The Construction of The Multidimensional Poverty Index of Kenya using The Alkire-Foster Method

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Outline

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Introduction

- Poverty is a phenomenon of multiple dimensions.
- However, majority of empirical work uses one-dimension measure usually household income/expenditure.
- Motivation: Lucy's Formula for revenue allocation uses poverty index as one of the variables. Lucy's formula:

$$CA_i = 0.46PN_i + 0.27ES_i + 0.17PI_i + 0.07LA_i + 0.02FE_i + 0.01DF_i$$

- The poverty index in Lucy's formula was calculated using the Human Development Index used by the UN. HDI combines the aggregate dimensional achievements into one general score.
- The AF Method is a better method since it determines the number of people who are poor and the number of deprivations they have.

Significance

- The AF method is quick to show the effects in changes in policy than income alone.
- This method can be used in policy making to target the poor specifically.
- Shows the intensity of poverty.
- Can be used to target extremely poor people as beneficiaries of Unconditional Cash Transfers.
- The government can use the AF Method to plan and cater for the poor in the economy.
- Invest resources where they are most likely to be effective in reducing poverty.

Objectives

- To reconstruct the poverty index of Kenya using the AF Method
- To compare the results of the AF Method and the results from the HDI poverty index used in Lucy's formula

Presentation of the AF Method

- The study focuses on all the 47 counties of Kenya
- The Alkire-Foster Method is as follows:
  1. Choose the unit of analysis
  2. Choose dimensions
  3. Choose indicators
  4. Set poverty lines (first cutoff)
  5. Apply poverty lines
  6. Count the number of deprivations in all dimensions
  7. Set the second cutoff 'k', assuming equal weights for simplicity
  8. Apply cutoff 'k'(number of deprivations to be considered multidimensionally poor)
  9. Calculate the headcount 'H'. Divide the total number of poor people by the total number of people.
  10. Calculate the poverty gap 'A'. Average number of deprivations a poor person suffers. Add the proportion of total deprivations each person suffers an dividing by the total number of poor persons.
  11. Calculate the Adjusted Headcount, M. M=H*A

