrition as the focus was on considerations of financial viability.**

EVIDENCE AND ANALYSIS

Rural populations in Northern Burkina Faso - as in the Sudano-Sahelian zone in general - are living in remote villages with poor infrastructure. They are organized into farming households producing mainly cereals for their own consumption over a single agricultural season - from June to October. At harvest time, they typically store grain in household granaries before consuming it gradually throughout the agricultural year which starts after harvest and ends up one year later with the new harvest.

The food diet is poorly diversified in those areas and food grain represents more than two-third of the daily calorie intake. In absence of irrigation, agricultural production is highly sensitive to rainfall shocks, and while some households are systematically able to produce enough grain, most of them crucially depend on food markets.

Over the 2011-2012 agricultural year, as many as 87% of households were not able to produce enough grain to satisfy their basic needs. While there is always some market demand for grain, it appears to have reached very a high level following the bad harvest of that particular agricultural year: the grain deficit amounted to almost one third of annual consumption (45 kg per head) on average. This strong market demand resulted in very high prices as early as the beginning of the agricultural year. For example, the mean price of sorghum increased by 50 % compared to the previous year.

After the 2011 harvest, twenty out of forty sampled villages were randomly selected to benefit from the FSG intervention as a consequence of which appointed local managers obtained an annual credit of 3,150 Euros (on average) for working capital purposes. Using this fund, each FSG had sold an average of 18.1 tons of grain, which corresponds to about 3.5% of total annual village requirement. Their broad market share was 14% and reached more than 30 % when only considering village transactions. For a first year of activity with limited access to funds, the experimental FSGs carried out a non-negligible market activity as compared to more experienced villages.

Using the method of community-level randomization and collected data points before and after treatment, we find that FSGs have had a positive impact on an original set of food security indicators. It includes intermediate outcomes capturing various dimensions of household food access (availability, price, purchase, timing) but also final nutritional outcomes.

Anthropometric measurements show that the **food granaries have had a positive and large impact on nutritional status of both adults and children**. More precisely, **the nutritional situation in beneficiary villages was stabilized during a drought year.** By contrast**,** villages not covered by the program experienced some adverse nutritional stress.

Importantly, **the positive effects of the program were observed for the whole population of the beneficiary communities, and not only for those who actually purchased food from the FSG. This confirms positive spillovers from an intervention that affects local market conditions. In addition to that, and according to expectations, the effects are more pronounced in more remote communities.**

The program activated local food markets. **It substantially increases the market share of local sellers** or, equivalently, decreases the total distance trodden by households to buy cereals. Households in beneficiary villages tend to postpone their purchases until their own production stocks are depleted. T**he intervention is also responsible for a significant decrease in the price paid for cereals.** Overall, these results suggest **an improved availability of and better access to food.**

Strangely enough, there is no evidence that this improved access translates into higher or better food consumption. As a matter of fact, the FSG program has apparently no impact on both the quantity and the diversity of food consumed.

Those results lead to two puzzles. **First, why households have not increased the quantity of grain purchased while prices have decreased? And second, how can we account for an improvement in**

nutrition when total grain available (the sum of own production and purchase) did not increase as a result of the program?

In fact, the timing of purchases is critical to understand these puzzles. By purchasing food later on in the cycle, households better manage the allocation of consumption throughout the year. In particular, they can increase food consumption when heavy work is required in the field and they rely less on costly body fat storage. Moreover, limited storage in the dwellings allows households to avoid redistributive pressures exerted by close relatives and neighbours.

In conclusion, the program reached its objective of enhancing food security and nutrition in a drought year through an activation of local food markets. The role of well-functioning markets is precisely to enable households to adjust their purchases so as to minimize the transaction and other costs of consumption. When markets are fraught with uncertainty, such smooth adjustment is not possible and costs are unavoidable. **It is noteworthy that the program has had the most pronounced effect on remote areas where food markets are most imperfect and where the potential for improving food security through market activation is therefore the largest.**

POLICY IMPLICATIONS

Some policy implications relate to the driving factors of food security in the Sahelian context while others shed light on the conditions under which a community – and market-based intervention – is capable to address this issue in a hopefully sustainable way.

