On the Construction of a Consumption Aggregate for Inequality and Poverty Analysis

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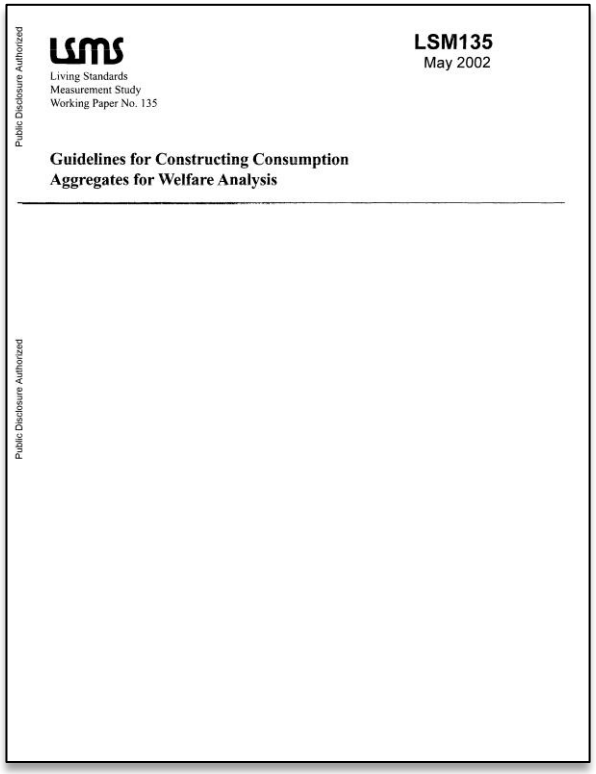
International Seminar on measuring shared prosperity and inclusion: challenges and innovative approaches

2-4 November, 2022

AD 2002

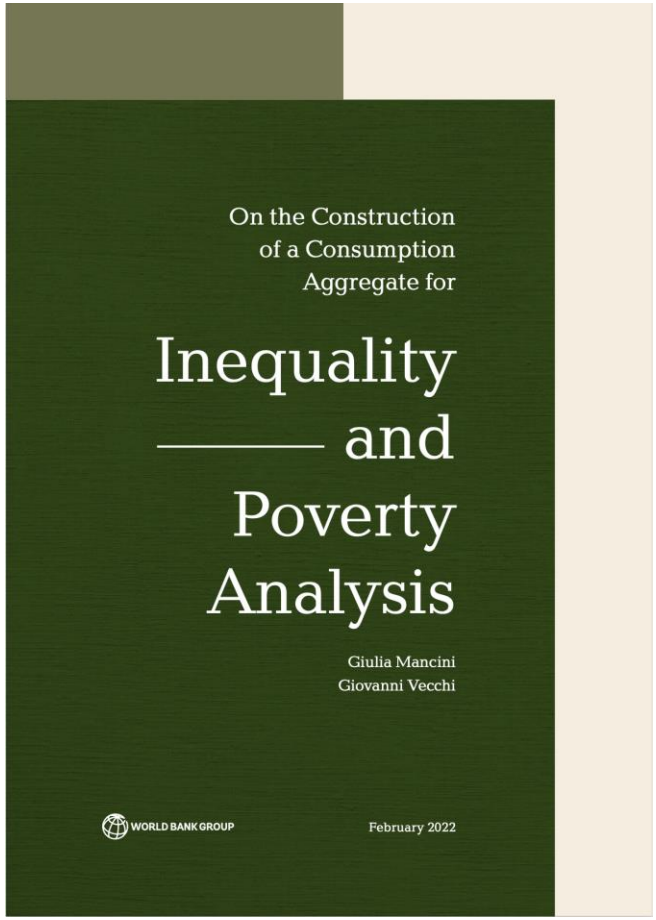


- Deaton and Zaidi (2002) needs no introduction:

  7,794 downloads

  only 2% of the World Bank's "knowledge products" surpass 1,000 downloads (Doemeland and Trevino, 2014).

Twenty years later



- This presentation:

1. Some context on the project
2. What is new with respect to DZ
3. What is still missing

1. Some context

in one slide

The process

- February 2019
  The World Bank Poverty and Equity Global Practice decides "(…) to produce an updated set of guidelines on monetary poverty measurement based on the construction of the consumption aggregate (…) this work should take as a starting point Deaton and Zaidi (2002) and should focus on what has, or has not, changed in the intervening 17 years".

- July 2020
  Vibrant review meeting (Martin Ravallion and Salman Zaidi)

- March 2022
  Release: a set of guidelines to support the work of practitioners

2. What is new with respect to Deaton and Zaidi

Overview

- DZ's Table of Contents has been modified only slightly:
- three new chapters (7, 9, 10), and
- three new appendices (A, C, E).

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New chapters:

