Young Lives

'How Many Rooms Are There in Your House?'

Constructing the Young Lives Wealth Index

Kristine Briones

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Acknowledgements

1.   Introduction

The Young Lives wealth index is intended to be the primary measure of socio-economic status of households within the Young Lives sample. The construction of the index draws on work undertaken by the World Bank and Macro International used to develop the wealth index cited in the UNICEF Multiple Indicator Cluster Surveys (MICS). The wealth index positions Young Lives households on a continuous scale of wealth, with higher values reflecting higher household wealth. It was introduced in the Young Lives Round 1 (2002) country reports (Galab et al. 2003; Tuan et al. 2003; Alemu et al. 2003; Escobal et al. 2003) to determine household poverty status. Using country-specific wealth index cut-off points, the reports categorised households into four groups ('poorest', 'very poor', 'less poor', and 'better-off') in India, Peru, and Vietnam, and three groups ('poorest', 'very poor', and 'less poor') in Ethiopia.[1]

The Young Lives wealth index has allowed researchers to investigate the impact of material well-being on child health[2] and education[3] outcomes, among others. It has also been used to investigate the representativeness of the Young Lives sample in each of the four survey countries. (Escobal and Flores 2008; Kumra 2008; Nguyen 2008; Outes-Leon and Sanchez 2008).

This technical note uses the wealth index definition as per the Round 5 (2016) fact sheets in all Young Lives countries. [4] While this definition is similar to the wealth index computed in the previous rounds for India and Peru, changes were made in the computation of some sub-indices to make sure that the definitions are similar across rounds and are consistent with nationally defined standards. Details of these changes are available in the Appendix. For those interested in using the Young Lives wealth index and its sub-indices computed using the new definition, the data and other constructed variables will be available to download in June 2018 via the UK Data Service website. The wealth index and its subcomponents computed using the old definition are available in the household datasets from Round 1 to Round 4.

Next, Sections 2 and 3 discuss the construction of the Young Lives wealth index and its sub-indices. Section 4 then investigates trends in the wealth index and its sub-indices across the Young Lives sample.

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1   The cut-off points for each country were as follows: Ethiopia, <0.2 very poor, 0.2-0.4 poor, >0.4 less poor; India and Vietnam, <0.25 poorest, 0.25-0.5 very poor, 0.5-0.75 less poor, >0.75 better off; Peru, <0.25 poorest, 0.25-0.4 very poor, 0.4-0.7 less poor, >0.7 better off.

2   See, for example, Krishna et al. (2015), Carrillo-Larco et al. (2016) and Fakir (2016).

3   See, for example, Woodhead et al. (2014) and Reynolds et al. (2017).

4   For a list of the Young Lives Round 5 factsheets, please visit https://www.younglives.org.uk/content/round-5-fact-sheets.

2. Structure of the Young Lives wealth index

The wealth index was designed to include a broad range of variables as markers of wealth that vary substantially across the sample. It is constructed from three indices: housing quality, access to services, and ownership of consumer durables. With the assumption that its three indicators are of equal importance, the wealth index is computed as a simple average of the three indices. The average produces a value between 0 and 1, where a higher wealth index indicates a higher socio-economic status.

$$\text{WEALTH INDEX} = \frac{\text{HOUSING QUALITY} + \text{ACCESS TO SERVICES} + \text{CONSUMER DURABLES}}{3}$$

Since certain household asset variables may reflect household wealth better in some countries than in others, or may better discriminate degrees of wealth in different countries, country-specific asset variables are used. While this increases the index's ability to reflect local realities better, it also means that the constructed wealth index is not comparable across the four study countries.

It is, however, comparable between cohorts and across the five survey rounds within each country. Information used in computing the index is obtained from questions asked consistently to households from both cohorts in all five rounds. Thus, the wealth index is a powerful tool to explore changes to households' socio-economic status, poverty dynamics, and intra and intergenerational socio-economic mobility.

3. Computation of the wealth index sub-indices

YOUNG LIVES WEALTH INDEX		
HOUSING QUALITY	ACCESS TO SERVICES	CONSUMER DURABLES
Main material of walls / Main material of roof / Main material of floor / Household density	Electricity / Drinking water source / Sanitation facility / Fuel for cooking	List of country-specific household items

3.1. Housing quality

The housing quality sub-index reflects the welfare of household members in terms of housing-related comfort by looking at materials used in constructing the family's dwelling (walls, roof, and floor), and household density. The housing quality indicator is computed as the simple average of four indicators (quality of walls, roof, and floor, and household density), assuming that each indicator has a weight equal to one. Equal weights assume equal importance between indicators. Thus, for instance, having good-quality walls has the same value as having good-quality floors.

$$\text{HOUSING QUALITY} = \frac{\text{Main material of walls} + \text{Main material of roof} + \text{Main material of floor} + \text{Household density}}{4}$$

The four indicators used to compute the housing quality indicator are described below.

