

Diamonds in the Rough?

Repurposing Multi-Topic Surveys to Estimate Individual-level Consumption Poverty

Krishna Pendakur

Simon Fraser University

krishna_pendakur@sfu.ca

Talip Kilic

World Bank

tkilic@worldbank.org

Joint work with **Theophiline Bose-Duker** (World Bank), **Isis Gaddis** (World Bank), and **Valérie Lechene** (University College London and Institute for Fiscal Studies)

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Household consumption

- In the previous presentations, we have seen how to
 - use household surveys to construct household consumption;
 - account for household non-market consumption
- But, what about *individual* consumption of household members?
 - Classic *per-capita* approach: assume it is equally distributed
 - But: maybe there's unequal access to household consumption
 - Gendered consumption levels, gendered consumption deprivation
 - Leading to misclassification into poverty
- We show how to use household survey data to learn about individual consumption.

Individual consumption

- *Consumption* is quantities of goods consumed (what we are interested in).
- *Expenditure* is money spent to get those goods.
- Consumption and expenditure differ because:
 - Some goods are shared, and so are cheaper for people living in households vis-à-vis people living alone (Browning, Chiappori and Lewbel 2013: BCL).
 - We can observe household expenditures, say, on food but we do not know who consumes it.
- To go from household expenditures to individual consumption, we need a model.
- *Efficient Collective Household* models picture the household as an environment where individual people spend money to buy goods for themselves. (Becker 1981; Chiappori 1988, 1992)
- *Individual expenditure* is money spent by individuals, spent at within-household prices (lower than market prices, faced by singles).

Resource shares

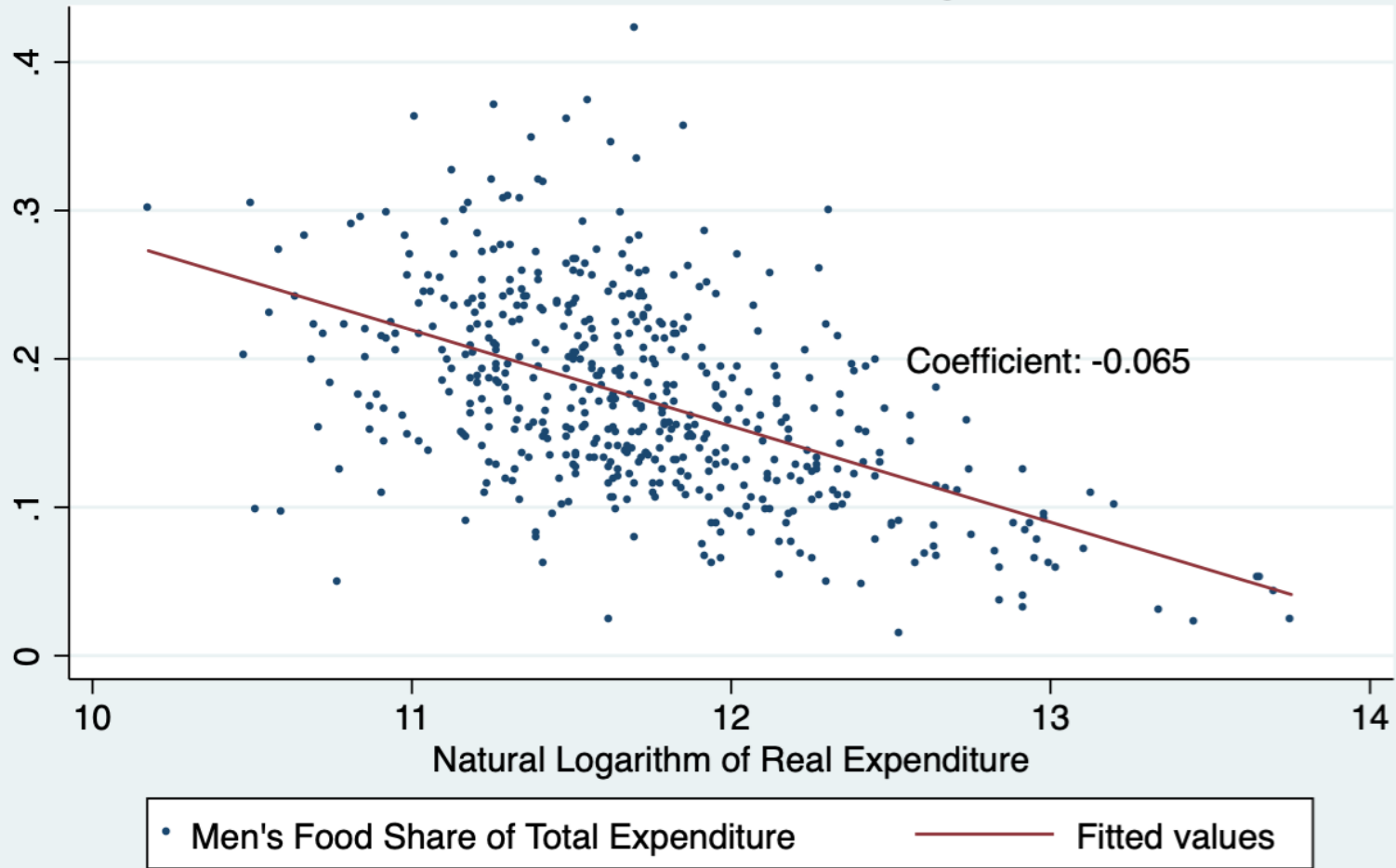
- Each person in a household has individual expenditure equal to their *resource share* times the full household expenditure.
 - Full household expenditure includes the value of non-market consumption.
- Resource shares may be (point- or partially-) *identified* from household survey data. (Chiappori 1988, 1992; Chiappori and Ekelund 2009; Cherchye, De Rock and Vermeulen 2011; Bargain and Donni 2012; BCL 2013; Dunbar, Lewbel and Pendakur 2013: **DLP**)
- **DLP** use assignable goods and a preference restriction to point-identify resource shares from survey data on collective households.
 - Expenditure on *assignable goods* is observed for each “type” of person.