7. Data issues

9. Reproducibility of results

10. Summary of recommendations

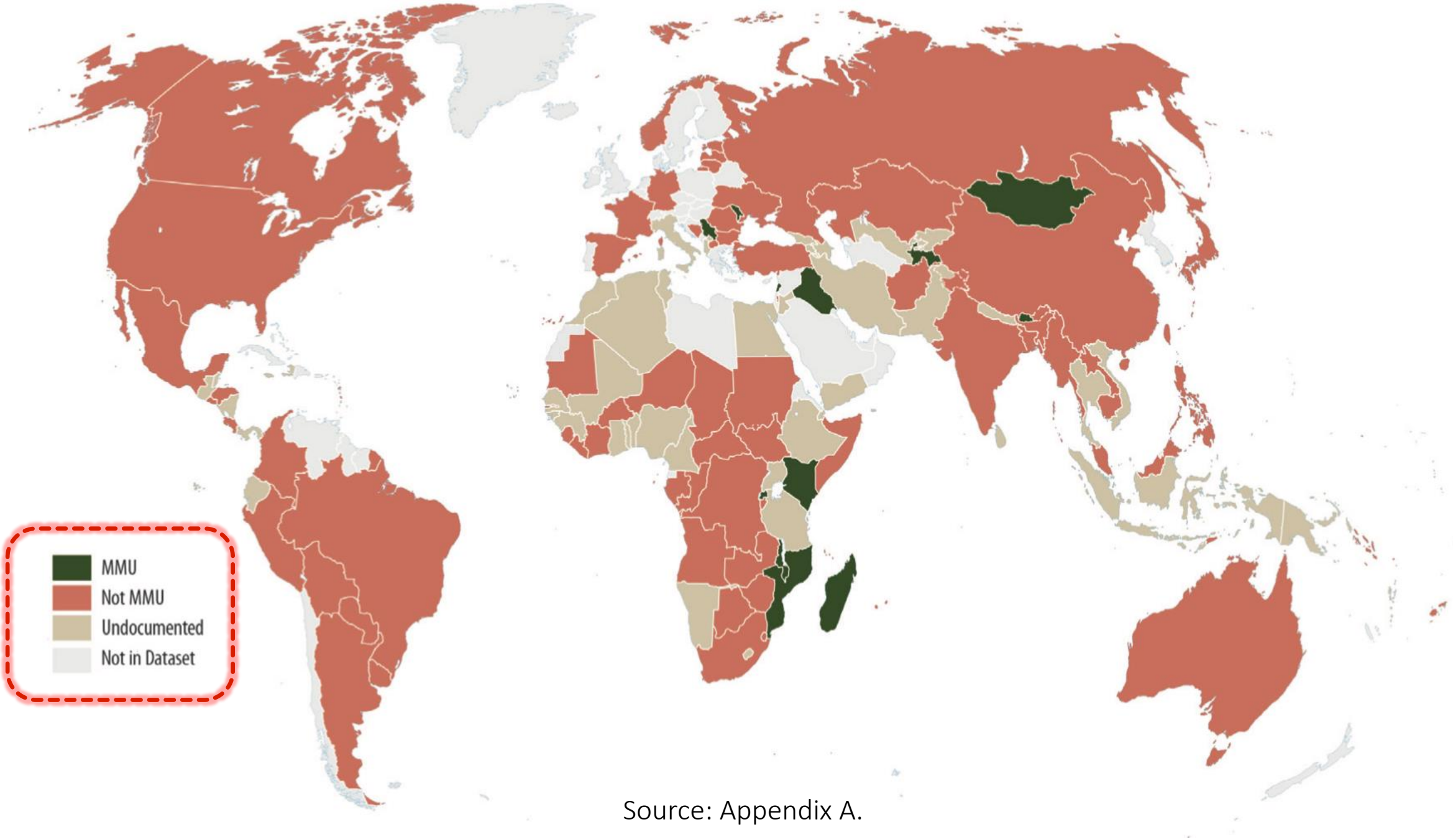
Ch. 2: Deaton and Zaidi's very first recommendation

Box 1. Summary of Theoretical Issues and Recommendations

Issue	Recommendation
bla bla bla …	Attempt should be made to use Money Metric Utility and to calculate the Paasche price indices with individual household weights.

“Attempt should be made to use MMU …”

- Is DZ’s recommendation followed in practice?
- No.



Source: Appendix A.

What's wrong with MMU?

$$MMU = \frac{x}{Paasche\ index}$$

Nothing.

More likely, the problem is with:

- the Paasche index is rarely available
- x (expenditure) is replaced with $\mathbf{y}$ (income)
- DZ's chapter 2: not an easy read.

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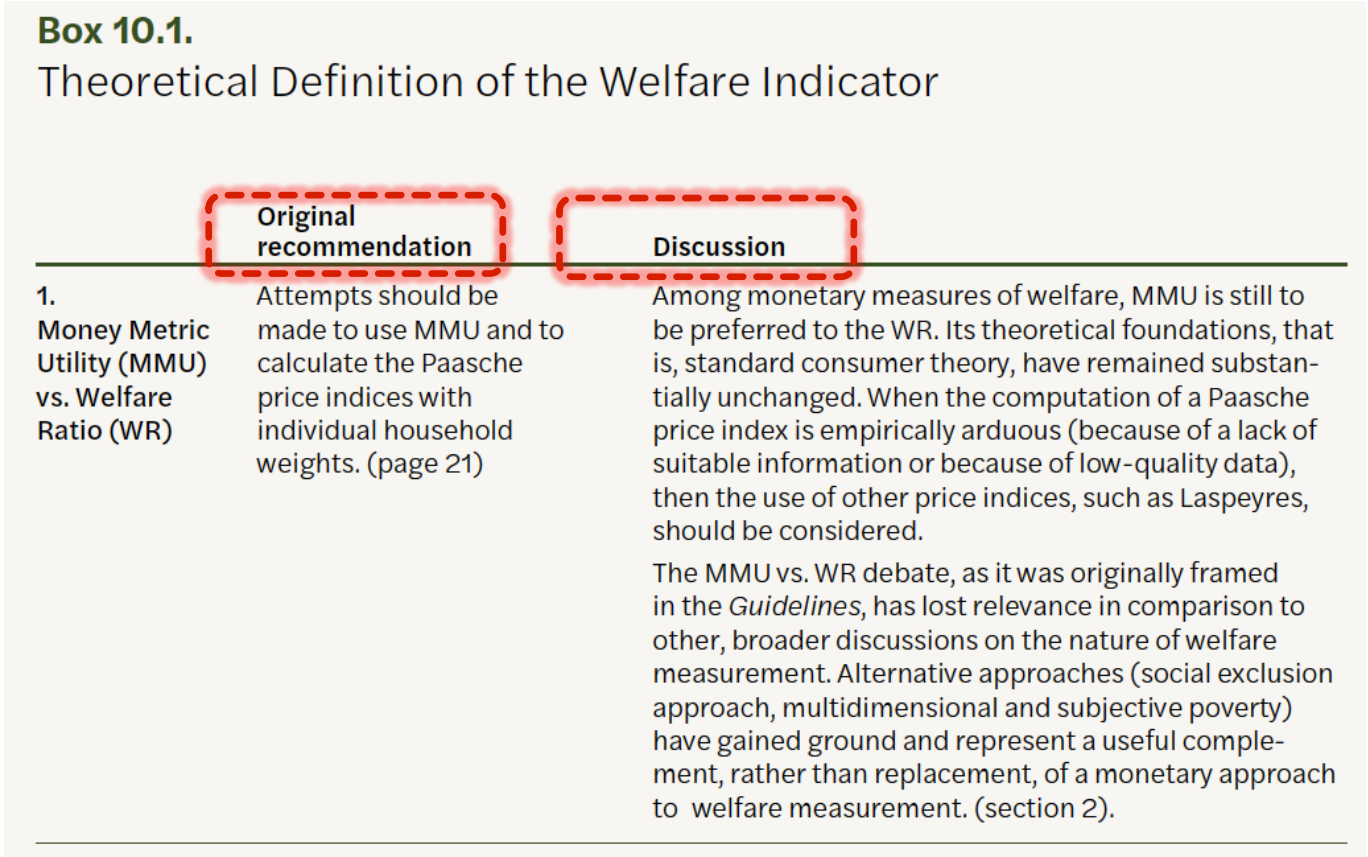
Chapter 10 – Summary of recommendations

