DATA & EVIDENCE

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TO END EXTREME POVERTY

Building high-quality evidence and insights **to help tackle extreme poverty**

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Understanding Poverty Dynamics and Vulnerability in Tanzania: 2012 – 2018

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Introduction

- Poverty analysis in the developing world very focused on assessing progress in the decline of static poverty line
  - Data constraints: Repeated cross-sections but not panels
  - Optimistic prospects on poverty reduction

- Pandemic setback to poverty reduction emphasizes the importance of thinking about dynamics and vulnerability

- Attempt to provide systematic assessment of poverty dynamics in a set of country studies (Ethiopia, India, Myanmar, Mozambique, Tanzania) published in special issue in the Review of Development Economics (2021)

- Use synthetic panel methods to overcome constraints on data avilability

Motivation and Contribution

Why Tanzania?

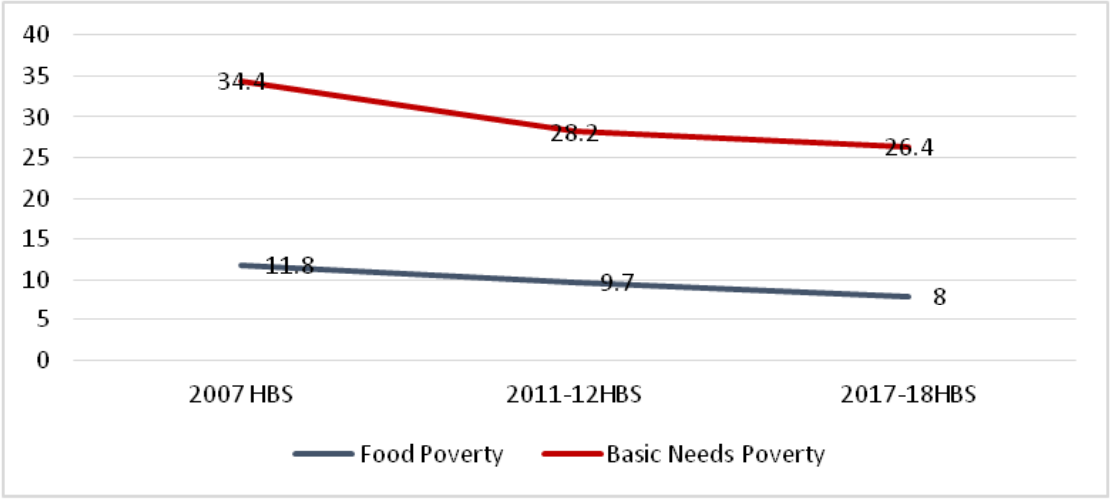
- Tanzania among the countries accounting for largest number of the extremely poor (in SSA and globally).
- Context of high vulnerability and transient poverty
- Unconventional response to Covid-19

This paper:

- Analyse poverty dynamics and vulnerability in ´normal´ times
- Apply synthetic panel methods to most recent data from large household survey that underlies national poverty statistics (HBS 2011/2 – 2017/8).
- Integrate (limited) information on Covid-19 economic impact with this analysis to think how recent developments may affect (or not) the profile of the poor and vulnerable

Country Background

- Sustained strong economic growth
- Substantial poverty reduction until 2010, path slowed down recently
- Poverty levels remain high in 2017-18:
  - National poverty line: 26.4%
  - IPL: 49%.