Identification of resource shares

- DLP (2013) assume
 - BCL model is correct
 - Resource shares do not depend on total household expenditure
 - There is an assignable good observed for each type of person
 - Individual Engel curves for assignable goods have the same shape for different people
- Lechene, Pendakur and Wolf (LPW 2021) assume Engel curves are linear
 - This implies that resource shares are identified by the *response to an increase in the household budget* of household Engel curves for assignable goods.
 - If the household Engel curve responds twice as much for my assignable good as it does for your assignable good, then I have twice your resource share.
 - Resource shares are identified from OLS regression coefficients.

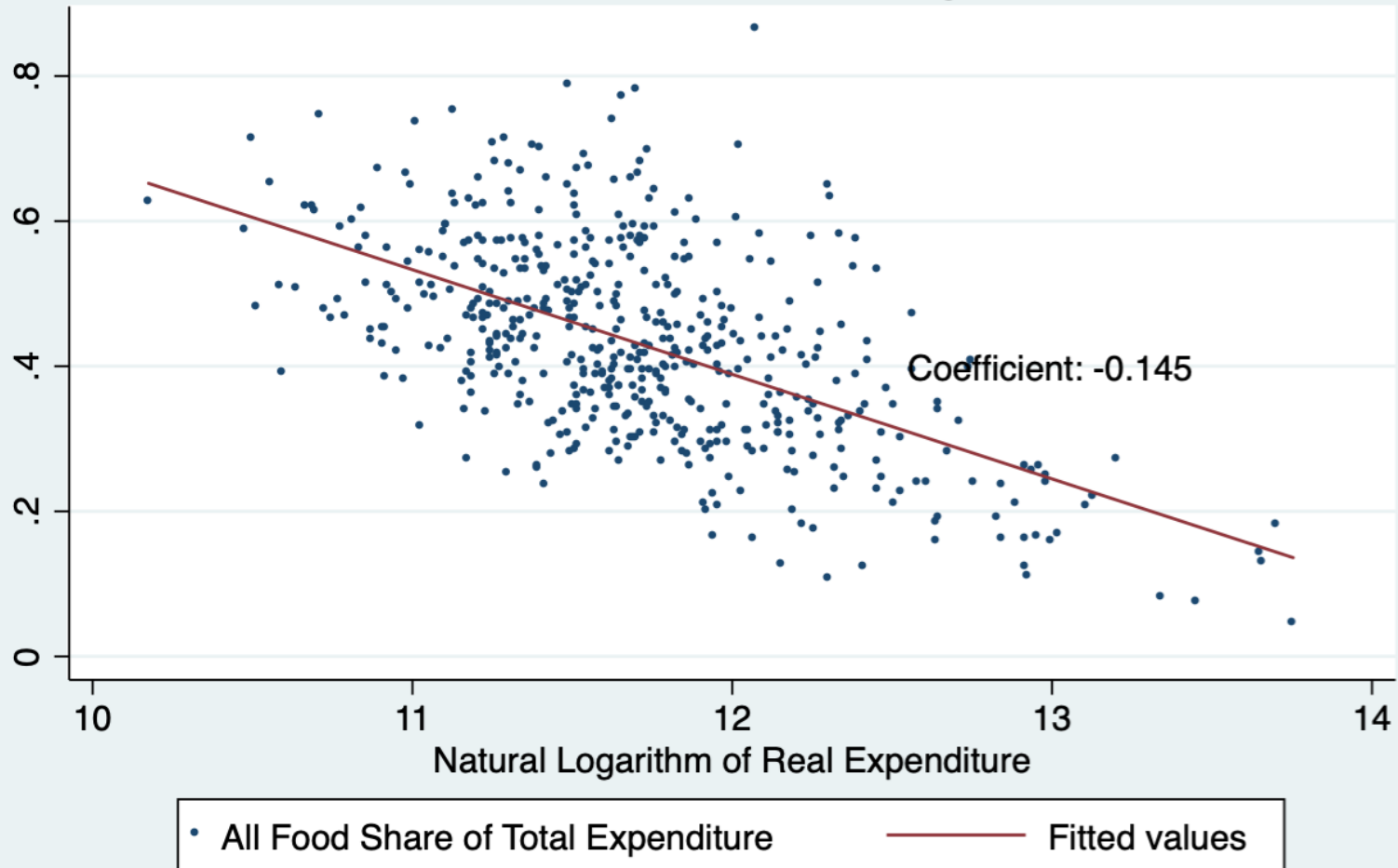
Men's Food Engel Curve

Nuclear households with 1 child, Bangladesh 2015



All Food Engel Curve

Nuclear households with 1 child, Bangladesh 2015

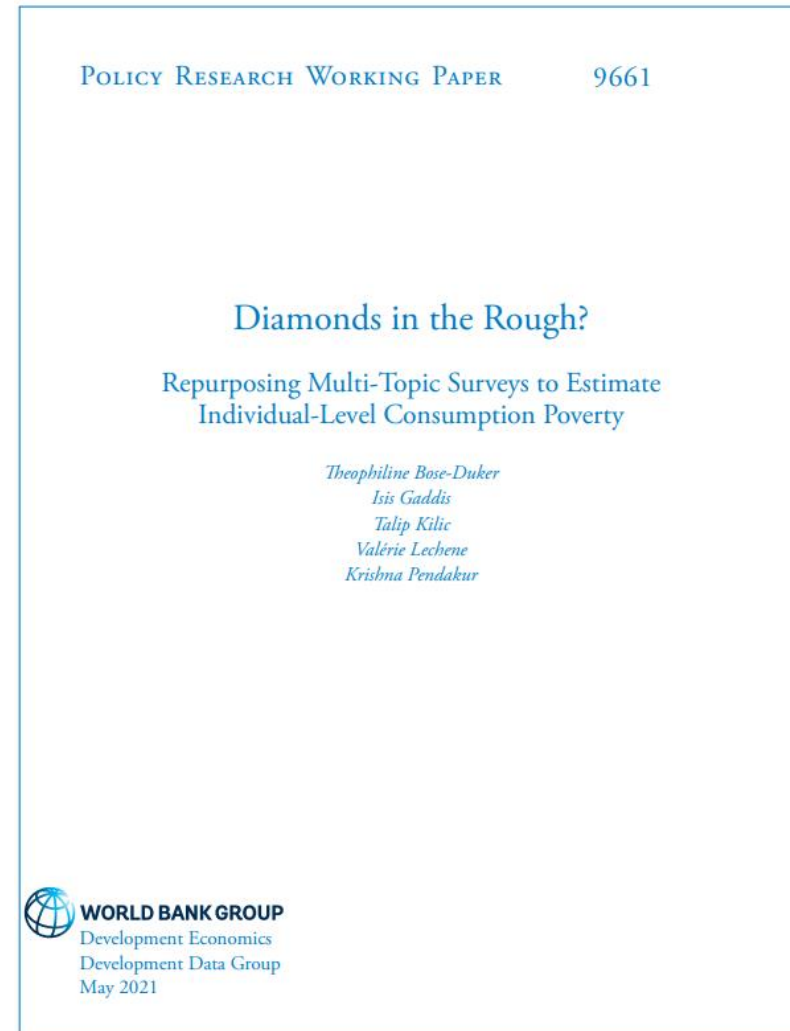


Resource shares in Bangladesh (example)

- Resource share = $\frac{\text{(response of person's Engel curve)}}{\text{(response of all persons' Engel curve)}}$
- Man's Resource share = $\frac{-0.065}{-0.145} = 45\%$