- DZ summarize their recommendations in boxes, at the end of each chapter.

- We follow DZ's lead and produce boxes ourselves: Chapter 10 contains them all.



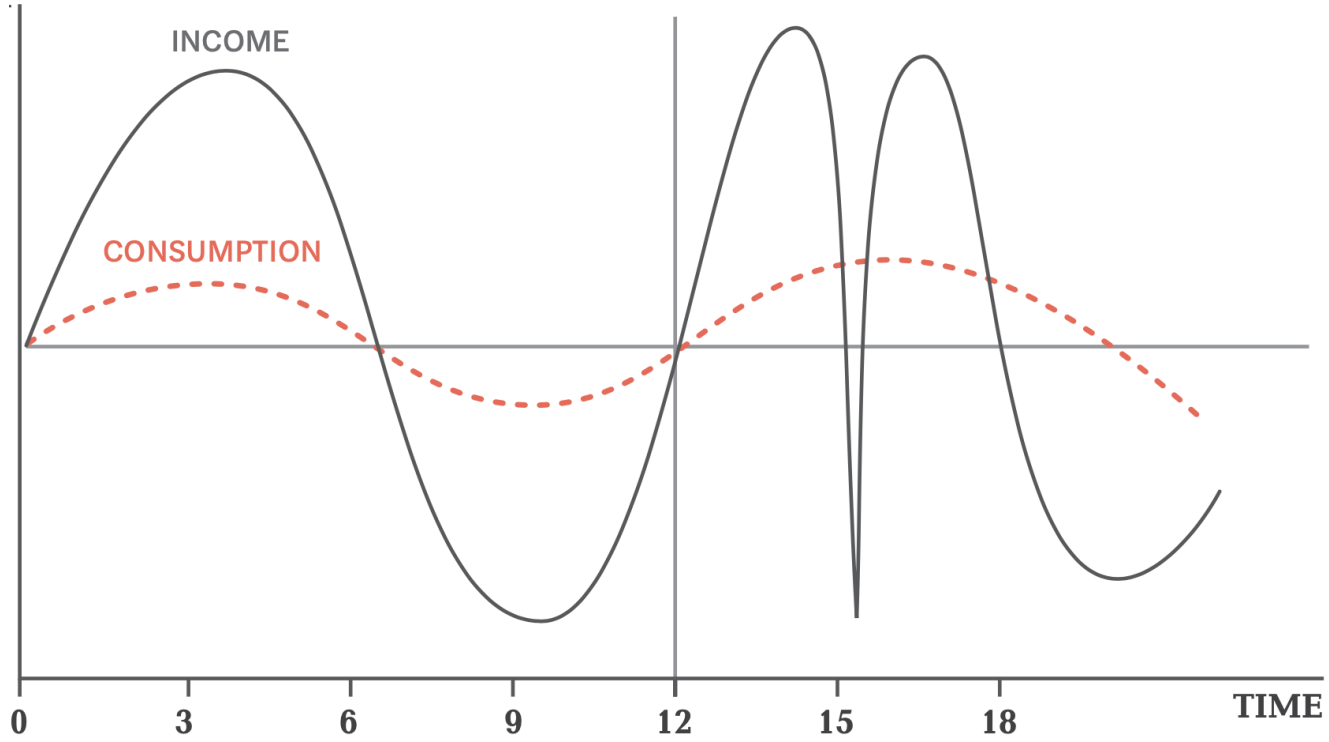
Box 10.1.