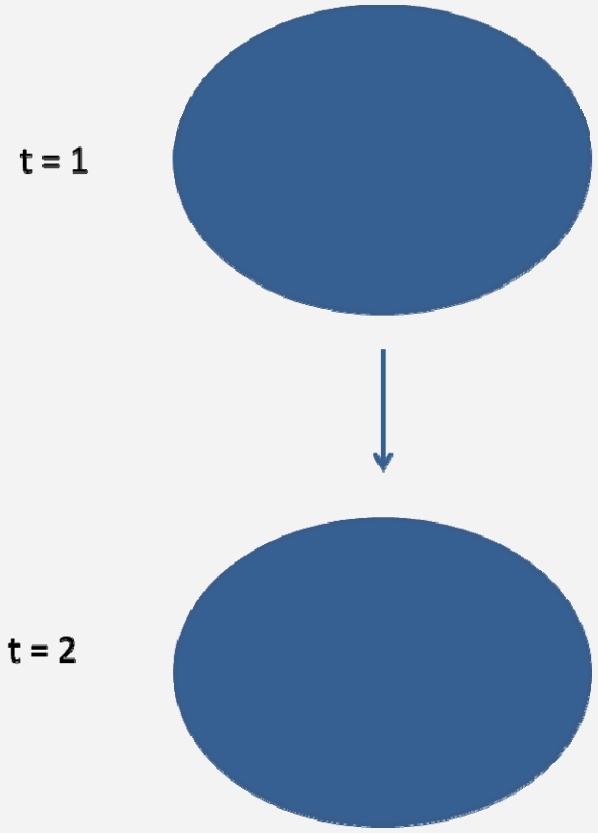


Headcount poverty rates according to national poverty lines

Data and Methodology

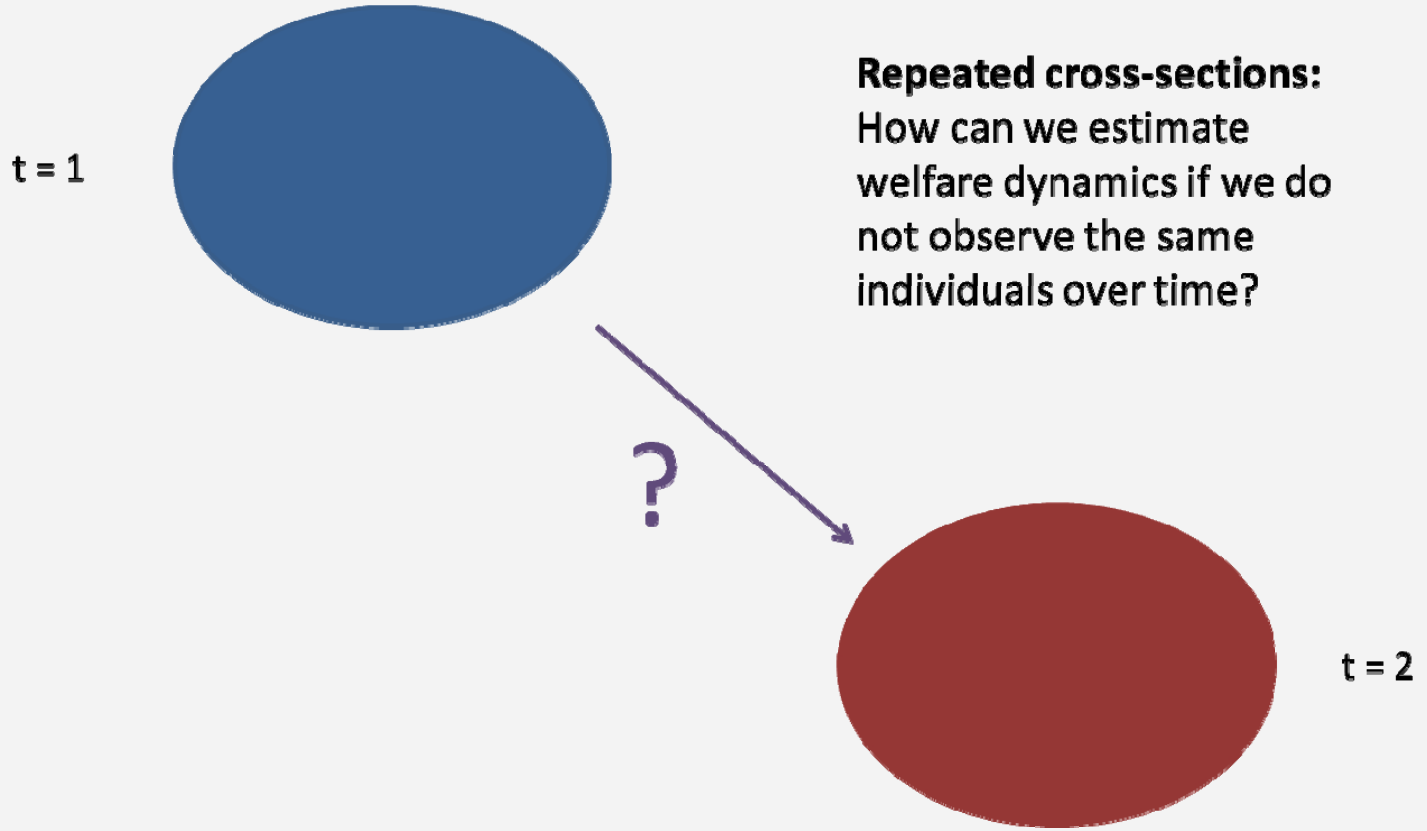
- Apply synthetic panel methods to HBS 2011/2 – 2017/8:
  - Large household survey: around 10,000 households
  - Basis for national poverty statistics
  - (At time of writing) most recent data

Synthetic Panel Method: Illustration



With **panel data**, estimation of income dynamics is possible.

