Poverty Estimation: Measuring nonfood consumption

Designing Household Surveys to Measure Poverty
Perugia, Italy
November 2017
Overview – nonfood consumption

• Durables – consume them multiple times over long period of time
  • Contrast with food
  • Some with shorter life and/or relatively small in value (e.g. clothes, some kitchen items)
  • Some with longer life and/or relatively large in value (e.g. car, motorcycle, some kitchen items)
• Dwelling – renters and owners
• Health expenditures (goods and “bads”)
Consumption Aggregate: Guiding principles

• **FOOD component:** include food consumed by household from all possible sources:
  • purchases (with cash, by barter),
  • consumption from home production
  • transfers (gifts, payment in kind)

• **NONFOOD component:**
  • Estimate “use-value” of durable goods -- anything that is not completely depleted within the time period (e.g. year) when consumed
  • Very similarly, smooth lumpy expenditures when feasible (i.e. large and infrequent)
  • avoid items for which value is hard to estimate accurately (e.g. public goods)
  • distinguish between investments and consumption;
Welfare aggregate: nonfood consumption

Non-food items in general:

**include:**
✓ Frequently purchased goods and services (e.g. soap, transport expenditure, airtime, etc.)
✓ Less frequently but regularly purchased items (e.g. clothing, kitchen equipment, etc.)

**exclude:**
✓ Business-related expenses
✓ Large occasional expenditures such as marriages, funerals (why?)
✓ Remittances paid; gifts and transfers out
✓ Taxes paid
✓ Repayment of loans, interest payments, purchase of financial assets
✓ Purchase price of assets (e.g. home and durable goods)
Durables

A durable good is a consumption good that *can deliver useful services to a consumer through repeated use over an extended period of time* (Diewert, 2009)
Why Measure Durables?

• Long-lived goods (automobiles, appliances, furniture) have a positive and significant impact on living standards.
  • Time-saving (e.g. household appliances, transport means)
  • Entertainment (TV, DVD, etc) and communications (Phones)

• Everyone devotes some expenditures to non-food items, their inclusion helps us to get the right level of consumption, improves link to utility concept.

• As the world grows richer, nonfood expenditures are also increasing
Why Measure Durables?

- Perhaps the most frequently used analysis is the profile of the poor (what are the socio, economic, demographic attributes of the poor).
- Successfully sorting (distinguishing) the poor from the nonpoor. And, nonfood items tend to be where people most distinguish their economic status.
  - Geely (China), Tata (India), Trabant (E. Germany), Lada (Soviet); Mercedes (Germany), BMW (Germany)
- More dispersion in nonfood consumption, means greater distance between people (as measured by consumption), often means an improved ability to separate rich from poor.

<table>
<thead>
<tr>
<th>GINI (measure of dispersion)</th>
<th>Afghanistan, 2011-12</th>
<th>Bangladesh, 2010</th>
<th>Iraq 2012</th>
<th>West Bank and Gaza</th>
<th>Malawi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food consumption</td>
<td>0.34</td>
<td>0.29</td>
<td>0.32</td>
<td>0.30</td>
<td>0.34</td>
</tr>
<tr>
<td>Nonfood consumption</td>
<td>0.44</td>
<td>0.48</td>
<td>0.41</td>
<td>0.39</td>
<td>0.47</td>
</tr>
<tr>
<td>Total consumption</td>
<td>0.37</td>
<td></td>
<td>0.36</td>
<td>0.32</td>
<td>0.37</td>
</tr>
</tbody>
</table>
How to Measure Durables

• NOT appropriate to use purchase prices of durables

• Principle: measure in monetary terms the flow of services that the household receives from durable good(s)
How to Measure Durables

- The durables’ service flow exceeds the reference period of the welfare aggregate.
- The purchasing price reflects the value of the durable for its entire life.
- Need to capture the value of the flow of the service during the reference period.
<table>
<thead>
<tr>
<th>Theoretical Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acquisition Approach</strong></td>
</tr>
<tr>
<td>When the good is purchased its entire value is attributed to the household welfare aggregate</td>
</tr>
<tr>
<td><strong>Rental Equivalence</strong></td>
</tr>
<tr>
<td>If a complete set of markets for the services of durables exists, we can use the market rental value of the goods</td>
</tr>
<tr>
<td><strong>User Cost</strong></td>
</tr>
<tr>
<td>The annual cost of holding the stock of each durable</td>
</tr>
</tbody>
</table>
How to Measure Durables continued

• We need to add *the annual cost* of holding the stock of each durable.