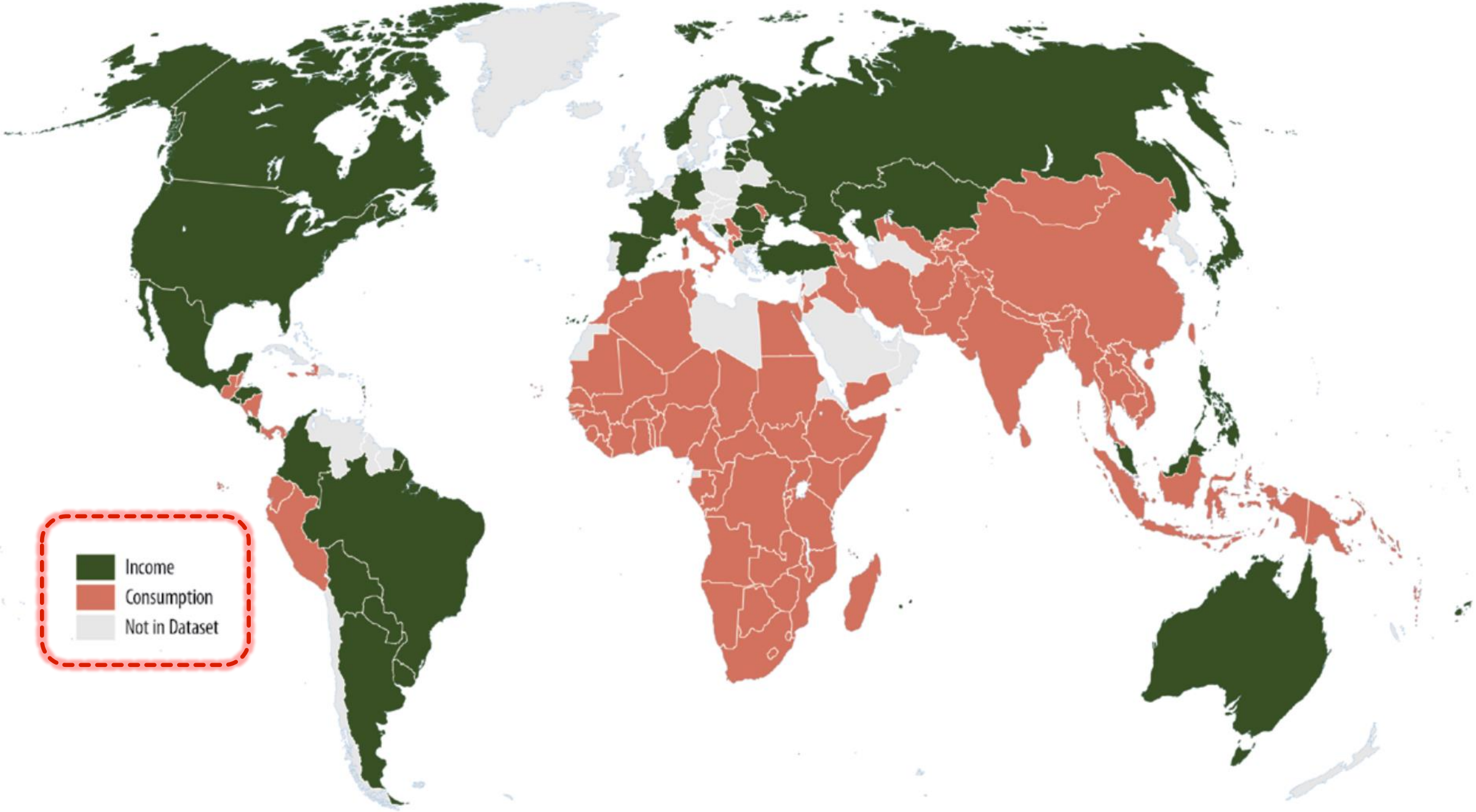
Theoretical Definition of the Welfare Indicator

	Original recommendation	Discussion
1. Money Metric Utility (MMU) vs. Welfare Ratio (WR)	Attempts should be made to use MMU and to calculate the Paasche price indices with individual household weights. (page 21)	Among monetary measures of welfare, MMU is still to be preferred to the WR. Its theoretical foundations, that is, standard consumer theory, have remained substantially unchanged. When the computation of a Paasche price index is empirically arduous (because of a lack of suitable information or because of low-quality data), then the use of other price indices, such as Laspeyres, should be considered. The MMU vs. WR debate, as it was originally framed in the *Guidelines*, has lost relevance in comparison to other, broader discussions on the nature of welfare measurement. Alternative approaches (social exclusion approach, multidimensional and subjective poverty) have gained ground and represent a useful complement, rather than replacement, of a monetary approach to welfare measurement. (section 2).

The consumption vs. income dilemma (ch. 3)

DZ favor consumption, based on the 'smoothness argument'





Source: Appendix A

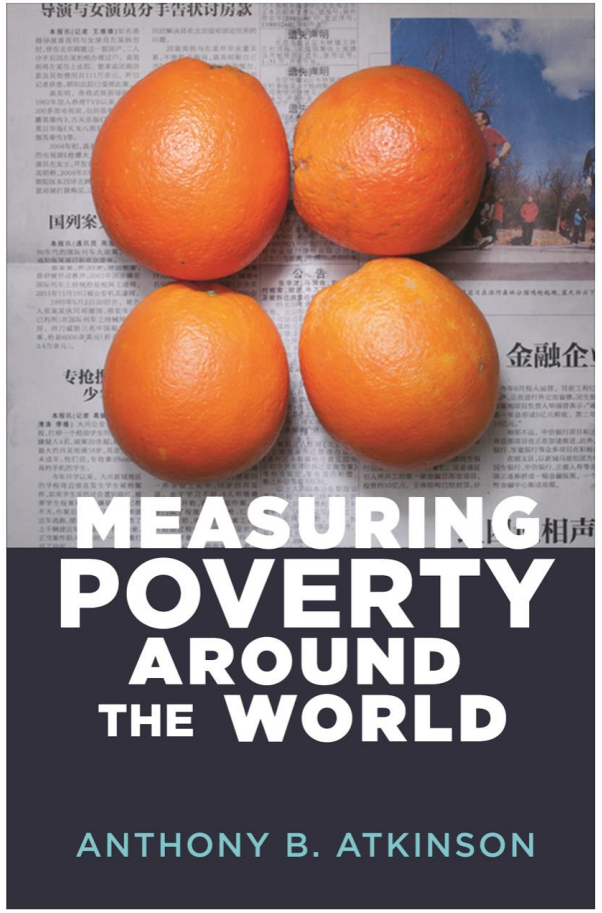
Recommendation from chapter 3

- Should we go for income or consumption?