Main material of walls. A variable equal to 1 if the dwelling's walls are made of good-quality material, 0 otherwise.

Main material of roof. A variable equal to 1 if the dwelling has a sturdy roof, 0 otherwise.

Main material of floor. A variable equal to 1 if the dwelling's floor is made of a finished material, 0 otherwise.

The fieldworker recorded the main materials of the dwelling's walls, roof, and floor at the time of the interview. In cases were a part of the house was built using more than one material, the material that makes up at least 50 per cent of the walls, roof, or floor was recorded. If there is more than one building in the household (e.g. a separate kitchen or bathroom) the material used in the main section of the dwelling, housing the living room and the bedrooms, was recorded. The decision on what material of walls and floor is good quality and what material of roof is considered sturdy is made by each Young Lives country team, using country-specific criteria (see Appendix).

Figure 1 shows the number of good-quality construction materials households have by country and survey year. On average, Young Lives households in Ethiopia have one good-quality construction material (out of three; wall, floor, and roof material) across the five survey years. Across the survey years, there was no improvement to dwellings in terms of construction materials for households in India and Peru (two out of three). Vietnam households, on the other hand, have had on average good-quality construction materials for the roof, wall, and floors (three out of three) since 2009.

Figure 1. *Average number of good-quality materials in constructing the dwelling by country and survey year*
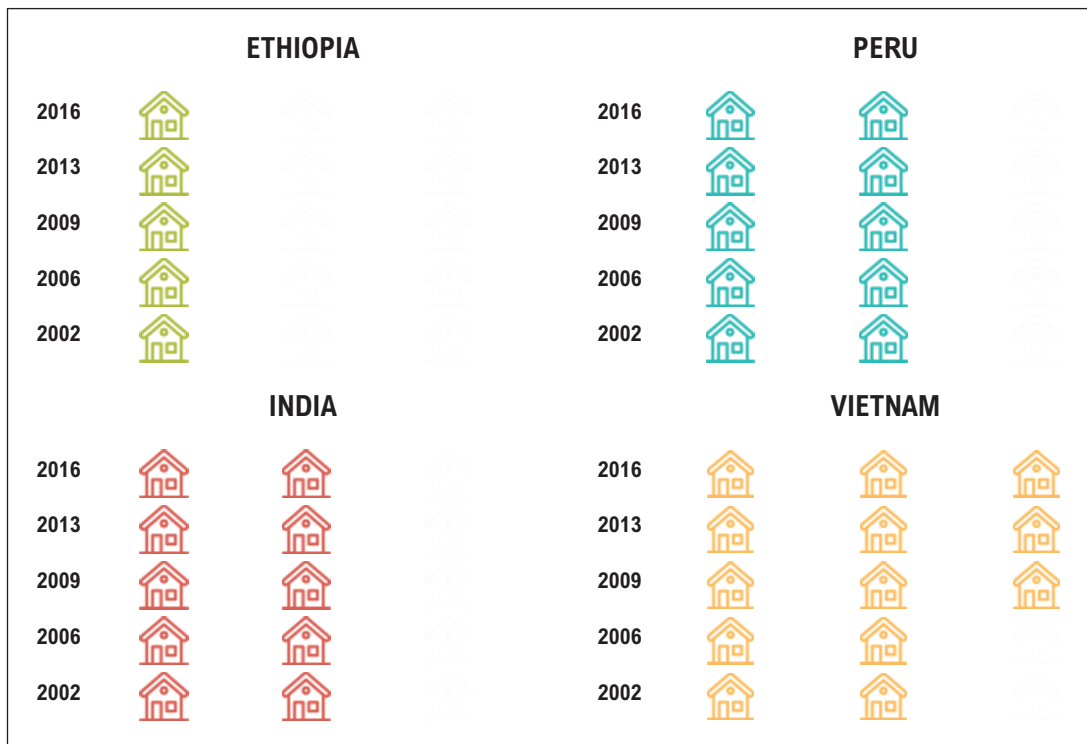
Household density. Household density is the rescaled value of rooms to household size ratio. In the survey, the respondents were asked about the number of rooms in the dwelling that have permanent divisions. It excludes the kitchen, bathrooms, corridor, and garage or rooms divided with non-permanent divisions such as a curtain. Rooms divided by non-permanent materials were counted as only one room. Figure 2 shows the average rooms per person by country and survey year.