  • Based on a conceptual experiment in which the household buys the durable good at the beginning of each year, and then sell it at year’s end

  • This will depend on prices at the beginning and end of year, interest rates (opportunity cost) and the rate of depreciation
Welfare aggregate: Durables

- Not appropriate to include purchases of durables consumption aggregate!
- Instead, include only amount of durable consumed during the year, plus “cost” of locking money in the asset.
- It can be approximated by the following formula:

\[ v_t^d \times (i_t - \pi_t + \delta_d) \]

\[ v_t^d \times (r_t + \delta_d) \]

- Where
  - \( v_t^d \) = current value
  - \( r_t \) = real interest rate, accounting for inflation
  - \( i_t \) = nominal interest rate, \( \pi_t \) = inflation rate
  - \( \delta_d \) = depreciation rate
Welfare aggregate: Durables

Example – purchase a car in 2015 for $10,000

When we used $10,000 to purchase the car, we “lost” the opportunity to invest that money in something else; Let’s assume that we could have loaned that money to someone and charged them interest of 5%. Conceptually we could have invested that $10,000 (or loaned it out) and earned an annual real rate of return of 5%. This means we forewent earning about $500/year when we made the decision to purchase the car. (Analogous to interest payments if we had needed to borrow money to purchase the car.)

Now assume that in 2016, if the person were to try to re-sell the car, it would be worth $9,000. This means that the car depreciated by $1,000, or another way to say this is that we used up (destroyed) $1,000 worth of car during the year. If depreciation is linear (or “flat line”), it would be completely used up in 10 years.

=> Annual “use-value” of the car=10,000*((0.05+0.1))= $500 + $1,000 = $1,500
A Quick Exercise

Calculate the (annual) user cost of a watch that you purchased at $25 a year ago and is worth $22.50 right now. Assume that real interest rate is 4%. (Another way to think of this is to say that the watch has a lifespan of 10 years and a flat-line depreciation, i.e. 10% per year.)

What is the use-value of the watch last year?

\[ v_t^d \times (r_t) = \text{this is the opportunity cost of having bought the watch ($1)} \]
\[ v_t^d \times (\delta^d) = \text{this is how much it depreciated ($2.5)} \]
\[ v_t^d \times (r_t + \delta^d) = $3.5 \]
Data requirements and estimation approach: Scenario 1

- From the survey:
  - **Current Value for each item** = $p_t$
  - Age of each item in years = $T$
  - Initial Value for each item = $p_{t-T}$
  - What can we estimate from this data?
- From other sources:
  - Nominal interest rate = $r_t$
  - Inflation rate = $\pi_t$
Empirical Implementation: - Scenario I

• Estimate rate of depreciation; \( f(\text{initial value, current value, age}) \)
  \[
  \delta - \pi = 1 - \left( \frac{p_t}{p_{t-T}} \right)^{1/T}
  \]

• Household-specific values are not recommended; why?
• Mean or median value? (Median reduces influence of outliers)
• Spatial differences?
Data requirements and estimation approach: Scenario 2

- Questionnaire: current value, age (Nigeria)
- Estimate lifespan & rate of depreciation; f(current value, age)
  - From the survey you have
    - Current Value for each item = $p_t^d$
    - Age of each item in years = $T$
  - From other sources:
    - Nominal interest rate = $r_t$
    - Inflation rate = $\pi_t$
Empirical Implementation: Scenario II

- Calculate the *remaining life* of each good = $2\bar{T} - T$
  - Where $\bar{T}$ is the average age for each durable good
  - $2\bar{T}$ is assumed to be the average *lifetime* of each durable good
  - This is clever; is it reasonable? (pattern of purchases, common lifespan)
- A rough estimate of annual depreciation:

\[
V_d^h = \sum_{a=1}^{D} \frac{p_t^d}{2\bar{T} - T}
\]

Consider something new in life, $T=1$ and $2\bar{T}=11$; current value=200. Annual depreciation estimate: 200/10 or 20/year.
Data requirements and estimation approach: Scenario 3