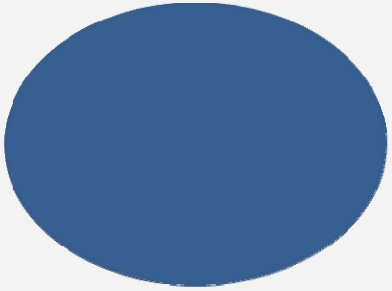
Synthetic Panel Method: Illustration



Repeated cross-sections:
How can we estimate welfare dynamics if we do not observe the same individuals over time?

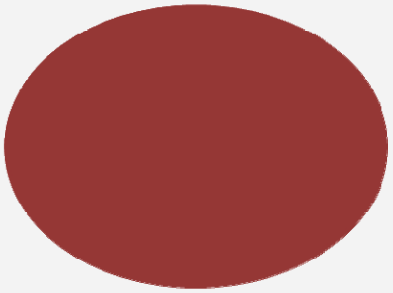
Synthetic Panel Method: Illustration

t = 1



- **Time-invariant** regressors X_{it}
- Model parameters $\hat{\beta}_t$

$$y_{i1} = Xi_1\beta_1 + \epsilon_{i1}$$

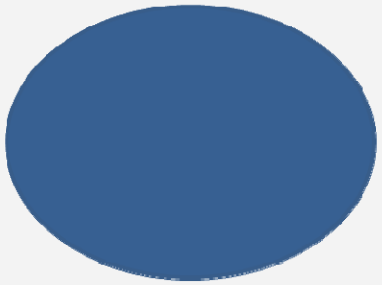


t = 2

$$y_{i2} = Xi_2\beta_2 + \epsilon_{i2}$$

Synthetic Panel Method: Illustration

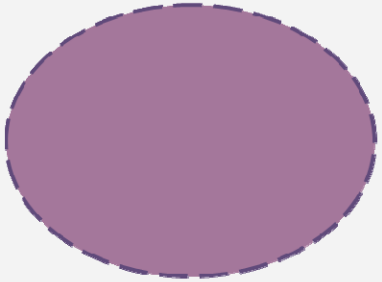
t = 1



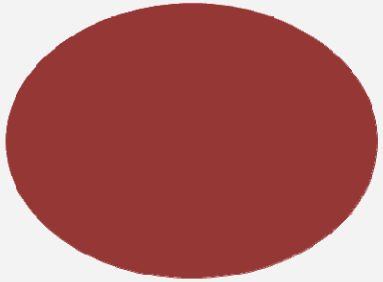
$$y_{i1} = Xi_1\beta_1 + \epsilon_{i1}$$

Imputing period 2 values to period 1 observations:

- t=2 **Time-invariant** regressors X_{i2}
- t=1 Model parameters $\hat{\beta}_1$



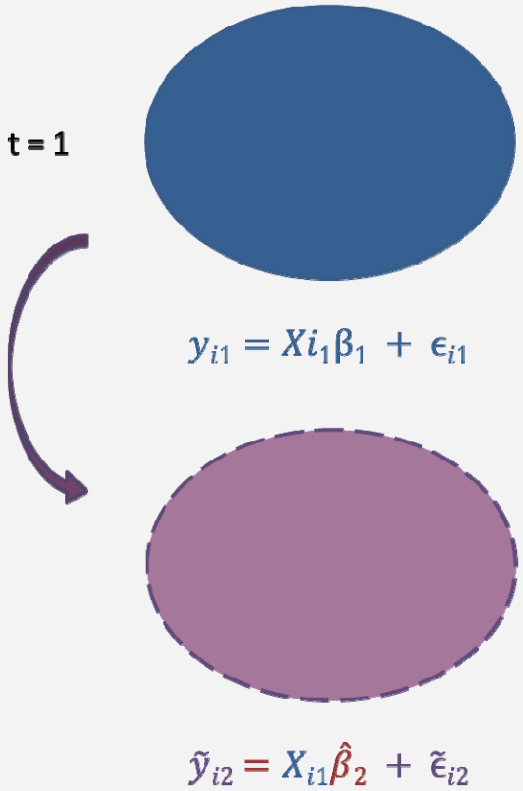
$$\tilde{y}_{i2} = X_{i1}\hat{\beta}_2 + \tilde{\epsilon}_{i2}$$



$$y_{i2} = Xi_2\beta_2 + \epsilon_{i2}$$

t = 2

Synthetic Panel Method: Illustration



Imputing period 2 values to period 1 observations:

- t=2 **Time-invariant** regressors X_{i2}
- t=1 Model parameters $\hat{\beta}_1$
- Error structure $\tilde{\epsilon}_{i1}$?
- Estimate $\Pr(y_{i1} \geq p, \tilde{y}_{i2} \leq p)$

Methodology

- Dang and Lanjouw (2013) approach to produce synthetic panel estimates of poverty transitions – assume bivariate log-normality for residuals
- Variation: inter-temporal income correlation $\rho_y = 0.49$ taken from panel NPS 2008 – 2012, after adjusting for longer six-year period
- Income model includes age, education and region of birth of household head
- Vulnerability line defined following Dang and Lanjouw (2017):
  - Set vulnerability index P^2, the conditional probability that vulnerable households fall into poverty in the next period
  - Implicity defines an empirical vulnerability line
  - Here $P^2 = 0.35$, vulnerability line 46.8% higher than the poverty line

Main results: Poverty dynamics

Unconditional probabilities

		2018	
		Poor	Non-Poor
2012	Poor	12.52	15.18
	Non-Poor	14.52	57.79

Conditional probabilities

		2018	
		Poor	Non-Poor
2012	Poor	45.20	54.80
	Non-Poor	20.08	79.92

Main results: Vulnerability dynamics

Unconditional

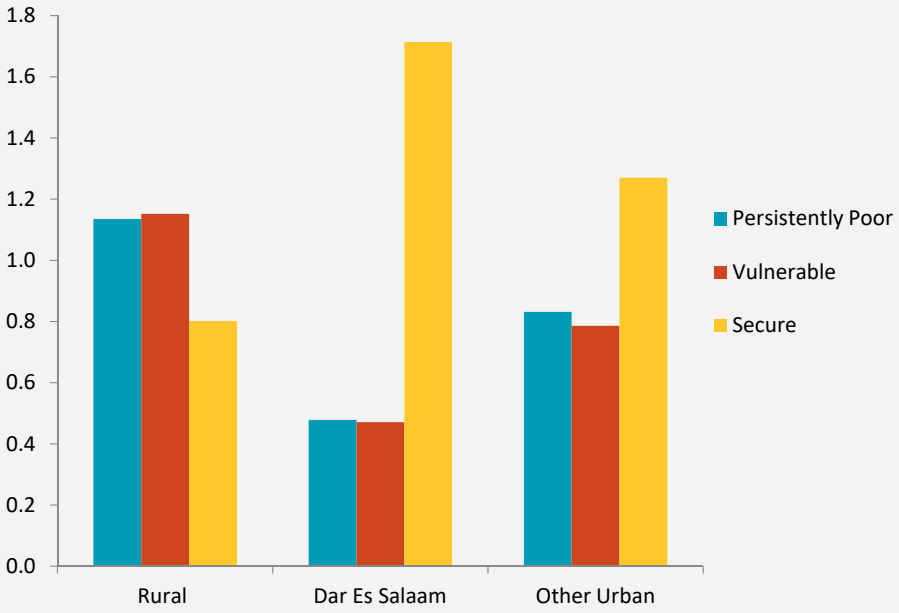
		2018		
		poor	vulnerable	secure
2012	poor	12.52	7.15	8.03
	vulnerable	7.02	6.13	10.24
	secure	7.50	9.65	31.76