Figure 2.   *Average rooms per person by country and survey year*
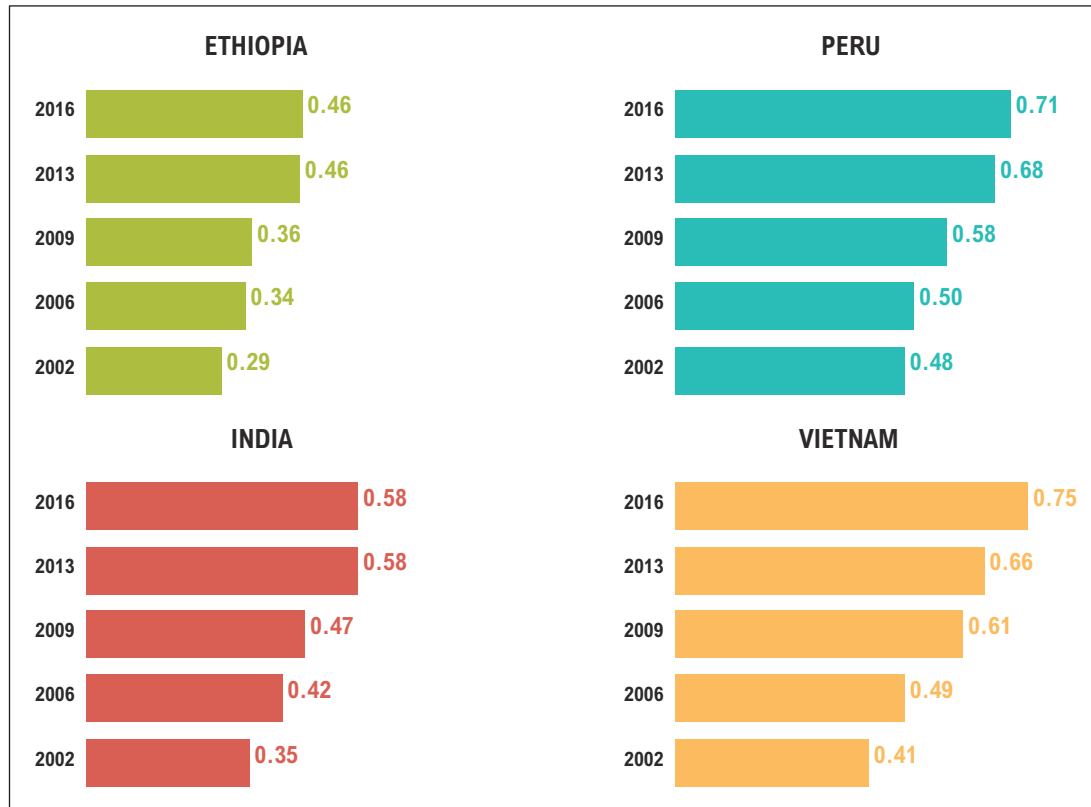
Rescaling was done to make the household density indicator take values between 0 and 1. The formula used was:

$$hd_i^* = \frac{(hd_i - hd_{\min})}{(hd_{max} - hd_{\min})}$$

Where hd_i^* = rescaled household density of household i;

hd_i = household density of household i;

$hd_{\min}$ = minimum household density in the sample; and

hd_{max} = maximum household density in the sample.

This formula limits comparability across time and space. To make household density comparable across the Young Lives survey rounds, hd_{min} is set to 0 and hd_{max} is set to 1.5. The selection of the maximum matters, as selecting too high a maximum will make the effective range too small with most values close to 0. For the Ethiopia, India, and Vietnam samples, a maximum of 1.5 was set since, upon investigation, only 2 per cent of households have household density greater than 1.5 for each survey round.[5] Households with densities greater than 1.5 are replaced with 1.5 before rescaling. Peru, on the other hand, uses the formula above, identifying the minimum and maximum values for each round and rescaling accordingly.

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5   In the Vietnam Round 5 survey, 4 per cent of households have household density greater than 1.5.