• Questionnaire: current value

• Assume lifespan & estimate rate of depreciation; f(current value)
  • Depreciation, flatline based on assumed lifespan; 10 years => d = 10%/year
  • Current value*assumed depreciation
  • Current value*real interest rate from external source
Questionnaire Examples: Food & Nonfood items
### Asset - Ghana Living Standards Survey (2012/2013)

**SECTION 12: CREDIT, ASSETS AND SAVINGS**

**PART B: ASSETS AND DURABLE CONSUMER GOODS**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CODE</th>
<th>1. Does any member of the household own?</th>
<th>2. How long ago was it obtained?</th>
<th>3. What was its purchase price? (If gift put zero)</th>
<th>4. How much could you sell it now in Ghana cedis?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LESS THAN ONE YEAR: 00 (ITEM)</td>
<td></td>
<td>C = CURRENCY CODE</td>
<td>ITEM = A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cedi……………………1</td>
<td>Dollar……………………5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Naira……………………2</td>
<td>Euro…………………6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CFA……………………3</td>
<td>Yen………………….7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pound………………….4</td>
<td>Other (specify)………………8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ITEM</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ITEM = A</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Furniture</td>
<td>301</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewing machine</td>
<td>302</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stove (kerosene)</td>
<td>303</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stove (electric)</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stove (gas)</td>
<td>305</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerator</td>
<td>306</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Asset - Nigeria GHS-Panel Wave 3 (2015)

<table>
<thead>
<tr>
<th>ITEM CODE</th>
<th>ITEM</th>
<th>NUMBER OF ITEMS</th>
<th>ID CODE</th>
<th>ID CODE</th>
<th>NUMBER OF YEARS</th>
<th>NAIRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>Furniture (3/4 piece sofa set)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>302</td>
<td>Furniture (chairs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>303</td>
<td>Furniture (table)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>304</td>
<td>Mattress</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Asset - Jordan Household Expenditure and Income Survey 2006 (MENA)

3. **AVAILABILITY OF HOUSEHOLD APPLIANCES AND PRIVATE CAR**

<table>
<thead>
<tr>
<th>Asset Code</th>
<th>Asset Description</th>
<th>YES</th>
<th>NO</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>302</td>
<td>WASHING MACHINE</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>303</td>
<td>REFRIGERATOR</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>304</td>
<td>FREEZER</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>305</td>
<td>COOKING STOVE &amp; OVEN</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>306</td>
<td>OVEN</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>307</td>
<td>COOKING STOVE</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>308</td>
<td>MICROWAVE OVEN</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>309</td>
<td>DISHWASHER</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>310</td>
<td>VACUUM CLEANER</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>311</td>
<td>TV SET</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>312</td>
<td>SATELLITE RECEIVER &amp; DISH</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>313</td>
<td>RADIO OR RADIO WITH RECORDER</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>314</td>
<td>VIDEO</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>315</td>
<td>VIDEO CAMERA</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>316</td>
<td>COMPUTER</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>317</td>
<td>INTERNET CONNECTION</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>318</td>
<td>TELEPHONE</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>319</td>
<td>MOBILE PHONE</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>320</td>
<td>FAX</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>321</td>
<td>AIR CONDITIONER</td>
<td>1</td>
<td>2</td>
<td>X</td>
</tr>
</tbody>
</table>

Captures only ownership and number owned.

No current per unit price is captured.
Housing

• Concept is the same as with durables. In fact, a house is a perfect example of an asset that significantly affects wellbeing and distinguishes wellbeing.

• So, of course purchase of a house should not be included in the aggregate; rather we want to include the use-value of the house.

• Usually there are two type of households in surveys: renters & owners
  • Renters report actual rent.
  • Owners are typically asked to report their estimate of the current value and age of the house. Sometimes also asked to report “implicit rental value” – how much it would costs them if they had to rent the dwelling in which they reside.
  • If housing were identical, we’d just use method 2 for durables and estimate use-value.
  • But, not all houses are the same; depending on their attributes (material of roof, floor, walls; size, number of rooms, location; infrastructure, indoor plumbing, wiring; etc.), their worth and then many attributes of the house.
Housing

Empirical implementation

• For renters: actual reported rent
  ✓ However, it is important to check if this is an accurate value. What if renters are primarily in urban areas? What if there is rent control?