Conditional

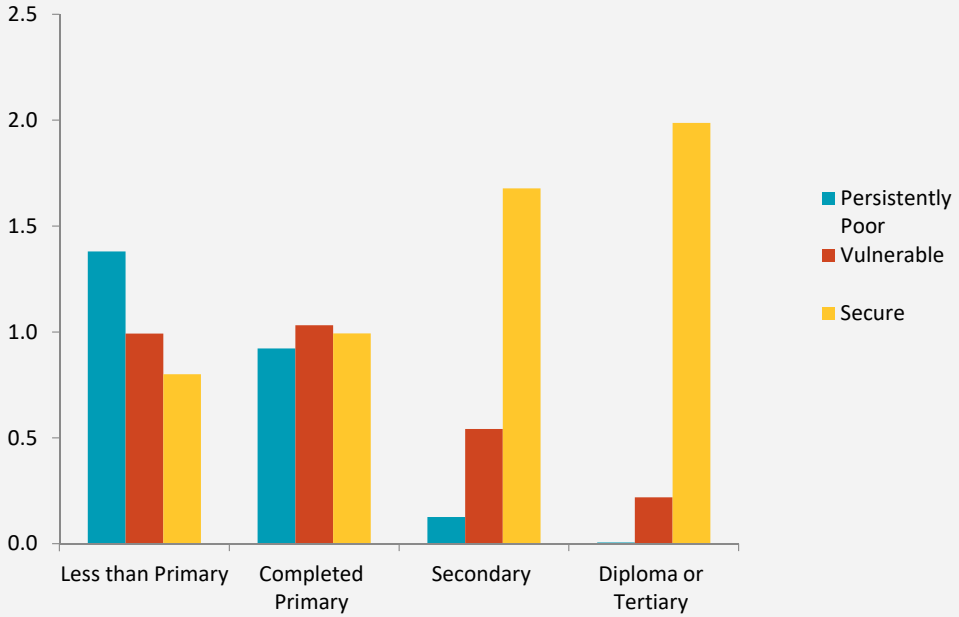
		2018		
		poor	vulnerable	secure
2012	poor	45.20	25.80	29.00
	vulnerable	30.00	26.22	43.78
	secure	15.34	19.73	64.93

