

Envecon 2019
15th of March

Preferences for equitable distribution in resource management

Are distributive justice concerns reflected in
values for forest Ecosystem services?

Ilda Dreoni, Marije Schaafsma, Emmanouil Mentzakis

Highlights

- Our discrete choice experiment disentangles private from social (altruistic) preferences
- Our findings inform the design of community-based forest management
- Distributive justice concerns are assessed in a valuation study

Policy context: CBFM in Malawi

Rural communities in Malawi rely on forest ecosystem

- food
- fuelwood
- water
- soil nutrients
- flood protection
- socio-cultural benefits



Photo by Dr Marije Schaafsma



Malawi National Forest Policy (1996) introduced community-based forest management (CBFM)

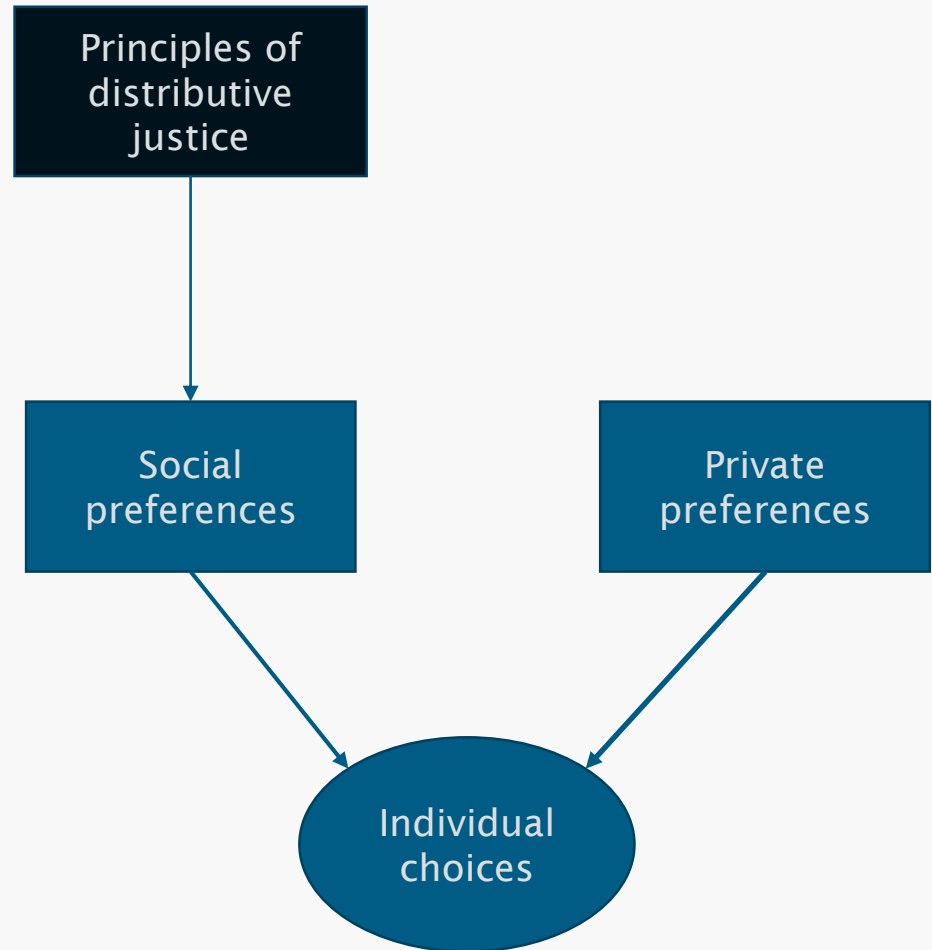


What are the welfare implications of CBFM for the rural population in Malawi?