3.2.   Access to services

The access to services sub-index is a measure of the household's ability to meet functional requirements of sound shelter. It is a simple average of four indicators: (1) access to electricity; (2) access to safe drinking water; (3) access to a safely managed sanitation service; and (4) access to adequate fuel for cooking. All four indicators are considered to have equal weight.

$$\text{ACCESS TO SERVICES} = \frac{\text{Electricity} + \text{Drinking water source} + \text{Sanitation facility} + \text{Fuel for cooking}}{4}$$

The four indicators used to compute the access to services indicator are described below.

Electricity. A variable equal to 1 if household has electricity, 0 otherwise. This includes (legal and illegal) electricity connections and electricity coming from generators, including wind, solar, and biogas. It does not include electricity generated by car batteries.

Drinking water source. A variable equal to 1 if the household has a safe source for drinking water, 0 otherwise. If household members have different sources of drinking water, the source used by the majority of the members is considered.

Sanitation facility. A variable equal to 1 if the household has a safely managed sanitation service, 0 otherwise.

Fuel for cooking. A variable equal to 1 if the household uses kerosene, paraffin, gas, or electricity as fuel for cooking, 0 otherwise. If the household has multiple sources of fuel for cooking, the most frequent source is recorded.

The decisions on what source of drinking water and sanitation facility is considered safe were made separately across the four Young Lives countries. Figure 3 shows the average number of services (electricity, drinking water, sanitation facilities, fuel for cooking) accessible to the households in each Young Lives country by survey year.

Figure 3. *Average number of services accessible to households by country by survey year*
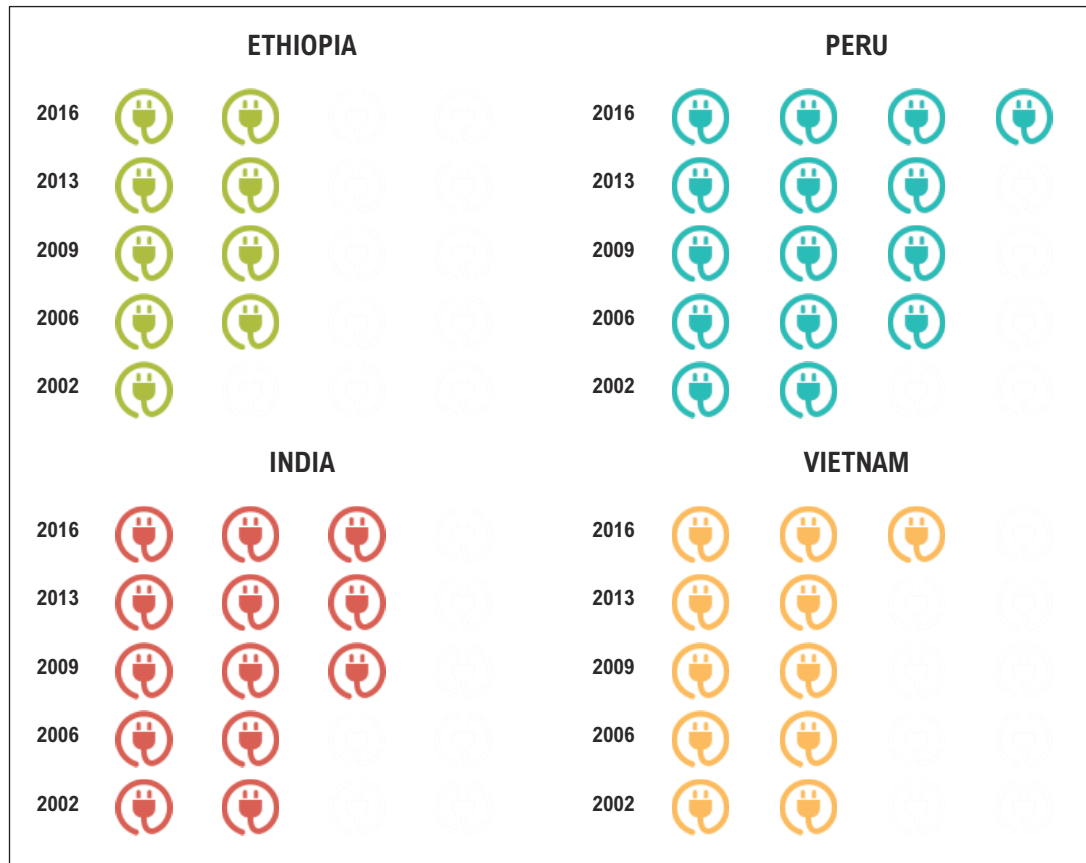