Poverty and vulnerability profiles

Area of Residence

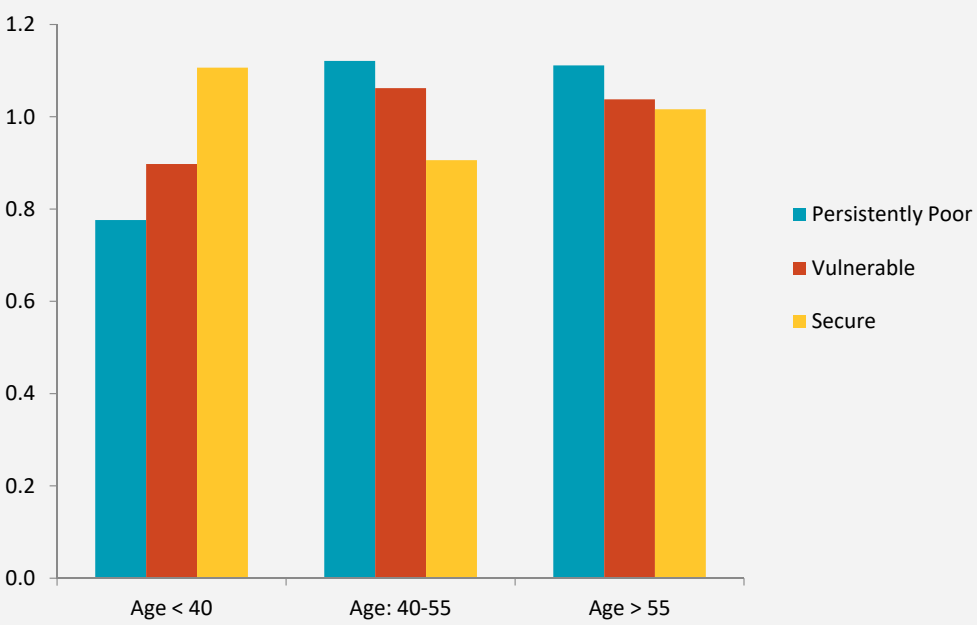


Education

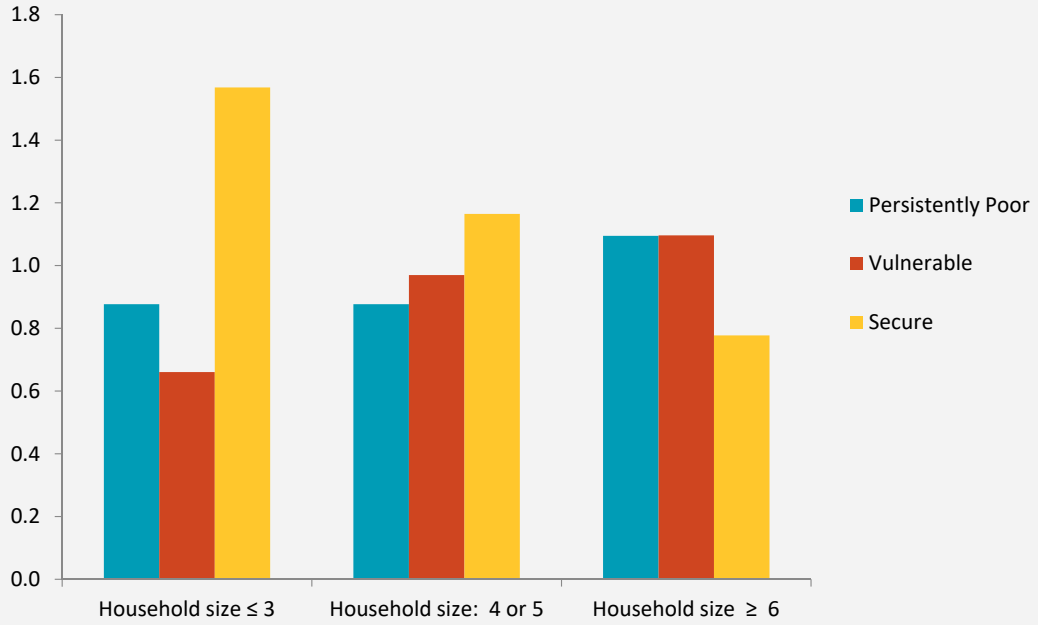


Poverty and vulnerability profiles

Age of head

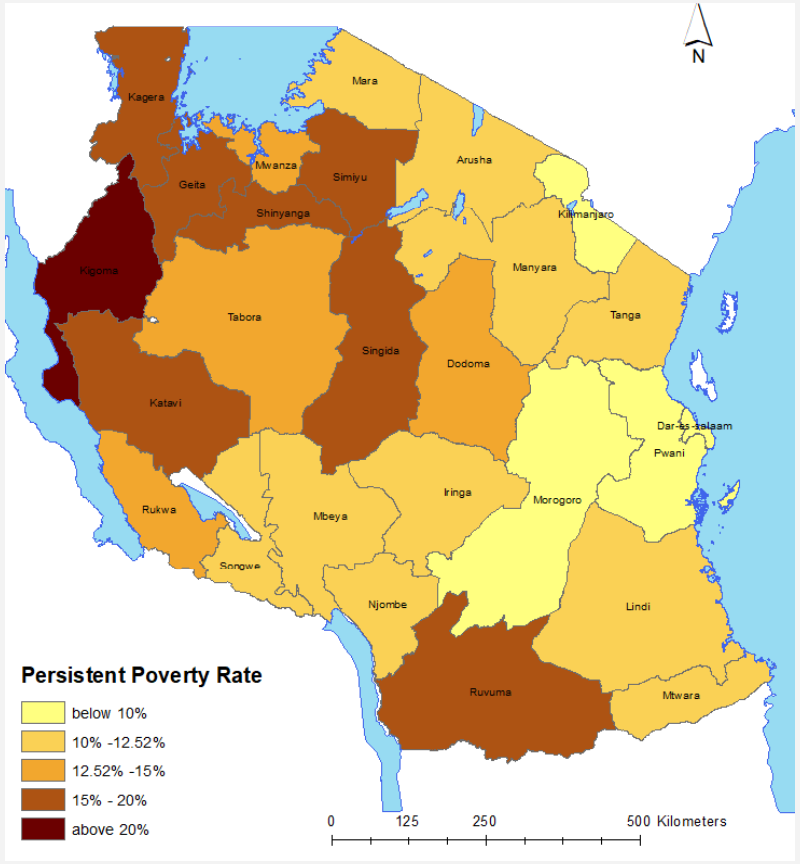


Household size

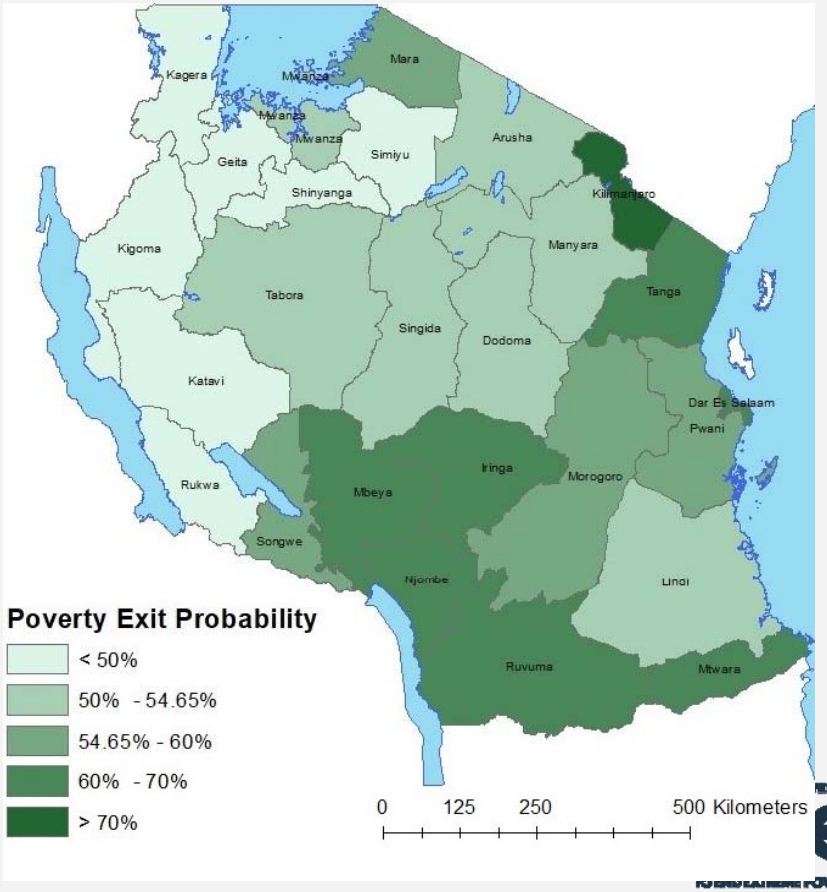


Profiles: Regional Patterns

Persistent Poverty



Poverty Exit Probability



Covid-19 response and economic impact

- Three phases in (unconventional) response to Covid-19:
  - March ´20 – May ´20:
    - Some preventive measures (school closures and restriction of mass gatherings) taken
  - May ´20 – March ´21 :
    - No further data on cases, hospitalizations or deaths reported since May ´20.
    - June ´20: Tanzania declared "Covid – free" and restrictions lifted
    - Discouragement of masks, tests, vaccines…
  - Since March ´21: Gradual convergence to more standard response
    - Death of president Magufuli in March ´21. Former VP Samia Suluhu Hassan takes over.
    - Acknowledge presence of C19 in the country, appoint technical advisory committee, recommend masks and other protective measures, release some hospitalization data.
    - Launch of a vaccination campaign, join COVAX.