  It depends.

- Consumption is “better” for low- and middle-income countries, where material deprivation is a priority.

- Income is “better” in contexts where living standards are ‘high’ and/or the focus is on minimum rights to resources, and inequality.

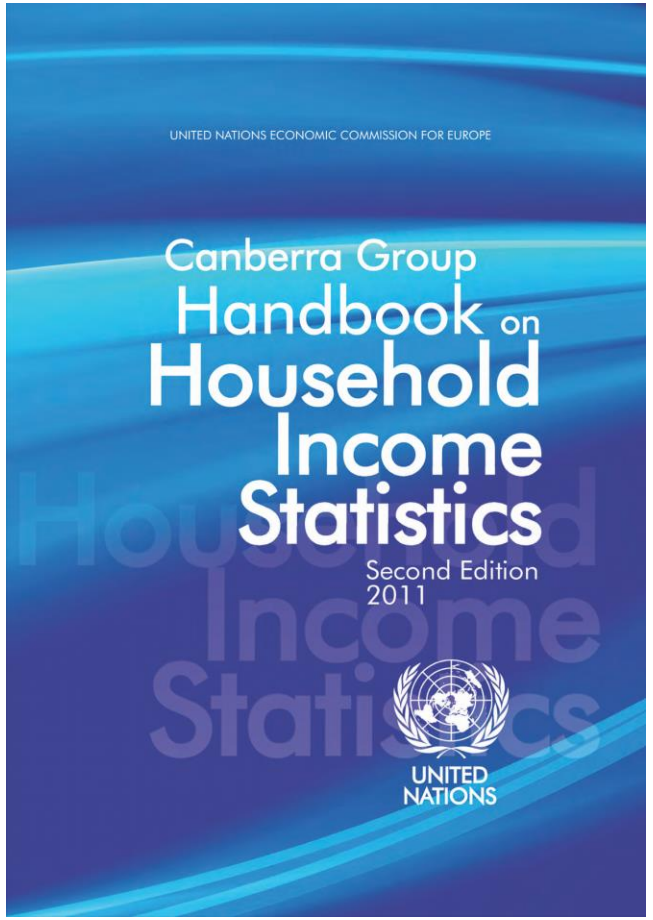


Appendix C: Construction of an income aggregate

- Appendix C is an operational guide to the construction of a household-level income aggregate
- Recommendations based on the Canberra Handbook.
- See also

C4D2
ROME | CENTER FOR DEVELOPMENT DATA

https://olc.worldbank.org/search?f%5b%5d=field_staff_learning_catalog:58213



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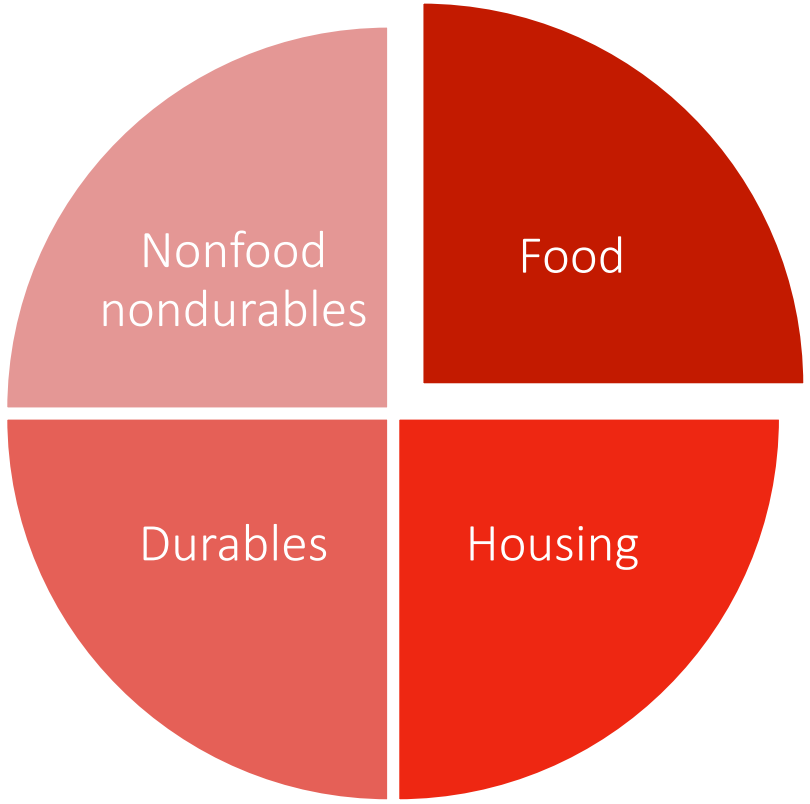
Ch. 4 – The nominal consumption aggregate



1. Food
   No major news – in general, more attention to questionnaire design (new Appendix E).
   Added guidance on food rations.

