

Challenges in predicting poverty trends using survey to survey imputation. Experiences from Malawi

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Background

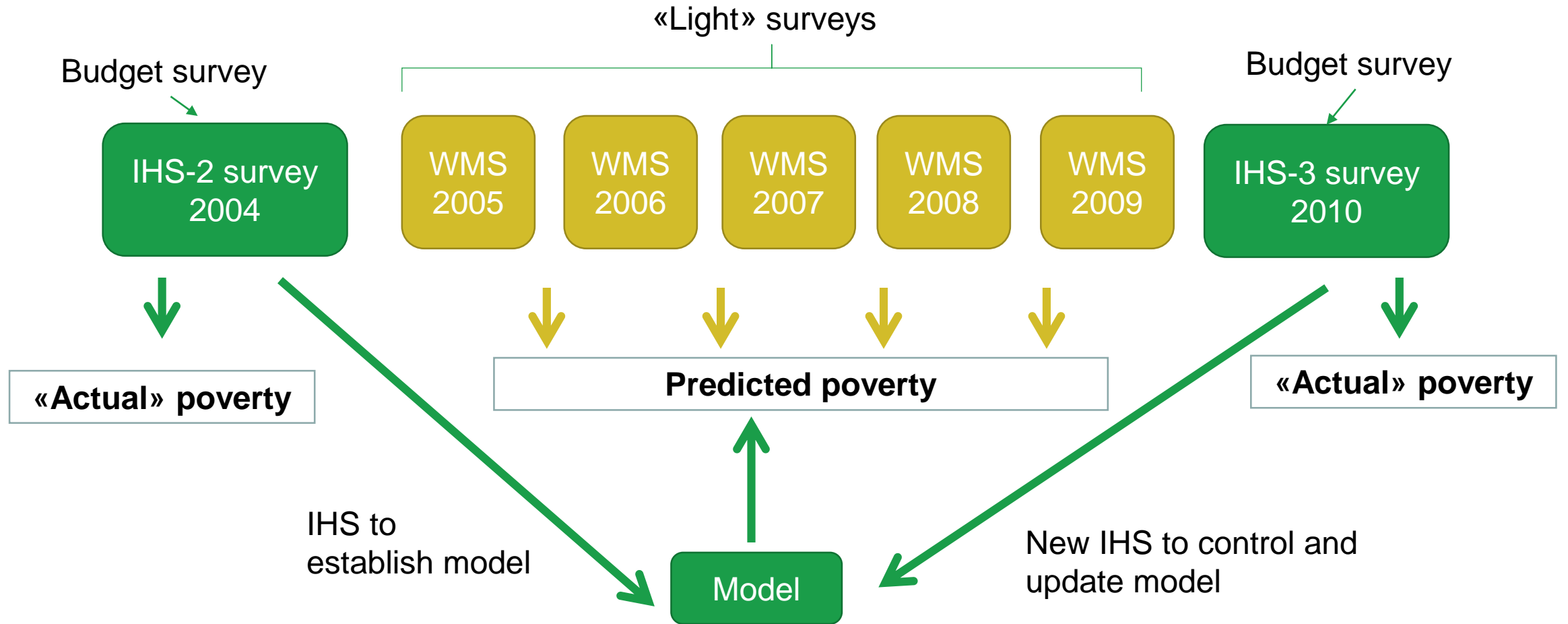
- Standard approach to measure poverty rely on resource intensive budget surveys. Cheaper methods to report on poverty on an annual basis are needed
- One common approach is survey to survey imputation method, building on a poverty mapping method developed by the World Bank.