3.3. Consumer durables

The consumer durables sub-index is a measure of the household's ownership of common household items. For an item to be considered it should be in working condition and could be sold by the household. This includes items that are currently being paid in instalments and items not in the house at the time of interview. The sub-index is a simple average of a set of variables indicating ownership of a long list of items, all items having equal weighting in the index (regardless of distinct monetary value of the item).

$$\text{CONSUMER DURABLES} = \frac{\text{Item 1} + \text{Item 2} + \dots + \text{Item n}}{n}$$

Item *i* is a variable equal to 1 if the household owns (at least one) item *i*, 0 otherwise. *n* is the total number of items listed, and varies by country ($n_{Ethiopia}$=10, n_{India}=9, n_{Peru}=12, and $n_{Vietnam}$=9).

Figure 4 shows the average number of consumer durables owned by households in the Young Lives sample by country and by survey year.

Figure 4. *Average number of household items by country and survey year*
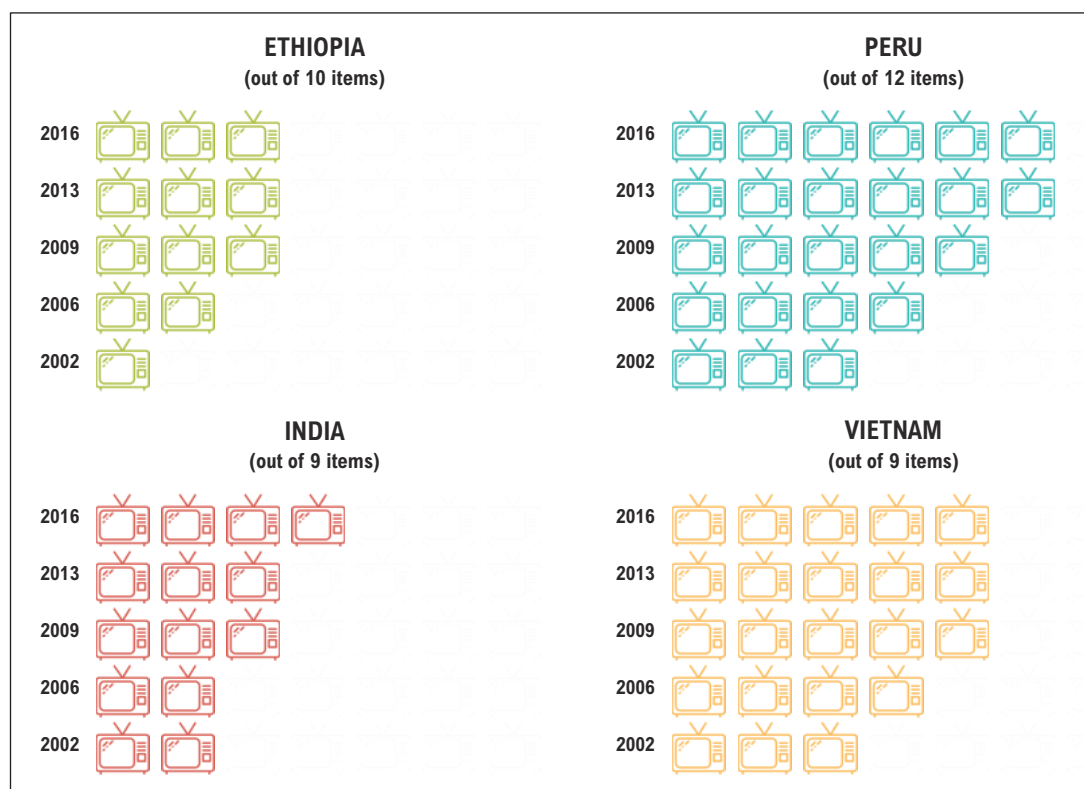
4. How the wealth index has changed in the past 15 years in the Young Lives countries

Figure 5 displays the trend of the wealth index and its three components by country. Ethiopia's wealth index has increased from 0.23 in 2002 to 0.43 in 2016. This increase is mainly due to improvements in access to services (0.25 points increase between 2002 and 2016).

All three components of the wealth index increased by about 0.2 points from 2002 to 2016 in India, with an increase of the wealth index from 0.41 in 2002 to 0.64 in 2016. The access to services sub-index in Peru is at a high of 0.88 in 2016, while its housing quality sub-index is 0.52 in 2016, only 0.2 higher from its value in 2002. Peru's wealth index increased from 0.44 in 2002 to 0.64 in 2016.