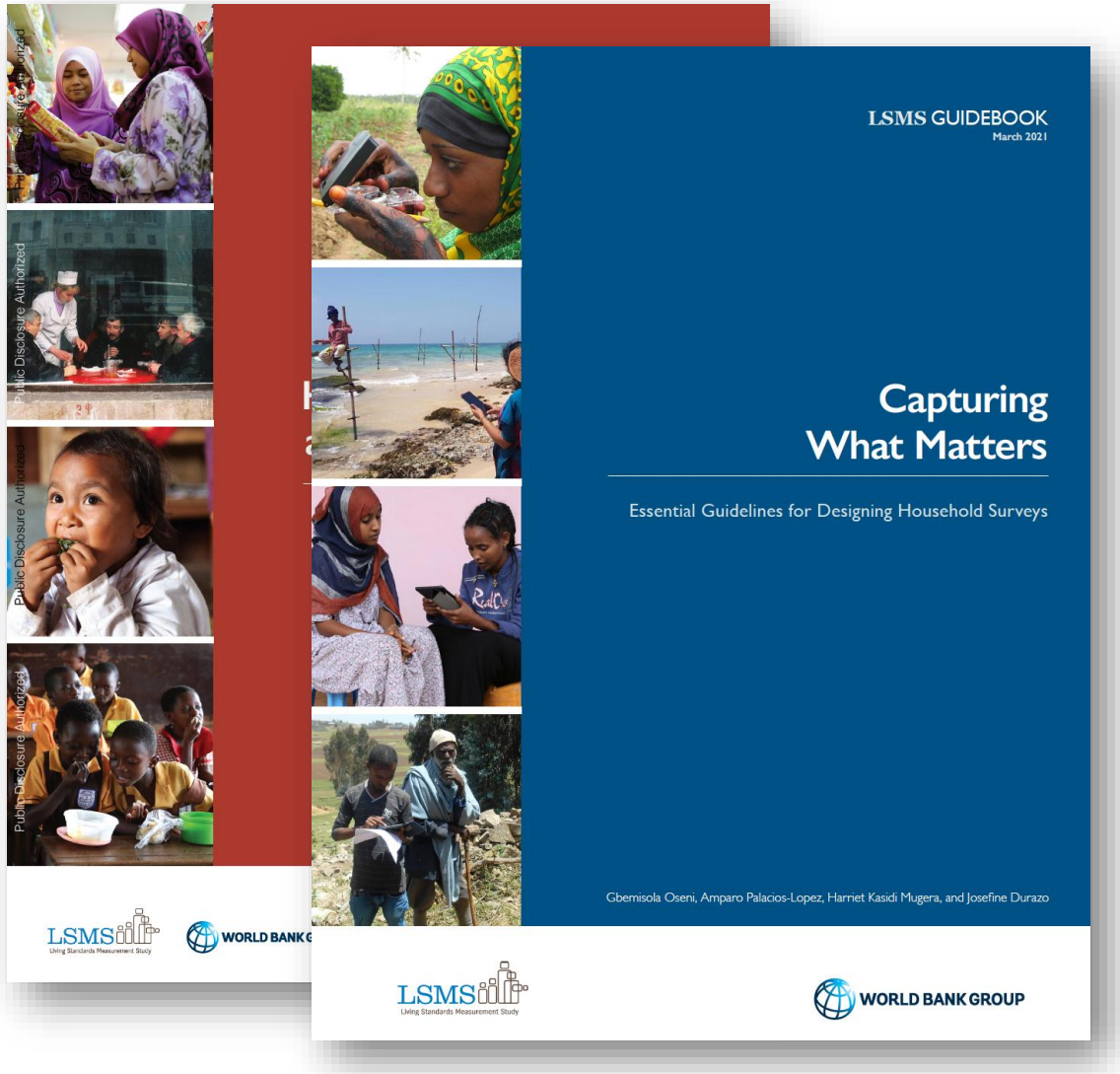
2. Nonfood nondurables
   Main revision: include health expenditures.

3. Durables
   No major news – Amendola and Vecchi (2022, JOES)

4. Housing
   No major news – a few suggestions on estimation methods.

Appendix E: Questionnaire Design

- Recent literature has documented the key role played by survey design for data quality and welfare comparisons.
- The appendix is organized as a list of Q&As: its main purpose is to raise awareness and share selected references with the reader.



Chapter 5 – Adjusting for price variation

- Spatial cost-of-living differences and within-survey inflation
- Practitioners face a number of important choices:
  - approach (price index vs. true cost-of-living index)
  - type of index (Paasche vs. Laspeyres vs. Fisher vs …)
  - sequence (“temporal first, spatial after” or viceversa?)
  - etc.

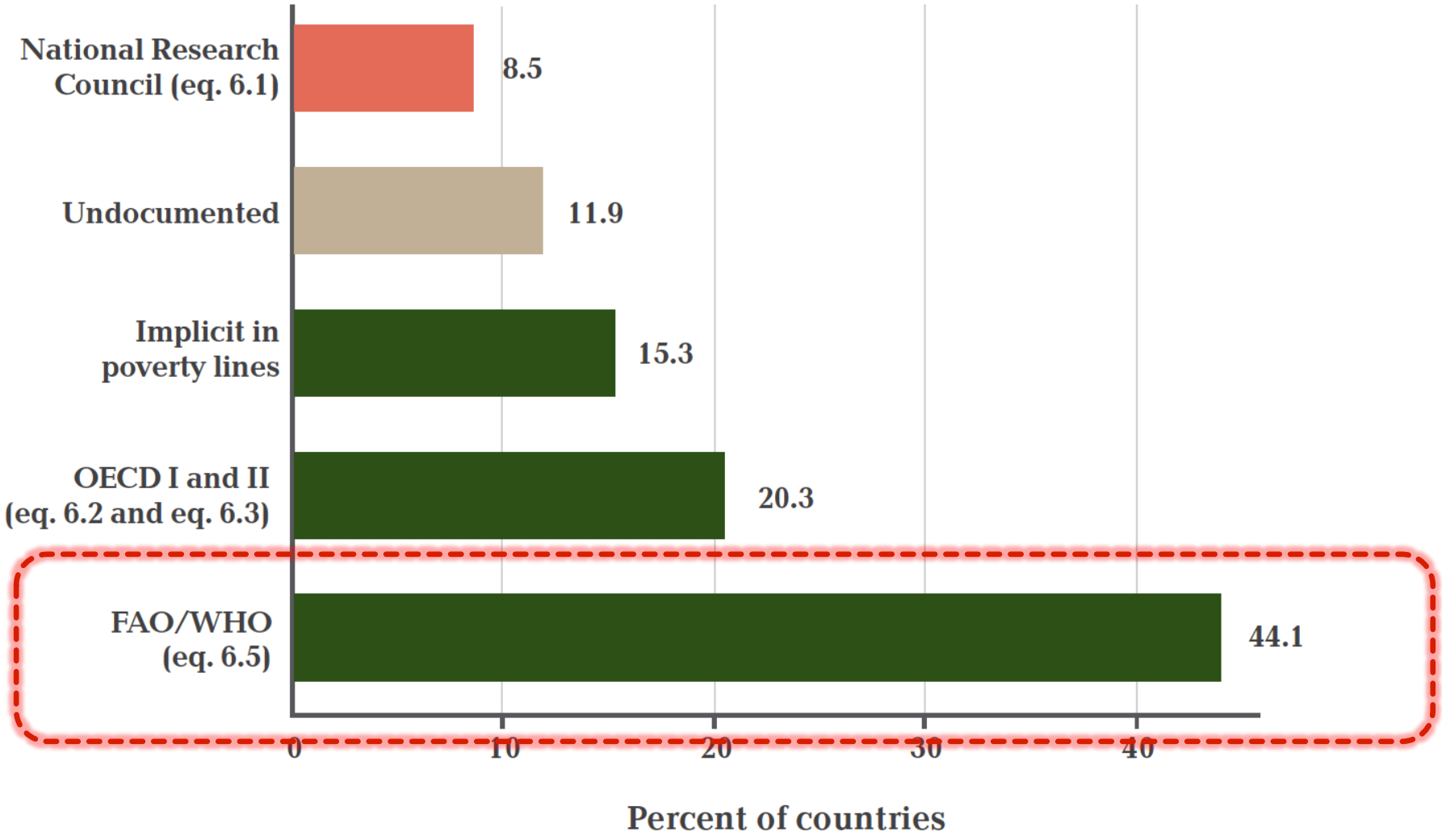
Inflation, how to deflate?