• For non-renters: the challenge is to impute what they would be paying if they were renting instead of owning
  Different options:
    ✓ Self-reported rent: many household surveys asked non-renters this “implicit rental value” → is this a credible number? In urban areas? In rural areas?
    ✓ Self-reported current value: → is this a credible number? In urban areas? In rural areas?
    ✓ “Hedonic” housing regression, Regress value or rent on housing attributes; create predicted current values for all (fill in missing values with predictions based on attributes).
    ✓ From predicted current value, follow method 2 or 3 to estimate use value.
Housing

• Hedonic regression approach
  • Estimate an econometric model:
    \[ \log(y) = X\beta + \varepsilon \]
    
    \( y \): rent (actual and/or self-assessed by owners)
    \( X \): housing characteristics (number of rooms, roof, floor, wall, type of toilet, location variables)

  • Predict for the rest of the population
    \[ \hat{y} = X\hat{\beta} \]
Housing, Example from Afghanistan Consumption—housing (8% of total)

- Housing: rents
  - Few households report rents (less than 5%)
  - Many households report value of house (48% in urban, 38% rural, 38% Kuchi)
  - Imputed housing value from dwelling characteristics (>99% of households have sufficient household characteristics)
  - Separate urban and rural models
  - Est. rent = value * depreciation * interest rate
Housing, Example from Afghanistan Housing Regression Model

\[ \log \text{value} = f(\text{dwelling characteristics}) \]

<table>
<thead>
<tr>
<th>Dwelling characteristics</th>
<th>Urban dwelling</th>
<th>Rural dwelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rooms</td>
<td>3.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Access through footpath (%)</td>
<td>14</td>
<td>31</td>
</tr>
<tr>
<td>Access through paved Road (%)</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Built 5 -&lt; 10 years ago (%)</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Traditional covered latrine (%)</td>
<td>73</td>
<td>58</td>
</tr>
<tr>
<td>Flush latrine (%)</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Fired brick/stone wall (%)</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Concrete wall (%)</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Mud bricks/ mud wall (%)</td>
<td>77</td>
<td>89</td>
</tr>
<tr>
<td>Number of observations</td>
<td>1,562</td>
<td>5,927</td>
</tr>
<tr>
<td>Regression R-square</td>
<td>0.51</td>
<td>0.48</td>
</tr>
</tbody>
</table>
## Housing, Example from Afghanistan Predicted & Reported value

<table>
<thead>
<tr>
<th>Dwelling type</th>
<th>Actual</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban dwelling</td>
<td>700,000</td>
<td>654,463</td>
</tr>
<tr>
<td>Rural dwelling</td>
<td>100,000</td>
<td>101,751</td>
</tr>
<tr>
<td>Tents</td>
<td>9,000</td>
<td>7,385</td>
</tr>
</tbody>
</table>

*Note:* Medians of predicted and actual housing values of households that reported housing values.
## Housing, Example from Afghanistan Imputed & Reported Rent

<table>
<thead>
<tr>
<th>Dwelling type</th>
<th>Actual rent</th>
<th>Rate of 4%</th>
<th>Rate of 4.5%</th>
<th>Rate of 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban dwelling</td>
<td>3,170</td>
<td>2,765</td>
<td>3,110</td>
<td>3,456</td>
</tr>
<tr>
<td>Rural dwelling</td>
<td>1,493</td>
<td>495</td>
<td>557</td>
<td>618</td>
</tr>
<tr>
<td>Total</td>
<td>2,816</td>
<td>2,285</td>
<td>2,571</td>
<td>2,857</td>
</tr>
</tbody>
</table>

*Note:* Means of predicted rental values. Figures shown based on households that reported actual rents. Rate is the sum of depreciation and interest rate.
## Housing, Example from Afghanistan Urban rents from CPI data

<table>
<thead>
<tr>
<th>Monthly rent</th>
<th>Kabul</th>
<th>Herat</th>
<th>Jalalabad</th>
<th>Mazar -e-sharief</th>
<th>Khost</th>
<th>Kandahar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rent, 4 rooms non-concrete</td>
<td>8,042</td>
<td>4,667</td>
<td>5,333</td>
<td>5,500</td>
<td>3,500</td>
<td>5,500</td>
</tr>
<tr>
<td>Rent, house 2 rooms concrete</td>
<td>5,433</td>
<td>3,167</td>
<td>3,333</td>
<td>5,000</td>
<td>3,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Rent, 2 rooms non-concrete</td>
<td>4,625</td>
<td>2,333</td>
<td>2,500</td>
<td>3,000</td>
<td>1,750</td>
<td>3,000</td>
</tr>
</tbody>
</table>