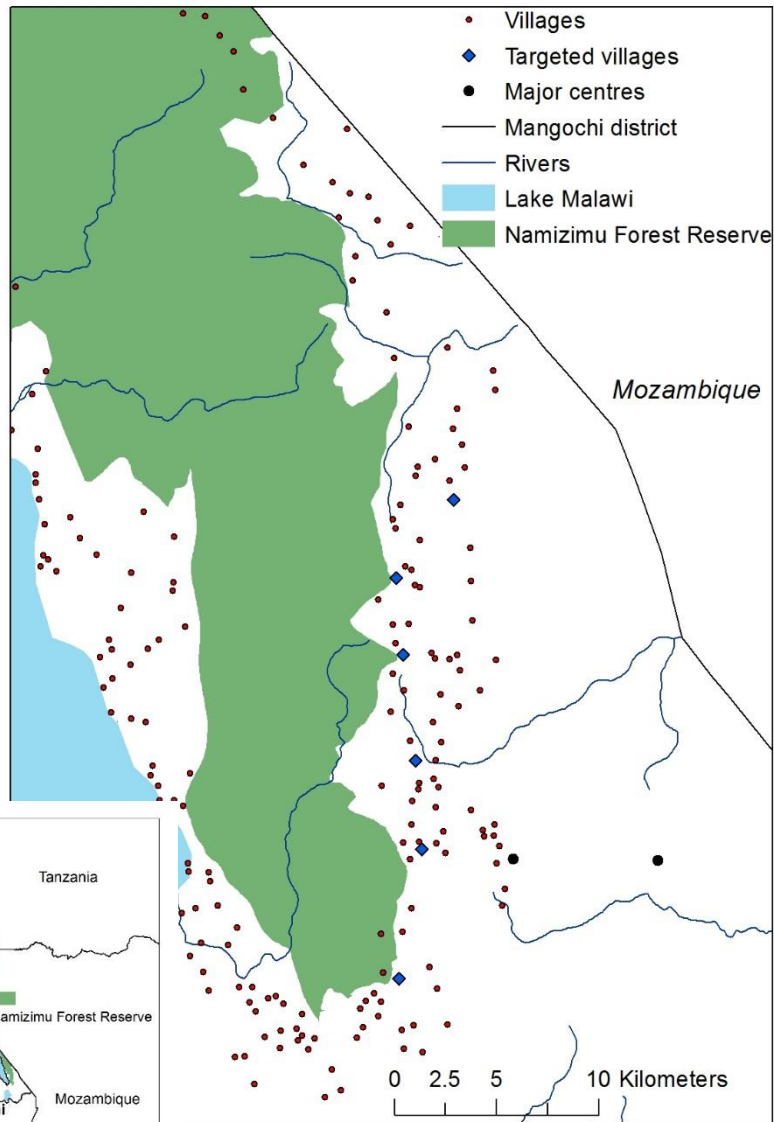
The role of fairness preferences for monetary valuation

Values

- inferred from choices
- associated with satisfaction of private preferences by most studies
- People have also social and moral values
- Forest is a collective resource



Study area









- Mangochi district - Namizimu forest reserve
- 6 villages within 5-km buffer
- Data collected in August 2017 during a 3-week period

Discrete Choice Experiment

Co-management scenarios

Attributes:

- Forest products
- Dry season streamflow regulation
- Distribution of forest products to wealthier and poorer households

	A	B	C
Number of trees for your household	15 Trees 	8 Trees 	Number of trees that you can collect following the rules of the department of forestry.
Number of months with low level of water in the river	3 Months	1 Month	
Number of trees for worse-off households	0 Trees 	8 Trees 	
Number of trees for better-off households	8 Trees 	15 Trees 	
Annual membership fee (3-months fee)	MK 2.000 (MK 500)	MK 16.000 (MK 4.000)	
Which option do you prefer?	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C

Results: social preferences

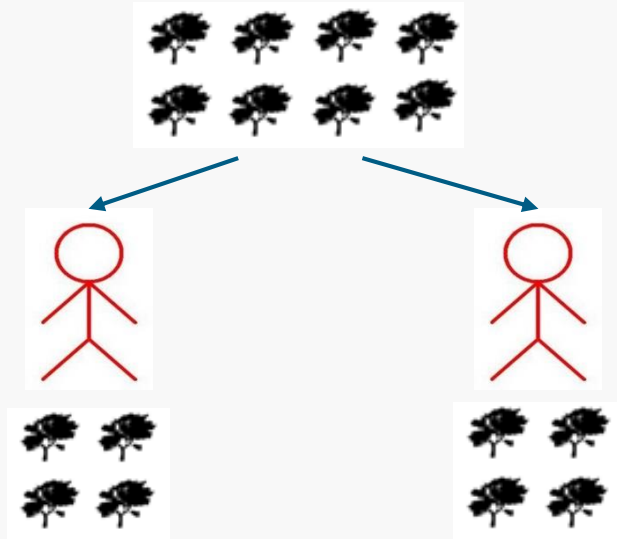
	Parameters
Water in the river	0.02 ***
Trees for self	0.23 ***
Trees for worse-off households	0.06 ***
Trees for better-off households	0.05 ***
Price	-0.20 ***
Constant (opt-out alternative)	-18.82 ***