- Two options:

A. $$\hat{X} = \frac{X}{CPI}$$

B. $$\tilde{X} = \sum_{j=1}^{J} \frac{X_j}{CPI_j} = \frac{X_1}{CPI_1} + \frac{X_2}{CPI_2} + \cdots + \frac{X_n}{CPI_n}$$

Chapter 6: Adjusting for household needs



Age	Male		Female	
	Energy requirement (kcal/person/day)	Equivalence scale	Energy requirement (kcal/person/day)	Equivalence scale
	Argentina 2016			
6–9 m	776	0.28	776	0.28
9–12 m	952	0.35	952	0.35
1	1,030	0.37	1,030	0.37
2	1,277	0.46	1,277	0.46
3	1,409	0.51	1,409	0.51
4	1,518	0.55	1,518	0.55
5	1,643	0.60	1,643	0.60
6	1,760	0.64	1,760	0.64
7	1,813	0.66	1,813	0.66
8	1,865	0.68	1,865	0.68
9	1,910	0.69	1,910	0.69
10	2,192	0.79	1,918	0.70
11	2,255	0.82	1,986	0.72
12	2,347	0.85	2,051	0.74

Recommendations

- Despite its popularity, computing coefficients on the basis of caloric energy requirements ("WHO/FAO" scale) is not superior to alternatives (if anything, it is more disputable, given that it is hinges solely on food consumption).
- DZ's recommended specification, the OECD-II scale, or the square-root scale, would all be better choices.
- Regardless of the choice of equivalence scale, it is recommended to keep computing per capita expenditure as a supplementary/benchmark measure.
- Sensitivity.

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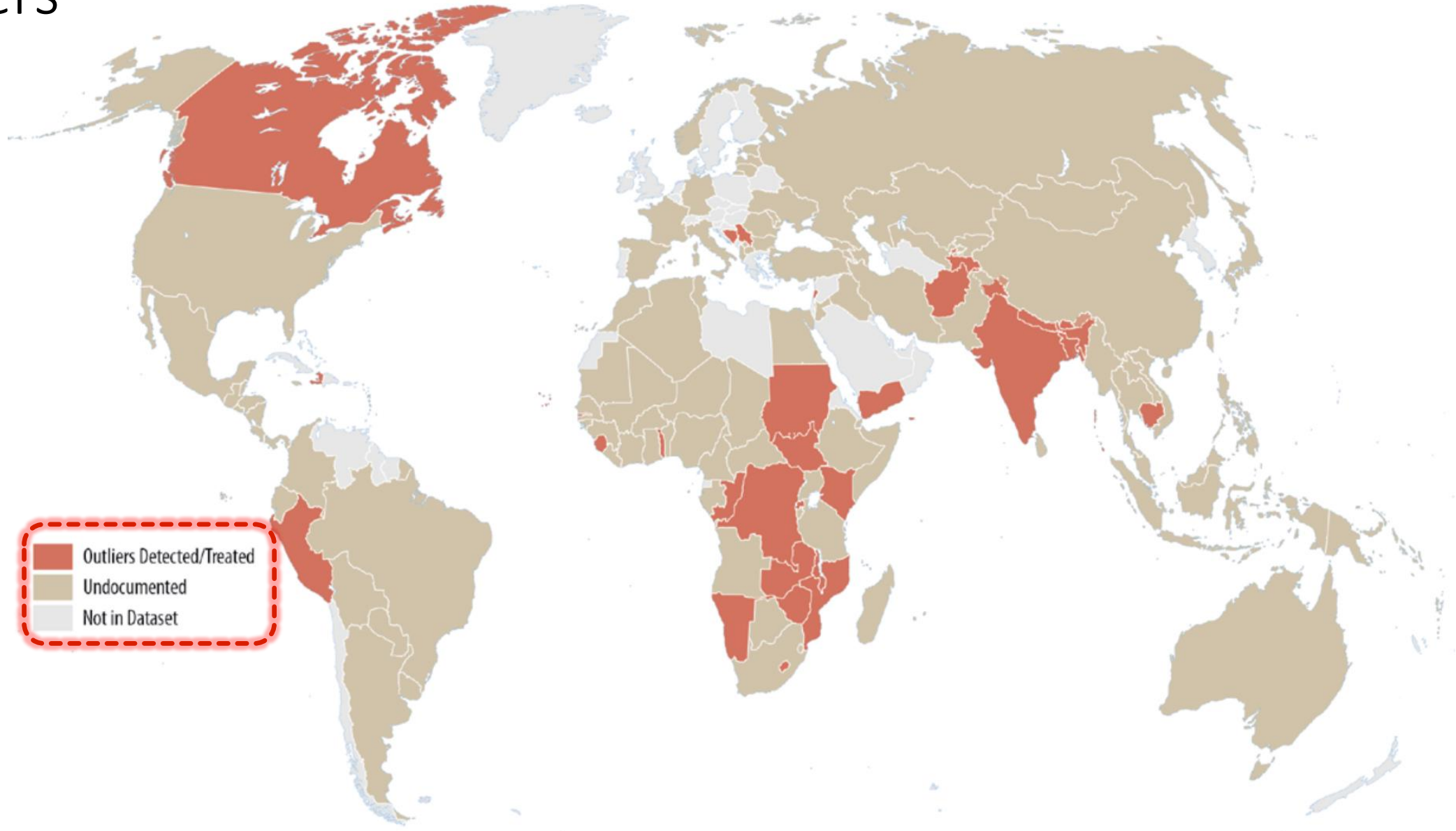
Chapter 7 (new) – Data Issues