The approach

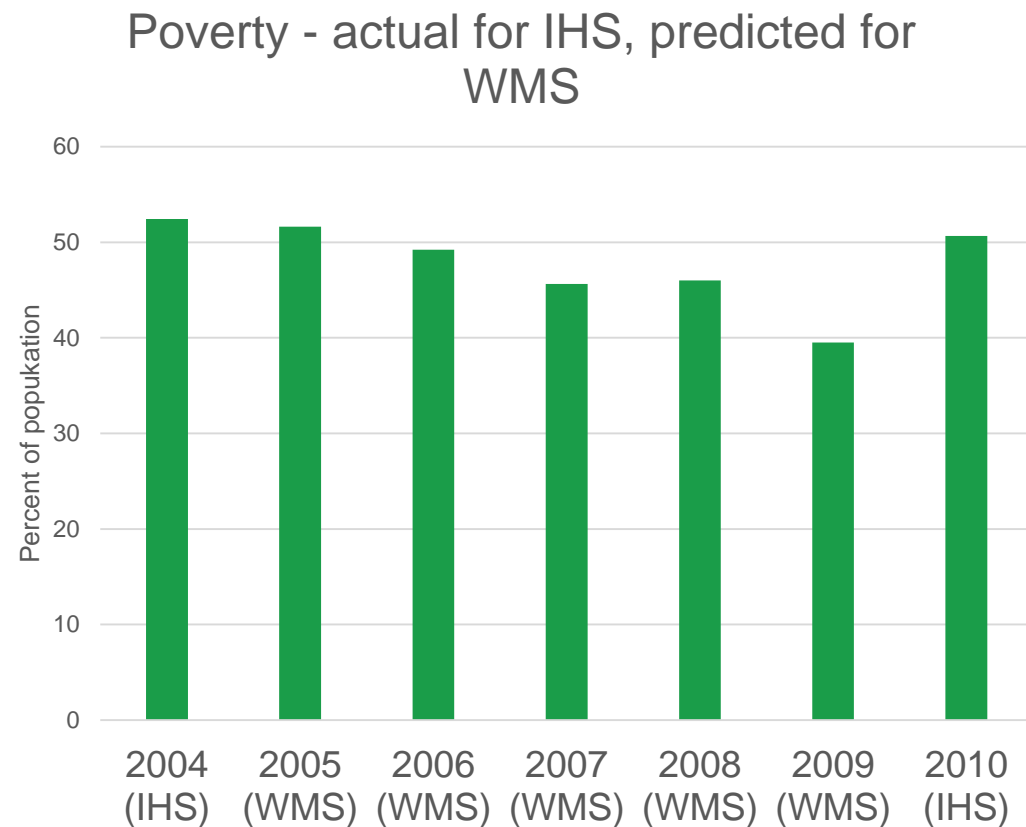
1. Estimate model for total consumption per capita based on the Budget Survey
 - Explanatory variables/poverty predictors: core demographic variables; characteristics of head of household; education; housing characteristics; assets ownership (yes/no); food and non-food consumption (yes/no of specific items); “subjective” welfare indicators
2. Collect the “poverty predictors” in the «light survey» and calculate the predicted consumption
3. Calculate probability of being poor using predicted consumption, its variance and the pre-established national poverty line

Separate models for regions and urban/rural

Malawi NSO (National Statistical Office) built the approach into its survey program



The experience from Malawi



- Poverty trend 2004-2009 showed improvements. The new budget survey (IHS-3) showed no improvements
- Malawi NSO stopped using the approach after 2010- but collected poverty predictors in new WMS
- Using 3 IHS- and 7 WMS surveys we try to understand more.



Real changes or is the model «wrong»?

- Does the model work per se?
- Are data used comparable between the surveys?



