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Expanding or increasing : index-based scalable social protection in Niger

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Expanding or increasing: index-based social protection in Niger

This case study documents the risks and shocks Nigerien households are exposed to and examines the welfare implications of expanding versus increasing a cash transfer program in Niger.

What is the case study about?

Niger suffers from widespread poverty, extreme weather conditions, and social distress. Nearly half of the population lives below the national poverty line, with 41% or 6.7 million of Nigerien citizens living on less than US$1.25 a day (PPP). The 2011 Living Standard Measurement Study (LSMS) survey indicates that unemployment and weather calamities are perceived as the main causes of poverty. In the year prior to the survey, almost 20% of respondents experienced the negative consequences of drought and irregular rain. The pervasiveness of these events are met with limited public resources to provide assistance. As a result, the LSMS survey indicates that the most common coping strategies in the face of a weather calamity are to either engage in spiritual activities or do nothing. The inability to cope with shocks imposes substantial consumption and welfare losses, calling for the development of a sustainable safety net system.

This case study contributes to these efforts by tackling two sets of questions. First, can we rely on meteorological and agronomic data to identify the potential beneficiaries of a social protection program? The targeting of beneficiaries is typically based on household-level data that would allow to accurately single out the most vulnerable and poor individuals. However, collecting and updating this information is a costly and time-demanding exercise which may call for alternative solutions. In this study we assess whether meteorological and agronomic data can be used to rapidly deliver assistance in response to weather shocks. Second, what are the welfare implications of expanding the number of beneficiaries relative to increasing the level of benefits under a given cash-transfer program?
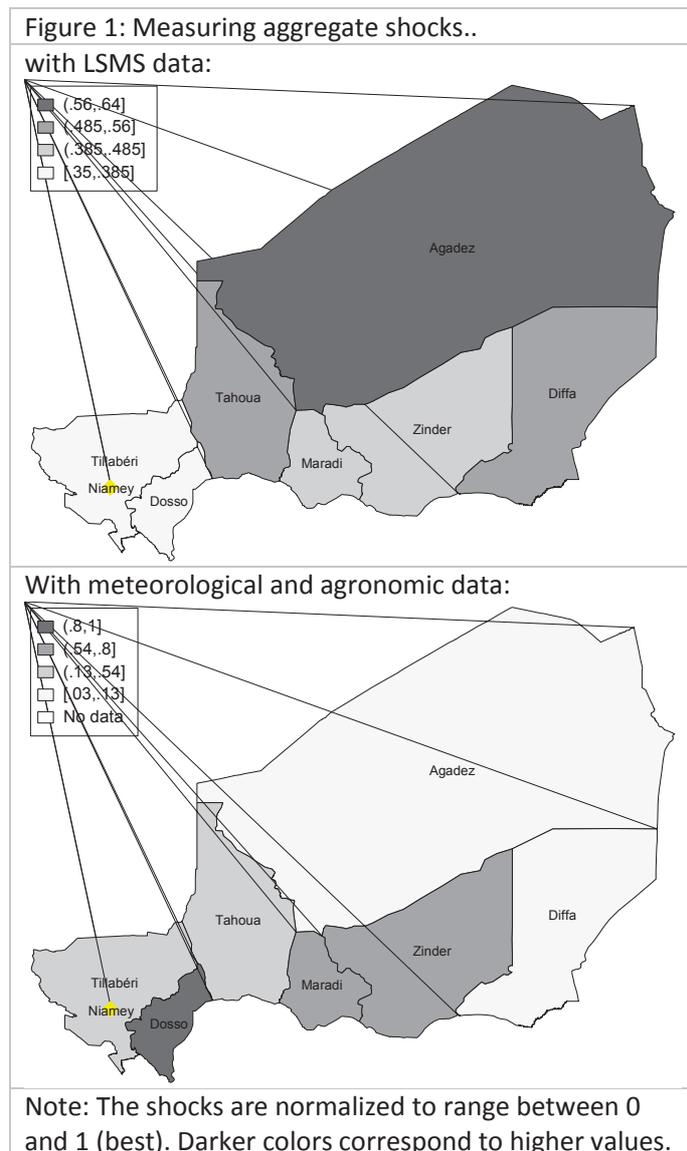
How do we answer these questions?

