



Climate Variability, Temporal Migration and Welfare Among Agricultural Households in Tanzania

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Highlights of findings

- Climate change risk has been one of the factors that induces people to migrate internally. As a result of climate change risks, temporal migration strategies have been linked as an insurance strategy to cope with its impacts.
- Findings indicates climate change and variability to have no effect on overall agricultural production but a significant effect on maize production, a staple food crop in Tanzania.

- A high market value from production is associated with a lower chance that climate variability will force a household member to migrate. In cases where climate change leads to temporal migration, the migrants may shield the household from large welfare loss by bringing back their earned income or come with new skills. Thus, more investments in adaptation to climate change can reduce temporal migration which is high among youth. This will facilitate retaining of productive force thus boost rural economy where agriculture is commonly practiced.

Introduction

Climate change risks poses threat to productivity and human welfare especially those living in climatic prone areas and those whose livelihood depends on agriculture activities. More than 80 percent of rural households in Tanzania are employed in the agricultural sector. Their incomes are vulnerable to climate change due to the adverse impact of climate variabilities on the sector. Already several mechanisms are employed by households to insure themselves against climatic risks, including agriculture diversification, income diversification, and social networks. Still no guarantee of which mechanism is best especially for agricultural households in developing countries like Tanzania. Among other mechanisms temporal migration strategies has been linked as strategy to cope with impacts of climate change but this channel has not been intensively researched on which motivates this brief's objective.

Most of mechanisms adopted by households may work better in the cases of individual risks, while most are less efficient if risks are covariant and affect everyone in an area. Spatial diversification, such as internal migration, has been employed to ensure against covariant risks like climate risk. Temporal internal migration may guarantee vulnerable households by supplementing income from remittances, extended business networks, or benefits from returning migrants who have acquired capital and skills. However, benefits only materialize if migrants remain in contact with their sending household.

This brief objective is to analyse whether seasonal temporal migration is a channel that farmers use to respond to climate risk. The questions this brief is trying to answer are: Whether the rate of temporal migration is higher among agricultural households compared to other households, is climate variability a driving factor for temporal migration among agricultural households and what are the characteristic of household's members who migrate due to climate compared to those who remain in original household location?

Summary of research

A study uses three waves (2008/09, 2010/11, and 2012/13) of the Tanzania National Panel survey data (NPS), which is a part of the living standard Measurement studies collected by the World Bank and the Tanzania National Bureau of Statistics. Secondary analysis is taken at household level that included individual information (sex, age, education), household (size, location, assets, expenditure), agriculture (production at plot level and harvest at household level) and climate data at household level (where climate variability is measured as deviation of temperature and rainfall from the average rainfall of the location from the past 20 years and as the deviation from the previous year's recorded levels of rainfall and temperature).

Research findings

- Rate of temporal migration has been steadily increasing, and it is higher among the working population age. However, heads and their spouse are less likely to migrating within households with proportionally lower (but the absolute number is high) migration among farmers. Agriculture is seen as a none pull factor as most youth without jobs migrate out of agriculture households.
- Climate change and variability may not necessarily be a push factor for temporal migrants in agricultural households, but it affects the staple food crop. Climate variability measured by deviations of the current level of rainfall from the long term (about 50 years) and medium term (about 10 years); and overall agriculture production, do not have significant effect on migration nor do they reinforce each other to influence temporal migration, similar to findings by Marchetta et al. (2021). However, when zeroing to households that produce maize, the major staple food in Tanzania, it is found that climate variability as measured by the long term deviation increases the probability of temporal migration. Insignificant effect of climate variability on overall agricultural production could possibly be because farmers might have adopted different farming techniques to absorb the effects of climate change.
- A high market value from production reduces is associated with a lower likelihood that climate variability will lead to migration. This result indicates that low yield per se cannot fuel a household sending a member as a migrant if the prices are good enough to restore the value of the produce.
- Households who have temporary migrants have higher per capita expenditure compared to those without migrants. But this effect is direct and not through sending of remittances. This could imply that temporal migrants may not be sending remittances directly to their homes, rather come back home with their earned incomes which boosts household expenditure. It also implies that temporary migrants have acquired new skills which are then employed to generate more incomes, hence more expenditure.

Policy recommendations

- 1) Enhance more efforts toward increasing adaptation to climate change to reduce temporal migration, which is concentrated more among youth. This can be advantageous by retaining the productive force which can propel rural economy where agriculture is mostly practiced.
- 2) Government to partner with private sector to design programs and introduce systems such as agriculture technical hubs to make agricultural activities attractive to retain more youth in the sector. This will substantially reduce youth migrating to urban areas and create enough labour supply to agriculture sector in rural areas.
- 3) Strengthening non-farm enterprises where the income earned, and skills acquired can be invested as a strategy to reduce vulnerability to climate change among agricultural households.

References

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