- For each household, assign 45% of the household expenditure to the man.

What we do

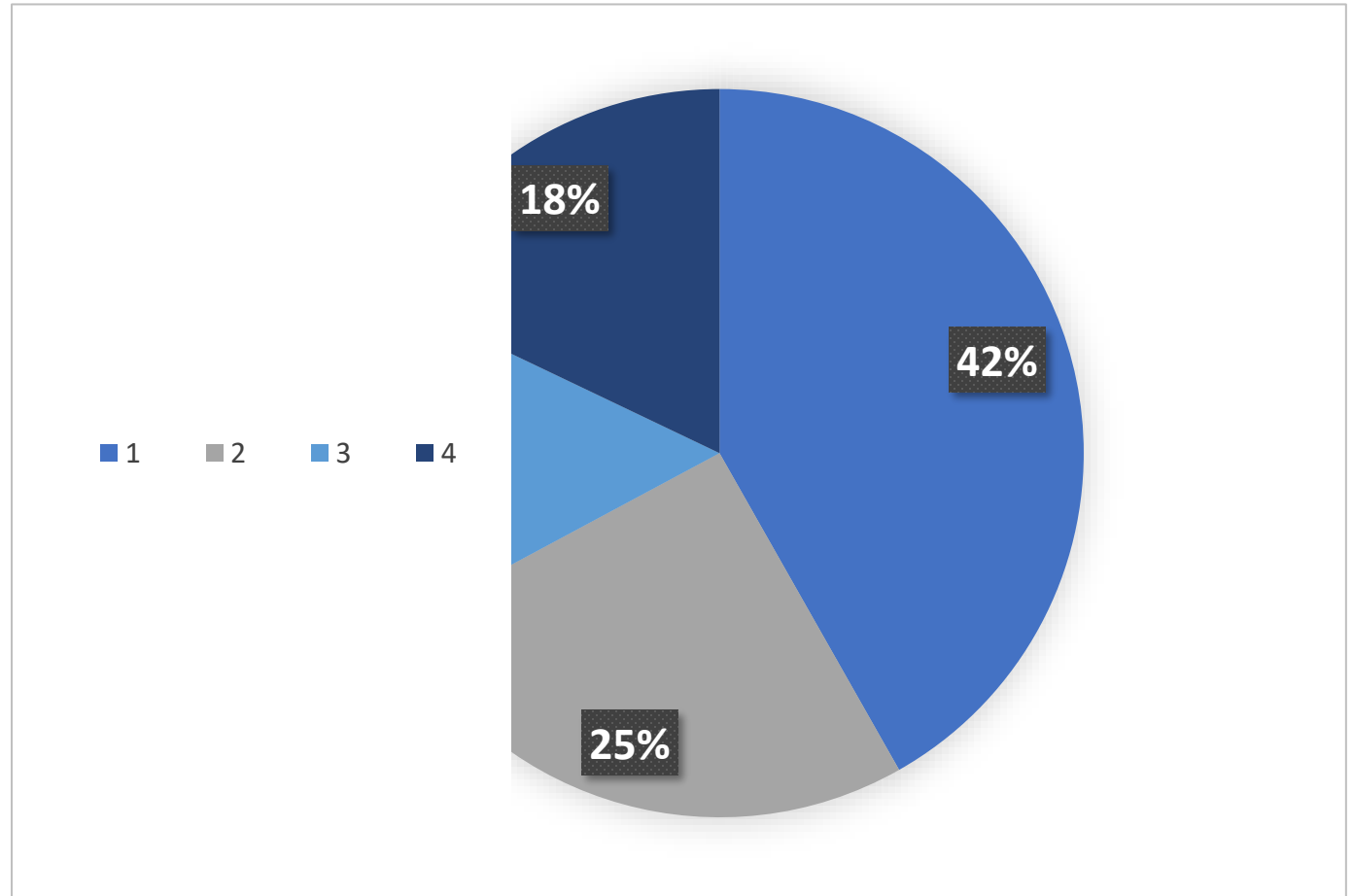
- Present the theory behind the model developed by LPW (2021) in a more accessible fashion
- Apply the model to household surveys from low- and middle-income countries to derive gender- and age-differentiated poverty estimates (under *unequal* sharing of resources) which are then compared to those based on the per capita approach (under *equal* sharing of resources)
 - Modified OECD equivalence scale applied to poverty estimates under both equal and unequal sharing