Adjusted Rho-square	0.51
Number of respondents	288
Number of observations	1728

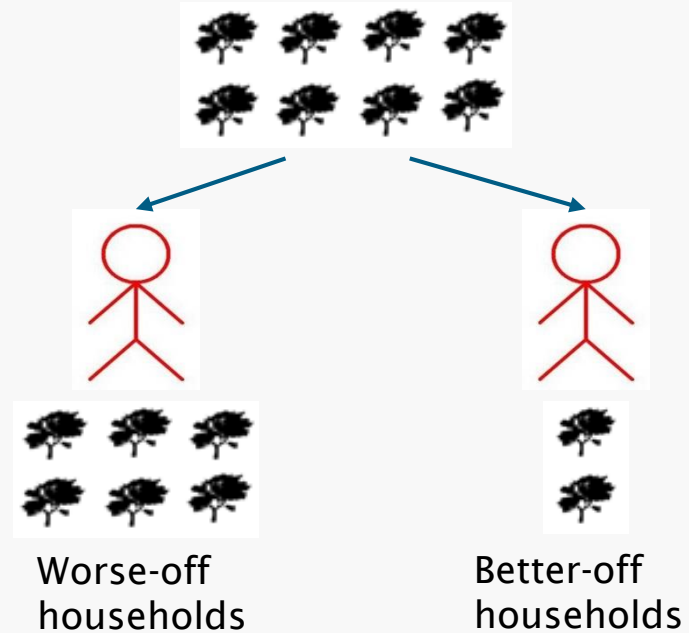
*** p<0.01, **p<0.05, * p<0.1.