Does it work? – Testing the model when we know the answer

Table Percentage points difference between "actual" and predicted poverty

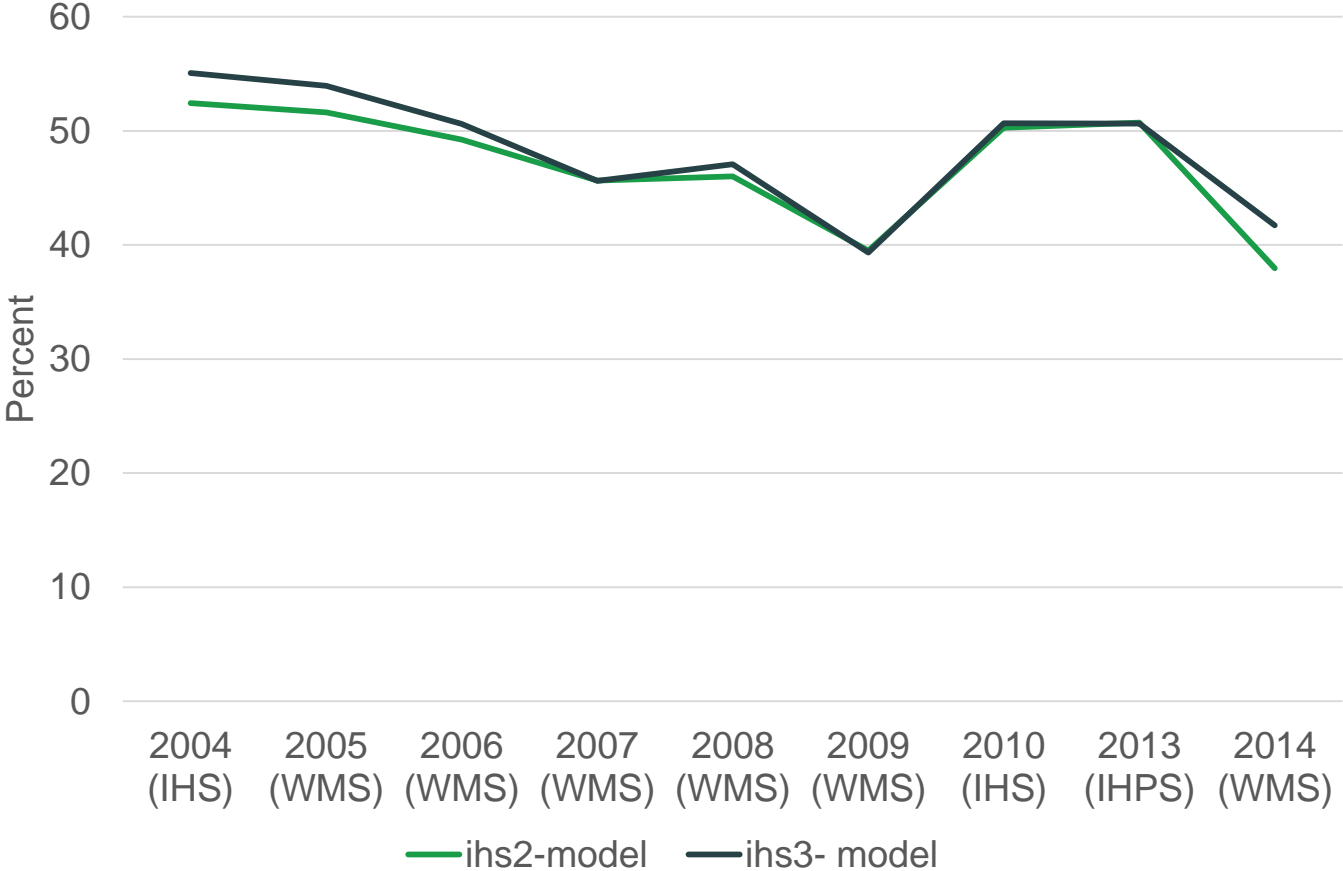
	(1)	(2)	(3)	(4)	(5)
	«Full» model, i.e. all variables	Without assets, housing	Without consumption variable	Without consumption assets, housing	Without demographic variable
<i>Ihs2-model</i>					
Urban	-1	-1	-1	-1	3
Rural North	1	1	2	1	10
Rural Central	-1	0	0	1	7
Rural South	0	0	1	1	7
<i>Ihs3-model</i>					
Urban	-3	-3	-2	-1	-1
Rural North	0	0	0	0	9
Rural Central	-2	-1	0	1	4
Rural South	-1	-1	0	0	5

- «Full» model (including all variable groups) seems to work
- Differences only significant different when excluding demographic variables
- Demographic variables (household size and age/sex composition) are important to include, especially in rural



Does it work? The two models predict very similar trends

- Poverty trends:



- Suggests that models work and are not outdated in the period

Implementation. Apparent differences in:

- Support given to surveys
 - IHS supported consistently by World bank.
 - WMS supported by Statistics Norway – but only advisory support given after 2007
- Sample sizes
 - WMS sample sizes vary from 5000 to 30000 households.
- Questionnaires and type of survey



Are data comparable between the surveys? (1)

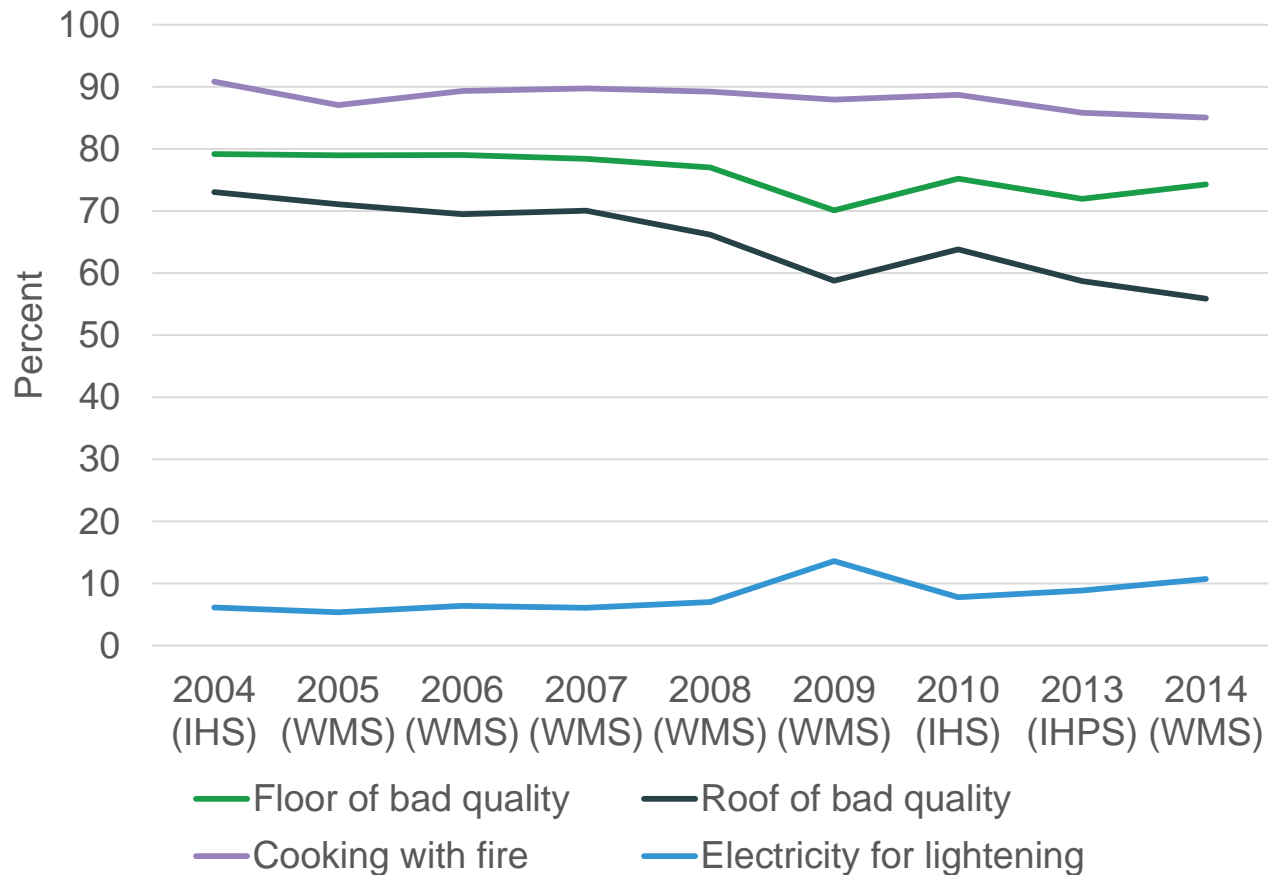
- Average number of members in household changes significantly every subsequent year, with no consistent trend
- Complicated variable - difficult to collect consistently in the same way