First, **well-functioning food markets are crucial for food security and nutrition**. In a context of pervasive market failures, an intervention aimed at strengthening market integration can improve food access and nutrition. This is especially true for populations from remote areas in which vulnerability to food shocks is typically higher. **A sub-program aimed at the activation of local food markets should therefore be systematically included in all food security programs.**

Secondly, **community and market-based interventions like cereal banks perform well for the above purpose.** Although not large, the grain shift operated by FSGs change market conditions in a way favourable to local consumers: cereals are bought closer to the dwellings and are supplied at lower prices. This market effect causes both users and non-users to benefit equally from the intervention, confirming the positive spillovers from the intervention. **In sum, the study provides strong evidence to support the renewed interest of major donors in programs of local food reserves.**

This also sheds some light on the conditions under which local food reserves could operate on a sustainable basis. **The experience of FSGs shows that providing proper financial incentives and close continual supervision is a necessary condition to achieve financial viability and to enhance food security simultaneously. Another key aspect is their organisation in a network structure.** It is this feature that allows efficient circulation of food between surplus and deficit communities in times of localized food stress. The existence of economies of scale in the management of food movements as well as the availability of superior information regarding local situations are central factors explaining the advantage of a federal organization such as the FNGN.

Close monitoring and support of target village communities is a main condition for success. A direct implication is that donor agencies or local governments need to provide funds aimed at financing the related costs, at least for a sufficiently long period of time. The fact that a non-negligible number of village granaries did not prove financially sound at the time of the renewal of the credit program actually shows that the monitoring was not intense enough to prevent all kinds of management problems. This alternatively suggests that the leadership and collective action capacity are too deficient to permit an efficient working of community-based program of food reserve. **If, as a result, monitoring costs are excessively large, donors may find it legitimate to drop out the troubled communities.**

RESEARCH PARAMETERS

The study relies on first-hand micro-level data collected with the explicit purpose of assessing the impact of the intervention and forming a dataset that covers three complete agricultural cycles (2010-2011, 2011-2012 and 2012-2013). The sample includes 400 households (or, equivalently, about 4500 individuals), who were visited five times over this period, at crucial moments of the agricultural cycle.

Moreover, **authors collected disaggregated data that go down to the individual level and enabled them to assess the nutritional status of all household members.** The dataset is exceptionally rich also because they have systematically gathered very detailed information about cereal transactions and behavioural patterns. These allow them to elucidate the pathways through which the intervention impacts food security of the population under study.

To identify the causal effects of the program, the authors relied on a randomized scale-up of the program, which involved 40 eligible villages having never benefited from the intervention before. They randomly assigned half of them to the treatment group and use the 20 remaining villages as control group. They also exploited pre-treatment data to control for initial chance differences across groups and subsequently increase the precision of their estimations.

FURTHER READINGS

Basu, K. and M. Wong (2015). Evaluating seasonal food storage and credit programs in east Indonesia. Journal of Development Economics (115), 200– 216. 1

Bhattamishra, R. (2008). Grain Banks: An Institutional and Impact Evaluation. Ph. D. thesis, Cornell University. 1

Gross, J., C. Guirkinger, and J-P. Platteau (2016): *Activation of Food Markets and Food Security: Impact of Cereal Banks in Northern Burkina Faso*, Mimeo, University of Namur

Gross, J and M. Mees (2016), Les Greniers de Securité Alimentaire au Burkina Faso: un Impact Confirmé, SOS Faim (Available on https://www.sosfaim.be/publication/les-greniers-de-securite-alimentaire-au-burkina-faso-un-impact-confirme/)

Jatta, R. (2015). Cereal banking impacts on food and nutrition security and resilience building of rural households in the Gambia. Technical report, World- Bank, Washington. 1

Mwamfupe, D. G. (2015, June). The experience of community cereal banks in food-deficit areas of semi-arid Tanzania. International Journal of Scientific and Research Publications Volume 5, Issue 6. 1

Oxfam (2013). First Line of Defence : Assessing the Potential of Local Food Reserves in the Sahel. Oxfam Research Reports written by Pons Cortès, G. and I. Gomez Carrasco.

World Bank (2011, April). Missing food: the case of postharvest grain losses in Sub-saharan Africa. Report No. 60371-AFR, Worldbank, Washington. 1, 5

PROJECT IDENTITY

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