We pool information from two main data sources to assess the sources of risk and the extent of the shocks affecting Nigerien households. First, the 2011 Living Standard Measurement Study (LSMS) survey provides insights on the typology and frequency of the shocks experienced by a national representative sample as well as a host of household- and community-level information. We apply a multilevel analysis to decompose the consumption shocks into an idiosyncratic and a covariant component. Second, we rely on meteorological and agronomic information that inform the calculations of the Water Requirement Satisfaction Index (WRSI) according to the methodology developed by the Food and Agriculture Organization of the United Nations. The WRSI provides a synthetic measure of crop yield losses under different weather conditions given the crop water requirement at different growth stages. We compare the WRSI distribution with that of the covariant shocks computed using LSMS data to assess the robustness of the alternative approaches used to quantify the aggregate shocks.

We then undertake a thought experiment to assess the welfare implications of changing the extensive or the intensive margin of the safety net program. Specifically, we assume that a fixed budget equivalent to 5% of GDP is allocated to fund a safety net program, in line with the amount spent on humanitarian interventions in Niger during the period 2001-2006. We assume that the program is progressively rolled

out in an increasing number of regions, keeping constant the overall envelop and consequently reducing the level of transfer per capita. We account for the cost of acquiring data and determining the region-specific weather realizations that would lead to a severe shock and trigger the payment of the cash-transfer program. In order to quantify the impact on welfare we need to make assumptions about the utility function. We select a Constant Relative Risk Aversion (CRRA) utility function whose concavity implies that higher consumption is more beneficial for poorer than richer households. This is consistent with the preferences of a Government that aims to improve the wellbeing of its most vulnerable and poor citizens.

What Do We Find?

Figure 1: Measuring aggregate shocks.. with LSMS data:

With meteorological and agronomic data:

Note: The shocks are normalized to range between 0 and 1 (best). Darker colors correspond to higher values.

Preliminary results indicate that index-based cash-transfer programs have the potential to substantially improve welfare. We compare the welfare gains achieved from an index-based program against those from a typically used proxy-mean-test targeting. Under a set of simplifying assumptions, targeting beneficiaries using meteorological instead of costly-to-acquire households data is preferable since it frees resources for additional funding for transfers. However, the lack of consistency between covariant shocks derived from LSMS survey and those based on the WRSI warns against relying only on remote data to identify beneficiaries (Figure 1).

% Welfare gains

Regions where cash transfer programs is rolled out

7   6   5   4   3   2   1
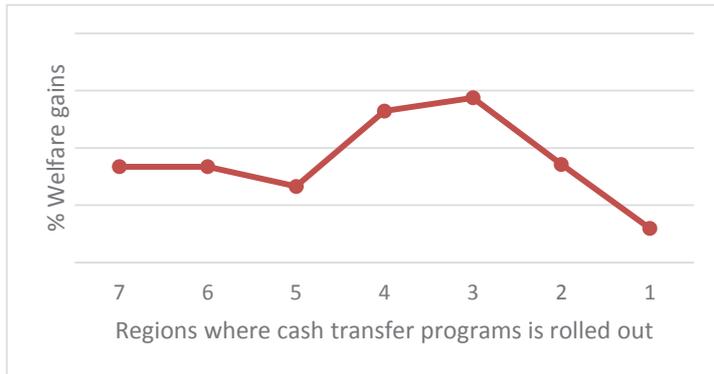
The tradeoff between expanding and increasing a cash transfer program follows a non-linear function. The pervasiveness of poverty across Nigerien regions results in higher welfare gains as the cash transfer programs is extended to a larger number of beneficiaries. Yet, the welfare calculations points in favor of balancing the number of beneficiaries and the number of regions covered by the program in order to maximize welfare.

Policy Implications

Niger may largely benefit from the development of a sustainable safety net program. However, the design of such intervention is not a trivial exercise. Targeting beneficiaries using meteorological and agronomic data could provide cost-effective solutions, yet the low correlations with alternative measures derived from households-level data may warn about the reliability of this approach.

Expanding the number of beneficiaries or increasing the level of benefit provided by a cash transfer program depends on the underlying distribution of poverty. In Niger, where in almost every region at least 1 in 5 is poor, policy makers could prefer expanding the program. Improving the efficiency of delivery mechanisms would then become essential to fully reap the potential benefits of a cash transfer program.