	2004 (IHS)	2005 (WMS)	2006 (WMS)	2007 (WMS)	2008 (WMS)	2009 (WMS)	2010 (IHS)	2013 (IHPS)	2014 (WMS)
<i>Lower limit for Confidence Interval</i>	4.48	4.62	4.43	4.86	4.55	4.68	4.51	4.78	4.31
<i>Upper limit for Confidence Interval</i>	4.56	4.74	4.55	4.92	4.61	4.73	4.59	4.92	4.38

Same colour indicate overlapping confidence intervals

Are data comparable between the surveys? (2)

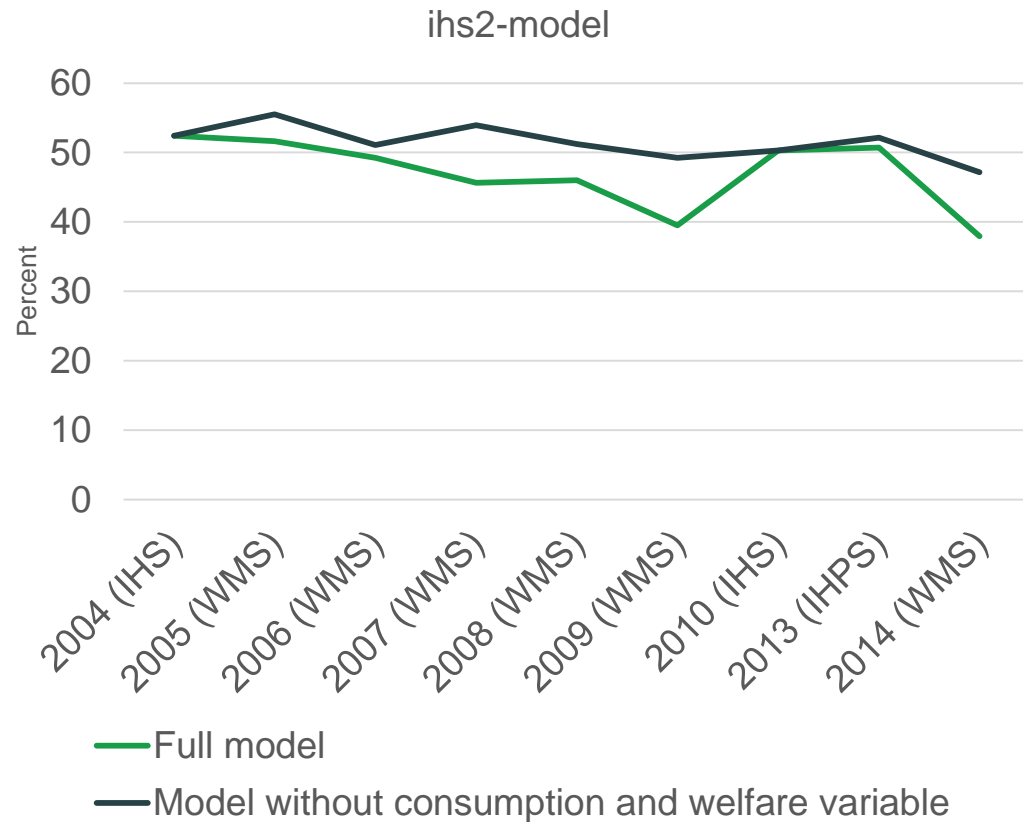
Trends in housing variable:



- Slow changing variables
- Gradually improvements
- 2009 – «off» the trend – not plausible

Are data comparable between the surveys? (3)

Excluding variables most sensitive to questionnaire context



- Result: higher predicted poverty for WMS surveys, hardly any impact on the prediction onto the IHS surveys
- Same results for ihs3-model

Concluding remarks

- Modelling approach seems to «work»
- Demographic variables must be included in the model
- There are challenges in data comparability
- If models are used for trend analysis: must collect poverty predictors in a consistent way



Thank you!