*Note: Rent in urban areas from CPI data in February 2009*

*Source: CSO*
### PART F: CHARACTERISTICS OF THE DWELLING

1. **What is the main construction material used for the outer wall?**
   - Mud bricks/earth........................................01
   - Wood.........................................................02
   - Metal sheet/slate/asbestos.............................03
   - Stone........................................................04
   - Burnt bricks.................................................05
   - Cement blocks/concrete.................................06
   - Landcrete....................................................07
   - Bamboo......................................................08
   - Palm leaves/Thatch (grass/Raffia)....................09
   - Other (specify)..............................................10

2. **What is the main construction material used for the floor?**
   - Earth/Mud..................................................1
   - Cement/Concrete.........................................2
   - Stone.......................................................3
   - Burnt bricks...............................................4
   - Wood.......................................................5
   - Vinyl tiles................................................6
   - Ceramic/Porcelain/Granite/ Marble tiles............7
   - Terrazzo/Terrazzo tiles.................................8
   - Other (specify)..............................................9

3. **What is the main material used for the roof?**
   - Mud bricks/earth.........................................1
   - Wood.........................................................2
   - Metal sheet...............................................3
   - Slate/Asbestos.............................................4
   - Cement blocks/concrete.................................5
   - Bamboo.....................................................6
   - Palm leaves/Thatch (grass/Raffia)....................7
   - Roofing Tiles...............................................8
   - Other (specify)..............................................9
### Housing - Nigeria GHS-Panel Wave 3 (2015)

**SECTION 8A - HOUSING**

1. **Do you own or purchase this dwelling, is it provided to you by an employer, do you use it for free, or do you rent this house?**
   - OWNED: **1**
   - EMPLOYER PROVIDES: **2**
   - PRODUCED, NOT AUTHORIZED: **3**
   - RENTED: **5**

2. **If you sold this dwelling today, how much would you receive for it?**

3. **Estimate the rent you could receive if you rented this dwelling?**

4. **How much do you pay to rent this dwelling?**

5. **In what year was this house built?**

6. **THE OUTER WALLS OF THE MAIN DWELLING OF THE HOUSEHOLD ARE PREDOMINANTLY MADE OF WHAT MATERIAL?**
   - IF DON'T KNOW, WRITE 9999
   - GRASS: **01**
   - CONCRETE: **02**
   - BRICK (UNPRIMED): **03**
   - CONCRETE BLOCKS: **05**
   - CONCRETE: **06**
   - WOOD: **07**
   - TIN SHEETS: **08**
   - CONCRETE ON GROUND: **09**
   - STONE: **10**
   - OTHER: **11**

<table>
<thead>
<tr>
<th>NAIRA</th>
<th>NAIRA</th>
<th>TIME UNIT</th>
<th>NAIRA</th>
<th>TIME UNIT</th>
<th>YEAR</th>
</tr>
</thead>
</table>

7. **THE ROOF OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?**
   - GRASS: **01**
   - TIN SHEETS: **02**
   - CLAY: **03**
   - CONCRETE: **04**
   - PLASTIC SHEETS: **05**
   - BRICK: **06**
   - OTHER (SPECIFY): **07**

8. **THE FLOOR OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?**
   - SAND/DIRT/DIRT: **01**
   - CONCRETE: **02**
   - WOOD: **03**
   - TILES/BLOCKS: **04**
   - OTHER (SPECIFY): **06**

9. **How many separate rooms do the members of your household occupy? (DO NOT COUNT BATHROOMS, TOILETS, STORAGE ROOMS, OR GARAGE)**

10. **What is your main source of lighting fuel?**

11. **What is your main source of cooking fuel?**

12. **Do you ever collect firewood?**
   - YES: **1**
   - NO: **2**

13. **Where do you go to collect firewood?**
   - OWN WOODLOT: **1**
   - COMMUNITY WOODLOT: **2**
   - PURCHASE: **3**
   - RESEVE: **4**
   - OTHER: **5**

14. **How long does it take you to walk from your dwelling to where you usually go to collect firewood? (ONE WAY)**
   - MINUTES: **1**
   - HOUR: **2**

15. **Of the firewood you used in the past week, how much of it did you purchase?**
   - DID NOT USE: **1**
   - ALL: **2**
   - ALMOST ALL: **3**
   - HALF: **4**
   - LESS THAN HALF: **5**
   - A LITTLE: **6**
   - NONE: **7**

**C4D2 Training**
Health
Welfare aggregate: Health

• Exclude if consumption reflects a bad:
  ✓ If it does not contribute to welfare – “regrettable necessity”.
  ✓ For example, I get very sick, have to spend a lot of money; consumption goes up, wellbeing goes down.