Fairness norms tested in the DCE

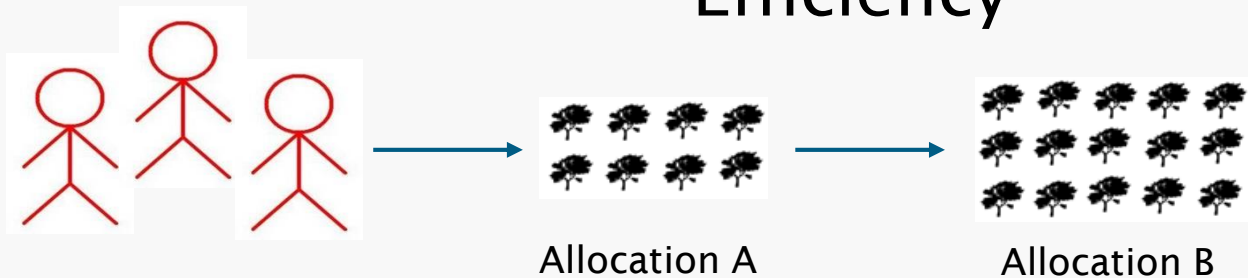
Equality



Need



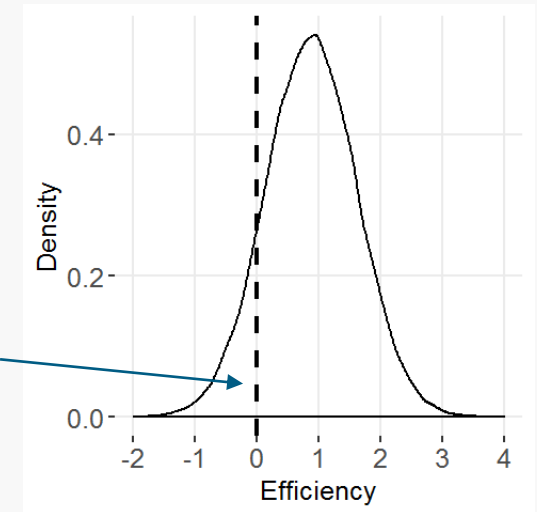
Efficiency



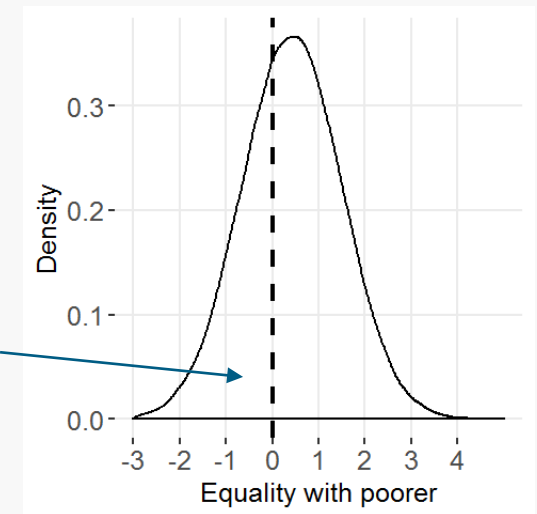
Results: fairness rules

	Parameters
Water in the river	0.02 ***
Trees for self	0.23 ***
Efficiency	0.88 ***
Need	0.29 *
Equality with worse-off households	0.42 **
Equality with better-off households	0.25 *
Price	-0.19 ***
Constant (opt-out alternative)	-16.71 ***
Adj Rho-sq	0.51
Number of respondents	288
Number of observations	1728

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.



12%



35%

Results: inequity aversion

	Parameters
Water in the river	0.02 ***
Trees for self	0.27 ***
Disadvantageous position	
Relative to better-off households	0.03 **
Relative to worse-off households	-0.01
Advantageous position	
Relative to better-off households	-0.05 ***
Relative to worse-off households	-0.12 ***
Price	-0.18 ***
Constant (opt-out alternative)	-15.77 ***
<hr/>	
Adjusted Rho-square	0.52
Number of respondents	288
Number of observations	1728

*** p<0.01, **p<0.05, * p<0.1

Inequity aversion (Fehr & Schmidt 1999)

- Explore further preferences for equality norm
- Self-centred aversion to unequal outcomes
- Relative position of respondent matters (asymmetrical inequity aversion preferences)

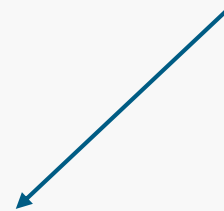
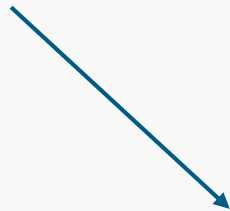
Discussion

Forest management policies

- determine supply of forest goods and services
- regulate distribution (who gets what)

Individual's benefit

Distributional outcomes



Individual's WTP for forest management options

Policy implications

- CBFM (and other policies) design and implementation should take in account social preferences
- Societal (utilitarian) welfare depends both on individual and collective gains and losses
- Different benefit sharing mechanisms have different welfare impacts (heterogeneous social preferences)

Thank you!

Research project funded by academic unit Geography and Environment – University of Southampton and Economic and Social Research Council – South Coast Doctoral Training Partnership – Sustainability, Environment and Resilience pathway

I would like to thank for their assistance:

- **My great research assistants Evanz, Lucius, Chakumbira and Chipso**
- **Willie Sagona, Henri Utila and Tembo Chanyenga from FRIM (Forest Research Institute of Malawi)**
- **The Forest Department Staff of the Mangochi, Machinga and Zomba district**
- **The study participants**



Appendix: descriptive statistics of sample

	Mean	SD
Female (%)	53.0	
Age	35.5	10.5
Primary school or more (%)	36.5	
Household size	4.6	1.9
Livestock ownership (%)	60.0	
Land size (Acre)	1.5	1.0

Results: inequity aversion non-linear effects

	Parameters
Water in the river	0.01 ***
Trees for self	0.23 ***
Disadvantageous position	
Relative to better-off households (DB)	-0.13 **
Relative to worse-off households (DW)	-0.04
Advantageous position	
Relative to better-off households (AB)	-0.06 ***
Relative to worse-off households (AW)	-0.12 ***
DB*number of trees distributed to worse-off HH	0.01 ***
DW*number of trees distributed to worse-off HH	-0.00
AB*number of trees distributed to worse-off HH	-0.01 **
AW*number of trees distributed to worse-off HH	0.01 **
Price	-0.18 ***
Constant (opt-out alternative)	-15.77 ***
Adjusted Rho-square	0.52
Number of respondents	288
Number of observations	1728

*** p<0.01, **p<0.05, * p<0.1