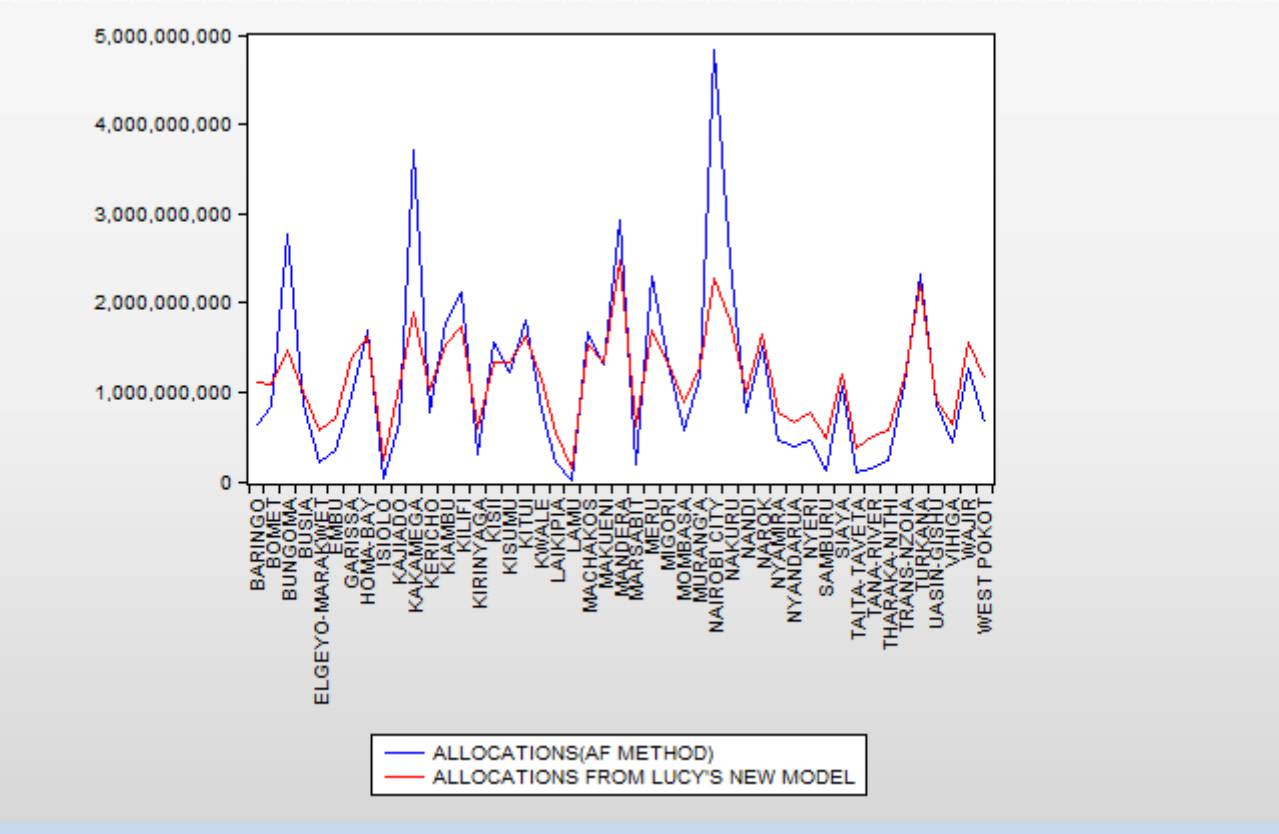
Robustness Tests

- Test for sensitivity to changes in ‘k’ to assess the extent to which the conclusions will be sensitive to the number of deprivations required to qualify as multidimensionally poor
- Test for statistical significance of the results and stochastic dominance. Check whether the different estimated values of the MPI(M) are significant under null hypothesis MPI=0
- Robustness tests are crucial for ensuring that results obtained are not dependent upon the calibration choices and for allowing these choices to be made in the first place

Anticipated Results

- Determine the number of deprivations.
- Rank the counties from the wealthiest to the poorest using Mann-Whitney U Test.
- Compare these results with the results from HDI used in Lucy's model.

Results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TANA-RIVER
THARAKA-NITHI
TRANS-NZOIA
TURKANA
UASIN-GISHU
VIHIGA
WAJIR
WEST POKOT
ALLOCATIONS(AF METHOD)
ALLOCATIONS FROM LUCY'S NEW MODEL

Conclusion

- The two main objectives of this study were to reconstruct Kenya's poverty index using the Alkire-Foster Method and compare the difference between the poverty allocations arrived at by AF method and Lucy's model allocations. Based on the results of the study, we aimed to offer suggestions for improving the poverty index used in Lucy's model.
- We constructed the Kenyan poverty index using the AF method using data from the Commission for Revenue Allocation. The cutoffs described in the methodology were used and from this we were able to come up with the indices shown in Appendix A.
- The correlation between the allocations arrived at using both the AF method and the HDI in Lucy's model is 0.894789 which is quite high, indicating a strong positive correlation between the allocations from both methods. When we tested the significance of the difference in ranking the results from the test show that $U_{test} = 949$ with a Z score of 1.96. The test validates the null hypothesis which means that there is no difference between the rankings of counties using both methods.
- In conclusion, we find that though both methods indicate different counties as the neediest (Nairobi-AF method, Mandera-HDI; Lucy's model), there is no statistically significant difference between both the allocations arrived at by both models. We cannot offer suggestions for improvement of Lucy's model given the results of the study.

References

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- Muthoni, L. (2016). *Criticism of Lucy's Revenue Sharing Formula for 2016/2017/2018.*

THANK YOU

QUESTIONS?