• Include if consumption reflects a good:
  ✓ Being able to afford health care may be welfare enhancing; health insurance in particular.
  ✓ If I spend money on preventative care and health insurance, my consumption goes up and so too does my wellbeing.

• Common recommendation
  ✓ Include only if there is a strong linkage to the overall total expenditures – high elasticity with respect to total expenditures.
  ✓ Consumed frequently.
Welfare aggregate: Health and Education

Expenditure on health and education are quite regular across the distribution

<table>
<thead>
<tr>
<th></th>
<th>Non-zero health</th>
<th>Non-zero education</th>
<th>Non-zero education for household with kids 7-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom</td>
<td>75%</td>
<td>76%</td>
<td>86%</td>
</tr>
<tr>
<td>2</td>
<td>83%</td>
<td>74%</td>
<td>87%</td>
</tr>
<tr>
<td>3</td>
<td>86%</td>
<td>73%</td>
<td>87%</td>
</tr>
<tr>
<td>4</td>
<td>87%</td>
<td>73%</td>
<td>91%</td>
</tr>
<tr>
<td>Top</td>
<td>92%</td>
<td>66%</td>
<td>92%</td>
</tr>
<tr>
<td>Total</td>
<td>85%</td>
<td>72%</td>
<td>89%</td>
</tr>
</tbody>
</table>

Note: household weights are used. Spatailly adjusted per adult equivalent welfare aggregate is used.

Income gradient in both absolute values and budget shares of education and health

<table>
<thead>
<tr>
<th></th>
<th>Education</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>expenditure per adult equivalent</td>
<td>share</td>
</tr>
<tr>
<td>Bottom</td>
<td>19</td>
<td>3.4</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>3.9</td>
</tr>
<tr>
<td>3</td>
<td>53</td>
<td>4.6</td>
</tr>
<tr>
<td>4</td>
<td>78</td>
<td>5.0</td>
</tr>
<tr>
<td>Top</td>
<td>161</td>
<td>6.2</td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Note: household weights are used. Spatailly adjusted per adult equivalent welfare aggregate is used.
Welfare aggregate: Health and Education

- Elasticity of health and education expenditure are not significantly different from 1.
- Both expenditure are quite regular
- Keep both in welfare aggregate.

- Welfare aggregate per capita drops approximately by 10 percent if education and health expenditure are excluded (5 percent drop from each component)

| Table. Elasticity of health and education expenditure per adult equivalent |
|-----------------------------|-----------------------------|
|                            | log-log | asinh-asinh |
| elasticity                 | dropped zeros | including zero expenditures |
| health                     | 0.92    | 1.04       |
| education                  | 0.97    | 1.00       |

Note: Education expenditure are only for those with kids 7-22.
Health Expenditures - Malawi Fourth Integrated Household Survey (IHS4, 2016/17)

- All health expenditure questions asked at level of individual
- No distinction between in-cash and in-kind payments
- Distinguish between preventive- and curative-related health expenditures in last 30 days
- D17 captures coping mechanisms/extent to which health expenditures compromised wellbeing

- Asked at level of individual, last 14 months
- Divided by types of health services

- Includes drugs, transport, laboratory tests all together
- Doesn’t distinguish between in-cash and in-kind

Out-patient care

1. How much money did you pay for visits to the ambulanta or DZ during the last 14 months?

INCREASE COSTS OF: DRUGS, TRANSPORT, LABORATORY TESTS AND ESTIMATED IN KIND PAYMENTS. IF NONE WRITE IN 0

AMOUNT IN KM

OBGYN (women only)