<https://bit.ly/individualpoverty>

Data

- Considered 67 surveys on International Household Survey Network (IHSN) – across 42 countries
- 12 surveys (18%) ultimately subject to pre-test to assess feasibility of model estimation



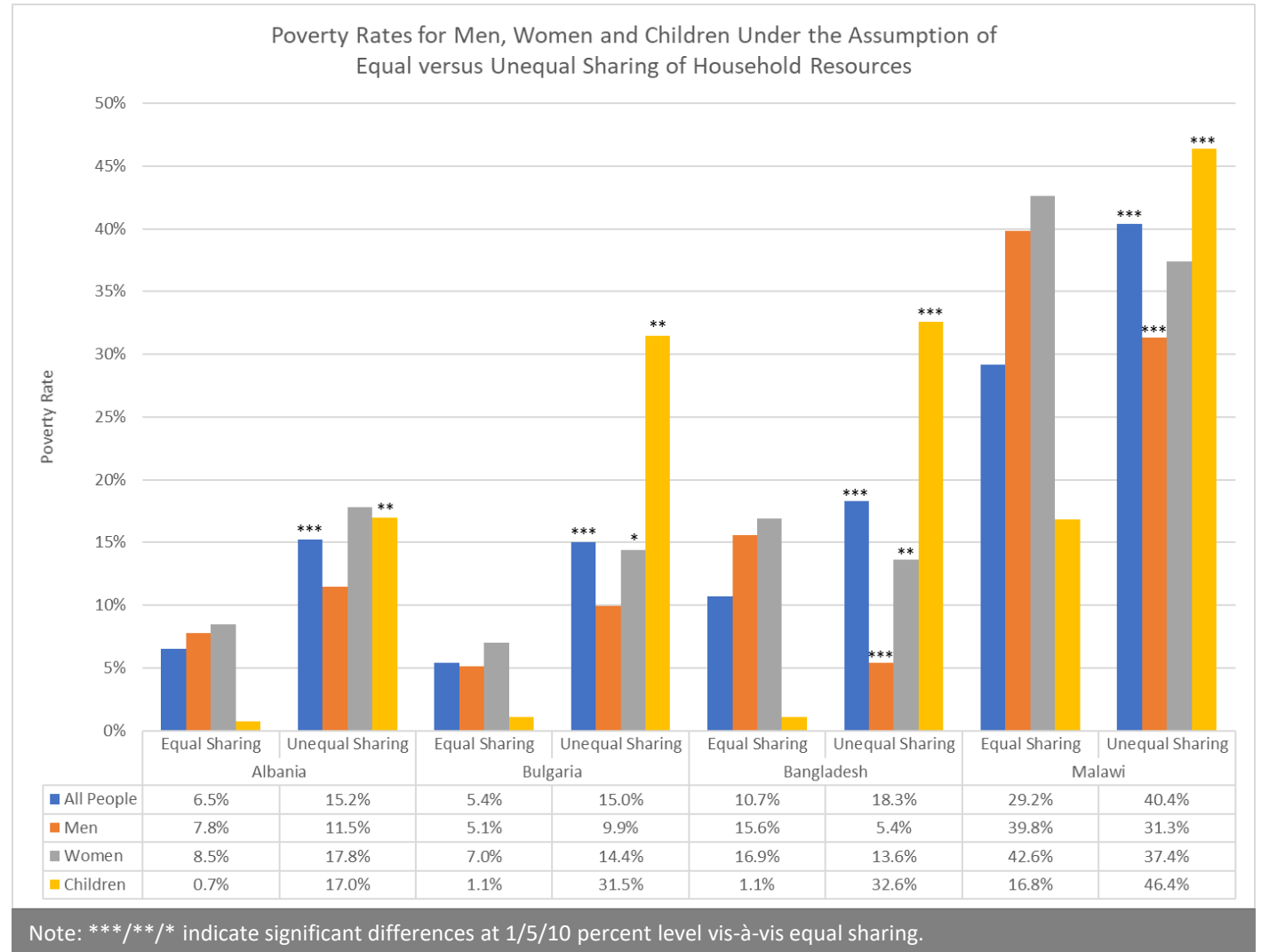
Pre-test

- Test whether the denominator in resource share - response of all persons' Engel curve - is significantly different from 0.
- Methods will not work if the denominator is statistically insignificant.

Country	Survey	Year	N	Assignable Good	Budget Share	Std Dev	Slope at Mean	T-test of Slope	% of Sample Significant	Pass/Fail
Albania	LSMS	2008	3,279	Clothing	0.041	0.042	0.014	4.6	84	Pass
Bangladesh	IHS	2015	4,288	Clothing	0.041	0.021	-0.016	-21	99	
Bangladesh	IHS	2015	3,929	Food	0.562	0.151	-0.118	-14.6	99	
Bulgaria	MTHS	2003	2,099	Clothing	0.036	0.040	0.014	5.1	90	
Iraq	IHSES	2007	14,297	Clothing	0.070	0.047	0.021	14.8	99	
Malawi	IHS	2010/11	10,873	Clothing	0.025	0.036	0.009	10	98	
Ethiopia	SES	2016	3,845	Clothing	0.072	0.064	-0.011	-3.5	65	Fail
Ghana	GLSS	2006	6,313	Clothing	0.048	0.040	-0.002	-1	62	
Nigeria	GHS	2013	3,556	Clothing	0.017	0.024	-0.002	-2	50	
Tajikistan	LSMS	2009	1,275	Clothing	0.058	0.050	0.008	1.8	5	
Tanzania	NPS	2015	2,677	Clothing	0.044	0.058	-0.002	-1	12	
Timor Leste	LSMS	2008	3,788	Clothing	0.022	0.021	-0.003	-1.8	48	
Uganda	NPS	2014	2,468	Clothing	0.055	0.052	-0.004	-1.2	5	