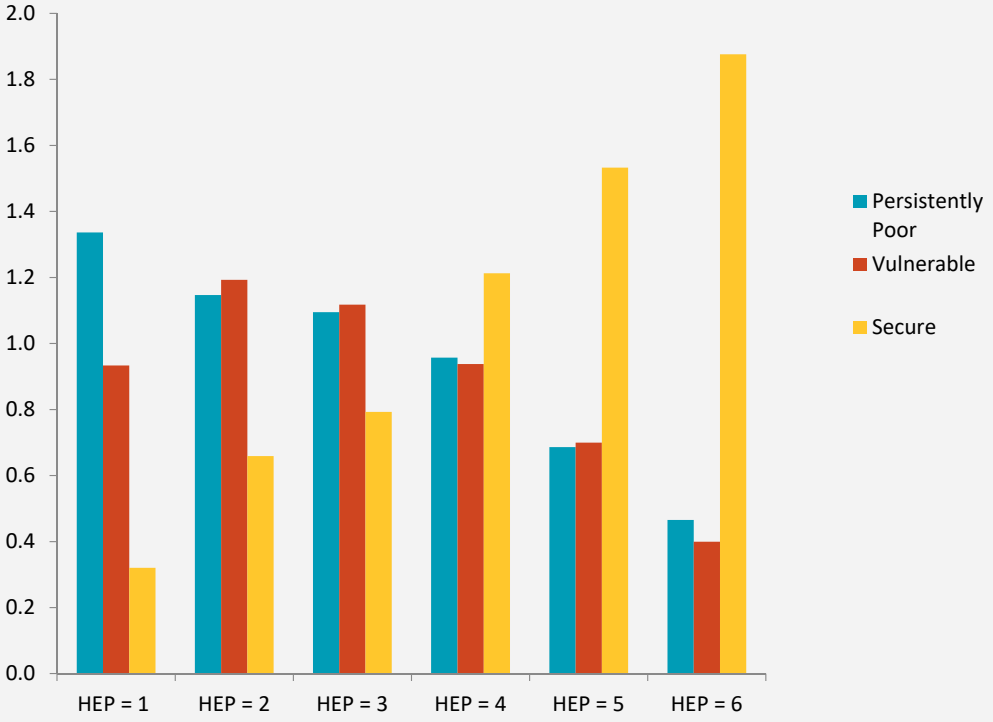
Covid-19: Economic impact

- Comparatively good macroeconomic performance
  - Lower but positive real GDP growth over 2020 (2% - 4.8%) and 2021 (4.3%- 4.9%)

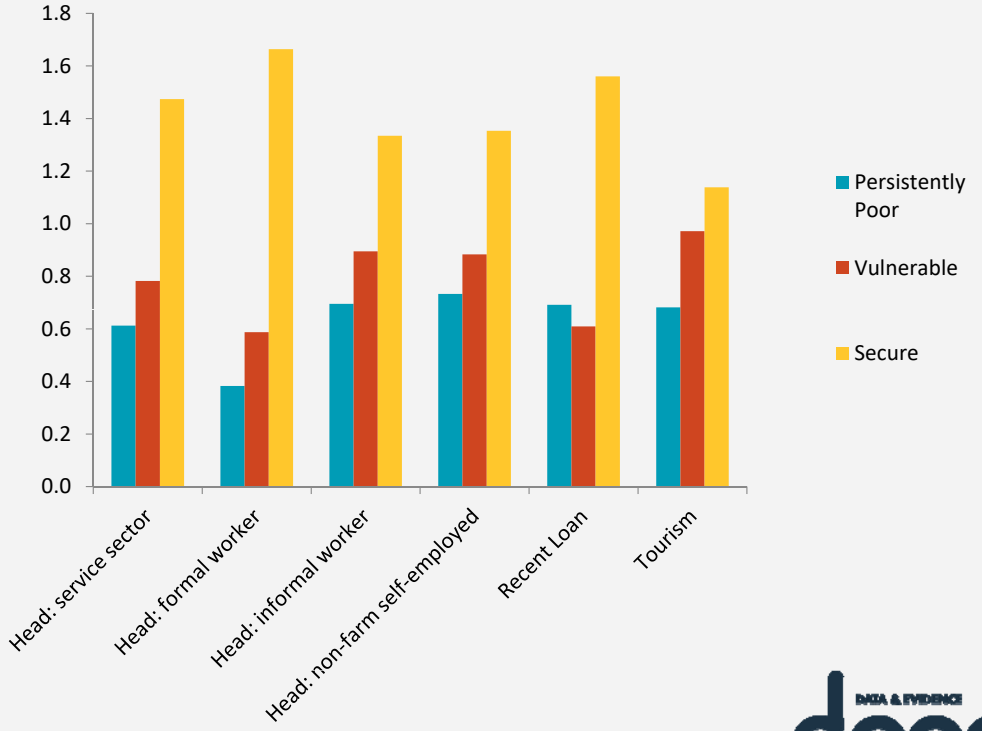
- Mainly affected sectors or groups:
  - Tourism
  - Loss of formal jobs
  - Income losses for non-farm informal workers and self-employed in urban areas
  - Agricultural export crops due to disrupted international value chains

Covid-19 and vulnerability

Home Environment Protection Index (Brown, Ravallion and van de Walle, 2020)



Economic impact



Conclusion

- Increase in poverty numbers due to Covid -19 has brought renewed attention to vulnerability

- In Tanzania, no calm before the storm. (At least) around 30% of people in transient poverty between 2012 and 2018

- Sectors and households most affected by economic consequences of Covid-19 different from those most likely to be persistently poor or vulnerable in ´normal times´:
  - Might need for specific policies to address the ´new vulnerable´
  - BUT: cannot neglect structural factors that determine persistent poverty and vulnerability.