- This is new material, with respect to DZ.
- The chapter discusses
  1. missing data (unit- and item- nonresponse)
  2. outliers
- Little to no agreement exists on how to handle them in practice.

Outliers



Source: Appendix A

Outliers – Practical recommendations

1. Compare results obtained for key indicators with and without outliers.

   Type `ssc install outdetect`
   Belotti et al (2022)

2. When estimating trends, implement the same outlier detection and treatment routines across surveys.

3. Document how any outlier corrections were handled.

Incidence of outliers:

	Freq.	Percent	Share
Bottom	58	0.47	72.50
Top	22	0.18	27.50
Total	80	0.64	100.00

Statistics for raw and trimmed pce:

	Raw	Trimmed
Summary stats		
Mean	897878.59	834540.61
Median	648734.69	648583.81
SD	1.42e+08	2.43e+07
CV	15827.77	2914.83
IQR	550120.25	546117.03
Inequality		
Gini	0.4063	0.3609
MLD	0.2839	0.2133
Theil	0.5057	0.2322
CV2	9.5596	0.3221
A(0.125)	0.0541	0.0283
A(1)	0.2472	0.1921
A(2)	0.3776	0.3261
p90/p10	4.8185	4.7690

Beta-version output of `outdetect`

Chapter 8 - Sensitivity Analysis

- We reinforce DZ's original recommendation. Now it reads:

  "A section or appendix dedicated to systematic sensitivity testing should become the norm for any technical report presenting inequality and poverty estimates."

- The key question that we have in mind in this chapter, however, is: how robust is the poverty profile?

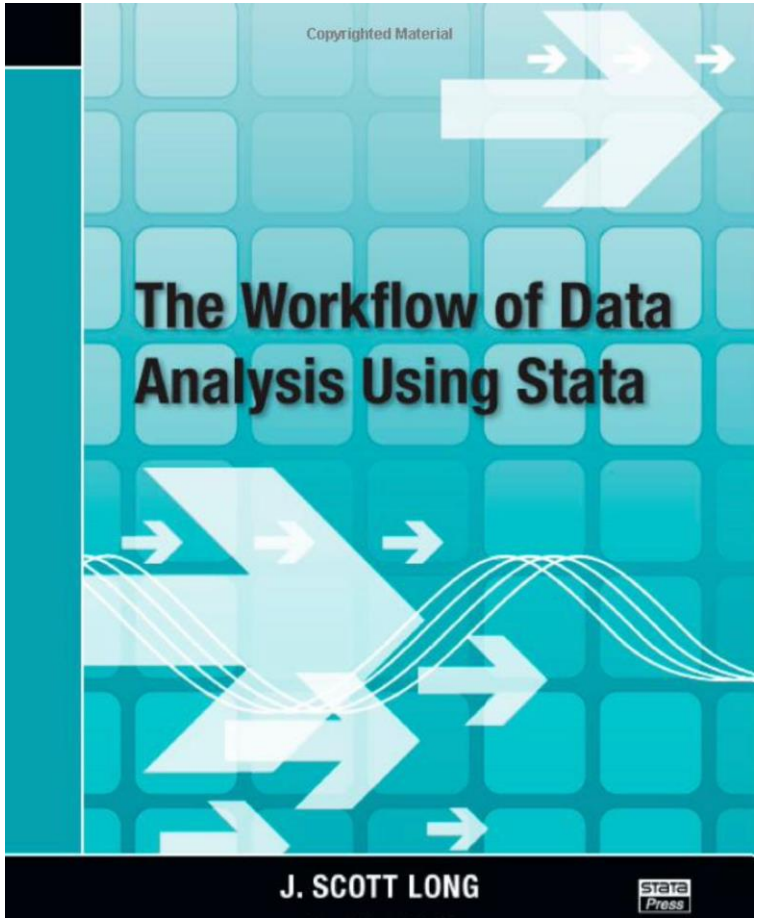
- We propose a few templates/tools.

Chapter 9 (new) - Reproducibility of Results

- The key message of the chapter is:

  implement the entire analysis in a way that ensures reproducibility of the results by external researchers.

- How to achieve it, in practice?



3. What is still missing

in one slide

The Guidelines do *not* include advice on

- How to construct a poverty line consistently with the welfare aggregate.
- Interplay between poverty line(s) and spatial deflation.
- Data issues: ex-post adjustment for unit-nonresponse, and treatment of outliers.

Thank you for your attention

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