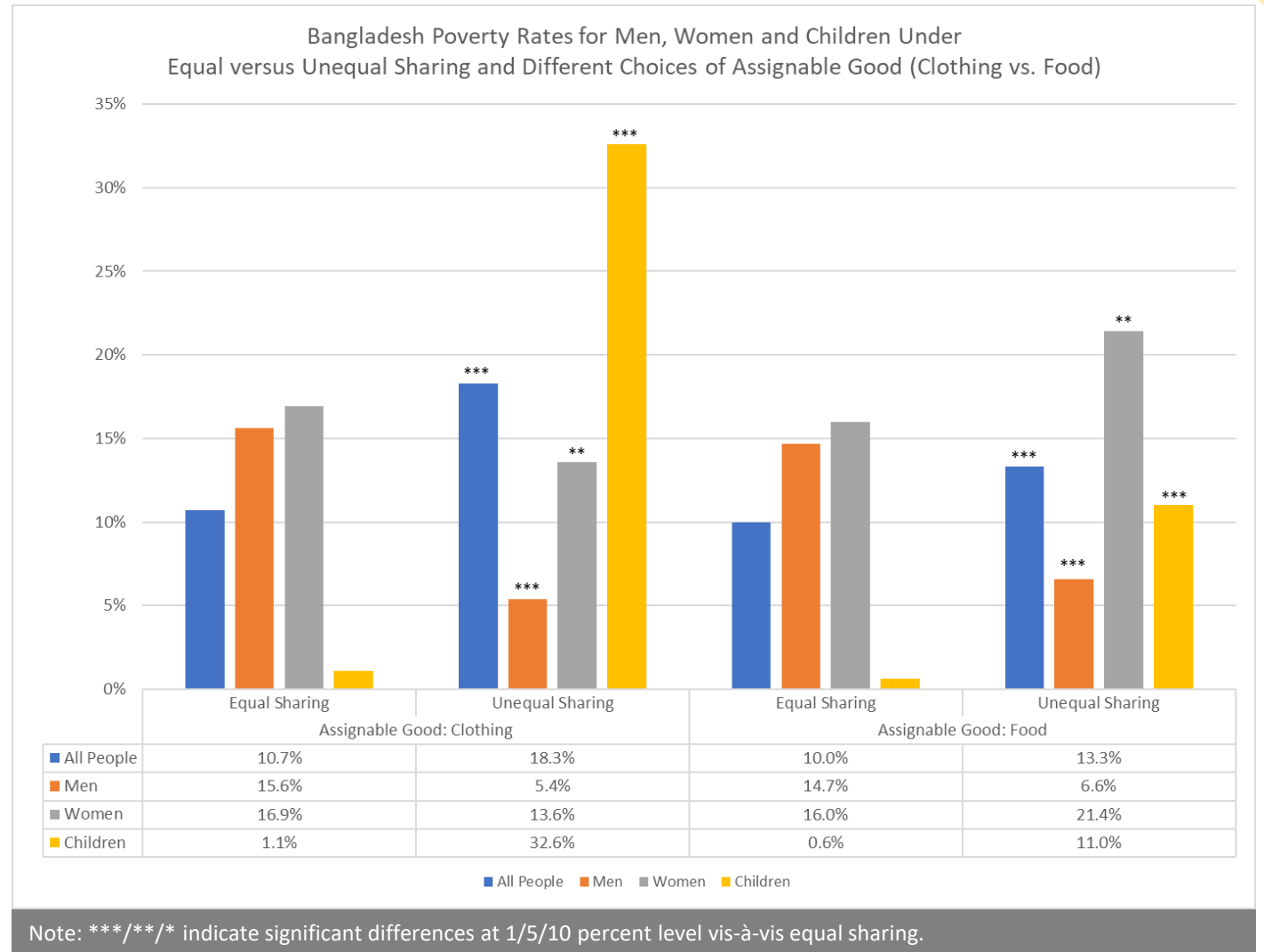
Assumption of equal sharing of resources leads to a misleading understanding of poverty

- Evidence of substantial within-household consumption inequality
- Consistent support for underestimation in poverty among all people, and particularly children, under equal sharing
- Moving from equal to unequal sharing, x-country heterogeneity in
 - Extent of increase in poverty among all people
 - Directional change in poverty for men, women
 - Gender difference in poverty rates



Looking forward

- Data from Bangladesh provide motivation for follow-up work on model validation
- To be pursued in randomized survey experiments
 - Collect individual-disaggregated consumption data; compute *observed* resources shares and poverty
 - Compare to *predicted* resource shares and poverty rates obtained by applying our model to more aggregate data elicited under survey designs of varying complexity and cost



Thoughts on the utility of our findings for BLS/CES

- Pretest and if successful, the model can be applied to the existing CES data
 - Diary readily collects data on clothing expenditures for children (0-2), boys and girls (2-15) and men and women (16+) -though for the 7-day diary period
- CES data on food consumption and expenditures are not individual disaggregated, but one area where small tweaks can pay off is the diary survey section on food away from home (FAFH), where expenditures can be tied to specific household members
 - Alignment with international recommendations
 - FAFH can be considered as an alternative assignable good – but likely with challenges re: data on children
- Model validation in high-income settings such as the US (currently not planned) would be valuable

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