10. How much money did you pay for health services obtained from the gynecologist during the last 14 months?

INCLUDE COSTS OF: DRUGS, TRANSPORT, LABORATORY TESTS AND ESTIMATED IN KIND PAYMENTS. IF NONE WRITE IN 0

AMOUNT IN KM

Dentist

13. How much money did you pay for visits to the dentist during the last 14 months?

INCLUDE COSTS OF: DRUGS, TRANSPORT, LABORATORY TESTS AND ESTIMATED IN KIND PAYMENTS. IF NONE WRITE IN 0

AMOUNT IN KM

Other doctors

16. How much money did you pay for costs associated with those visits to the other doctor during the last 14 months?

INCLUDE COSTS OF: DRUGS, TRANSPORT, LABORATORY TESTS AND ESTIMATED IN KIND PAYMENTS. IF NONE WRITE IN 0

AMOUNT IN KM

Private nurse, paramedic, midwife

19. How much money did you pay for these services?

INCLUDE COSTS OF: DRUGS, TRANSPORT, LABORATORY TESTS AND ESTIMATED IN KIND PAYMENTS. IF NONE WRITE IN 0

AMOUNT IN KM

PT, chiropractor, home nurse, herbalist

21. During the last 14 months how much did you pay for all drugs purchased on your own initiative during the last 14 months?

INCLUDE COSTS OF: DRUGS, TRANSPORT, LABORATORY TESTS AND ESTIMATED IN KIND PAYMENTS. IF NONE WRITE IN 0

AMOUNT IN KM

OTC drugs

23. How much did you pay for hospital/ spa stays during the last 14 months?

DO NOT INCLUDE COSTS REIMBURSED BY HEALTH INSURANCE

AMOUNT IN KM

In-patient

27. How much did you pay for visits to the ambulanta or DZ during the last 14 months?

INCORRECT COSTS OF: DRUGS, TRANSPORT, LABORATORY TESTS AND ESTIMATED IN KIND PAYMENTS. IF NONE WRITE IN 0

AMOUNT IN KM
## Other Non-Food Expenditure: Nigeria GHS-Panel Wave 3 (2015)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
<th>NAIRA (Price)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes or tobacco</td>
<td>101</td>
<td>309</td>
</tr>
<tr>
<td>Matches</td>
<td>102</td>
<td>310</td>
</tr>
<tr>
<td>Newspaper and magazines</td>
<td>103</td>
<td>330</td>
</tr>
<tr>
<td>Public transport (bus, rail, boat, etc) EXCLUDE EDUCATION RELATED EXPENSES</td>
<td>104</td>
<td>311</td>
</tr>
<tr>
<td>Petrol</td>
<td>309</td>
<td>311</td>
</tr>
<tr>
<td>Diesel</td>
<td>310</td>
<td>312</td>
</tr>
<tr>
<td>Lubricants (oil, grease, etc)</td>
<td>330</td>
<td>313</td>
</tr>
<tr>
<td>Light bulbs/globes</td>
<td>311</td>
<td>314</td>
</tr>
<tr>
<td>Water</td>
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<td>313</td>
</tr>
<tr>
<td>Soap and Washing powder</td>
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<td>314</td>
</tr>
<tr>
<td>Toilet paper</td>
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<td></td>
</tr>
<tr>
<td>Infant Clothing</td>
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<td>438</td>
</tr>
<tr>
<td>Baby nappies/diapers</td>
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<td>434</td>
</tr>
<tr>
<td>Boys Tailored clothes</td>
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<td>435</td>
</tr>
<tr>
<td>Boys dress (ready made)</td>
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<td>422</td>
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<tr>
<td>Girls Tailored clothes</td>
<td>405</td>
<td>423</td>
</tr>
<tr>
<td>Electric kettle</td>
<td>438</td>
<td></td>
</tr>
<tr>
<td>Coal pot/other non-electric app</td>
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<td></td>
</tr>
<tr>
<td>Repairs of appliances</td>
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</tr>
<tr>
<td>Torch / flashlight</td>
<td>422</td>
<td></td>
</tr>
<tr>
<td>Umbrella and raincoat</td>
<td>423</td>
<td></td>
</tr>
</tbody>
</table>
References

1. Lisa Smith, Olivier Duriez & Nathalie Troubat, (Feb 2014), Assessment of the Reliability and Relevance of the Food Data Collected in National Household Consumption and Expenditure Surveys, IHSN Working Paper No. 008
