Using High Frequency Data to examine Resilience and Women Dietary Diversity in Uganda

RATIONALE

Resilience is an important concept given the current global situation of continually occurring shocks, including the COVID-19 pandemic - the ability of families, individuals, or communities to withstand shocks and stressors to maintain a certain level of well-being or their ability to bounce back or recover over time when exposed to stressors or a setback of some type. Several donors, development agencies, and international Non-Governmental Organizations (NGOs) have embraced the concept. Being an unobserved concept makes resilience challenging to measure. Yet, the correct measurements for resilience are critical for the proper targeting, identification of hotspots, understanding of the drivers, and measuring the impact of any interventions. So, there is a growing need for more evidence on its measurement using the existing metrics with different types of data sets, which motivates this study.

METHODS

Our interest was to measure whether the concept of resilience could change in a short period (within two to three months) and the possibility of the Resilience Index Measurement and Analysis (RIMA-II) measuring these changes. We also verified and explained quantitative estimates with qualitative methods. We proceeded as follows:

1. First, we estimated whether certain pillars in the estimation of resilience changed in two to three months. For example, households may withdraw or join new groups within this period, diversify their income sources, the number of assets may change, and distance to the markets may vary (due to floods.

KEY FINDINGS

- We measured whether the concept of resilience may change in a short period (within two to three months) and the possibility of RIMA-II measuring these changes.
- Our assessment established that the resilience concept changes within six months and does affect women's dietary diversity.
- Qualitative interviews also show that for some shock households can recover within the year to their previous level of well-being using different coping strategies.
- Overall, this study reveals the possibility of employing RIMA-II metrics for measuring resilience with data collected in six months durations.
RIMA-II DATA

We used high-frequency data to estimate resilience using the Resilience Index Measurement and Analysis (RIMA-II):

- Data came from surveys collected every two to three months, from June 2020 to August 2021.
- The sample consisted of eight districts Kole, Lira, Kamwenge, Kisoro, Kotido, Moroto, Sironko and Bududa in Uganda purposively selected based on their past exposure to climatic and price shocks.
- Using probability proportional to size sampling, 80 households were selected per district from the household listing to make a total of 640 households.
- The first survey wave was in June 2020, the second in August 2020, the third in December 2020, the fourth round in March 2021, the fifth round in May 2021 and the last round in August 2021.
- We also conducted phone interviews with half of the sampled respondents randomly selected from the six districts.

FINDINGS

From RIMA II estimation, we find that the latent variable pillars namely: assets, adaptive capacity, and social network of families are positive and have a statistically significant effect on the resilience capacity of households. Figure 1 shows the changes in the resilience index of households across the waves. Families were equally distributed across the first, second, and third resilience tertiles in the first wave of data collected in June/July 2021. In the second and third waves, most households were in the first and second resilience tertiles, while in the fourth, fifth, and sixth waves, the highest number of families were in the third resilience tertile. The distribution of families across the resilience tertiles in the different waves corroborates with the number of shocks reported in the various waves.

The results also show a statistically significant reduction in the resilience index of households between wave one, conducted in June, and wave three, conducted in December, and then a significant increase in the resilience capacity of families from wave 3 to wave 6. There were no significant differences in the resilience capacity of households in the third and fifth wave compared to the previous. One might suggest that a simple variation in the resilience pillars and capacity index, without considering the impact of shocks does not reflect changes in the household’s well-being and resilience capacity due to exposure. Nevertheless, we find that the shocks that occurred in one wave affect the wellbeing of households in the next wave and, ultimately, the resilience capacity of households (Figure 2). This result explains the behaviour of rural households within the year concerning short-term shocks and short-term coping strategies adopted to cope with the shocks. So households likely recover from some shocks initially experienced within the year.

2. that may make roads impassable. The number of shocks might also increase or decrease within a short period.
3. We corroborated the resilience constructed using RIMA-II with subjective measures of resilience (explained in the side-bar) and qualitative data collected from in-depth farmer interviews and focus group discussions.
4. Using the RIMA-II approach, we constructed the resilience capacity index for each survey wave and estimated if there were significant differences between the waves. Through the estimated resilience capacity index, we determined whether Households withstood and bounced back to their previous well-being in the presence of shocks.
5. We compared the resilience capacity index estimated through RIMA II with the Subjective Self-Evaluated Resilience Score (SERS) to find synergies and to establish whether the concept of resilience does change within short spans in the presence of some shocks. We used qualitative interview responses to explain the estimated resilience further.
6. Lastly, we assessed the effect of resilience on women's dietary diversity.

Figure 1. Resilience Capacity Index across the waves, Figure 2. Shocks, resilience and women dietary diversity across several waves of data collected.
This result explains perhaps the behaviour of rural households within the year concerning short-term shocks and short-term coping strategies adopted to cope with the shocks. So households likely recover from some shocks initially experienced within the year as also reflected in our focus group discussions. The results also show that a one standard deviation increase in the resilience capacity of households leads to a 1.42 increase in the magnitude of women's dietary diversity. More resilient families have a better women's dietary diversity score.

Lastly, the resilience scores constructed from RIMA-II are comparable to those estimated using the subjective self-evaluated resilience score, and are backed by the findings from the focus group discussions and in-depth farmer interviews. For example, both approaches showed that the household’s wealth status, the number of livestock units, education level, and age of the household head are positively related to resilience. Also, both methods show a positive association. Overall, this study has revealed the possibility of employing the RIMA-II metrics for measuring resilience with high frequency data as a way to understand the dynamic and complex nature of resilience within short time spans.

NEXT STEPS

The high frequency data that the project accessed consists of two waves of data collected after the first and second lockdowns, instituted by the Government of Uganda to curb the spread of COVID-19 amongst its population. In the next steps, I explore the effect of these Covid 19 restrictions on the resilience of households. In another research study (here), I collaborated with Researchers at Center for Development Research, University of Bonn (ZEF) to study the Effect of COVID-19 and Associated lockdown measures on Household Consumption, Income and Employment. Evidence from Sub-Saharan African Countries. The results from this discussion paper show that in the early days of the pandemic, restrictions within and between countries significantly increased job losses and decreased household income. Surprisingly though, household dietary diversity remained stable across the countries studies although average food consumption expenditure per capita has declined.

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REFERENCES