Finally, Vietnam experienced large improvements in all sub-indices from 2002 to 2016. Its wealth index in 2016 is 0.71, 0.26 points up from its value in 2002.

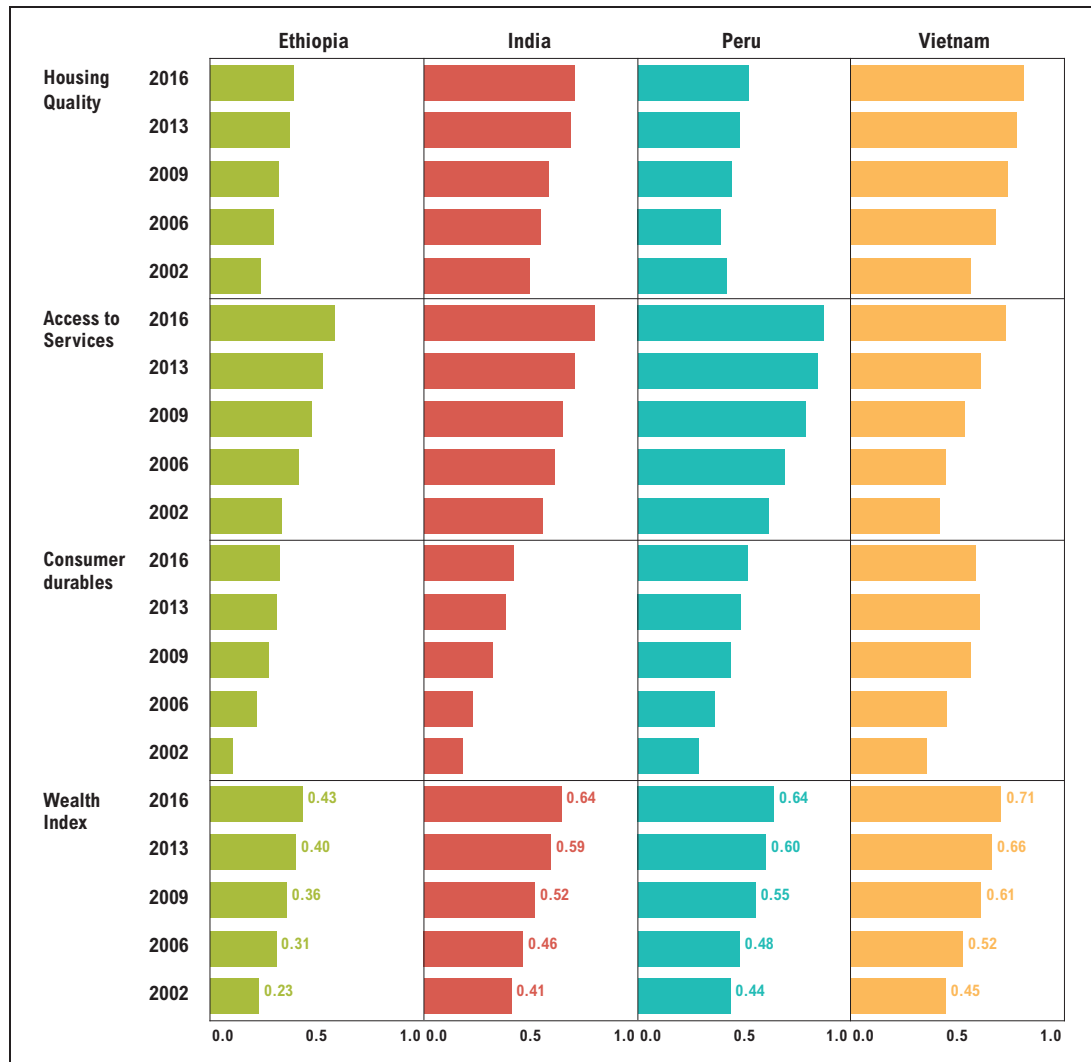**Figure 5.** *Young Lives wealth index and sub-indices averages by country and survey year*

Figure 6 shows the distribution of the wealth index in the four Young Lives countries in each survey year. While it is evident that Young Lives households' socio-economic status are improving in all countries, Ethiopia shows a considerable lower wealth index than the other three countries. The wealth index distribution for Ethiopia is skewed to the right, while the opposite is true for the other three countries. Indeed the majority of households in Ethiopia have a wealth index between 0.3 and 0.6. In contrast, a consistent number of Young Lives households in the other countries have a wealth index between 0.6 and 0.8.

Figure 6.   *Young Lives wealth index distribution by country and survey year*
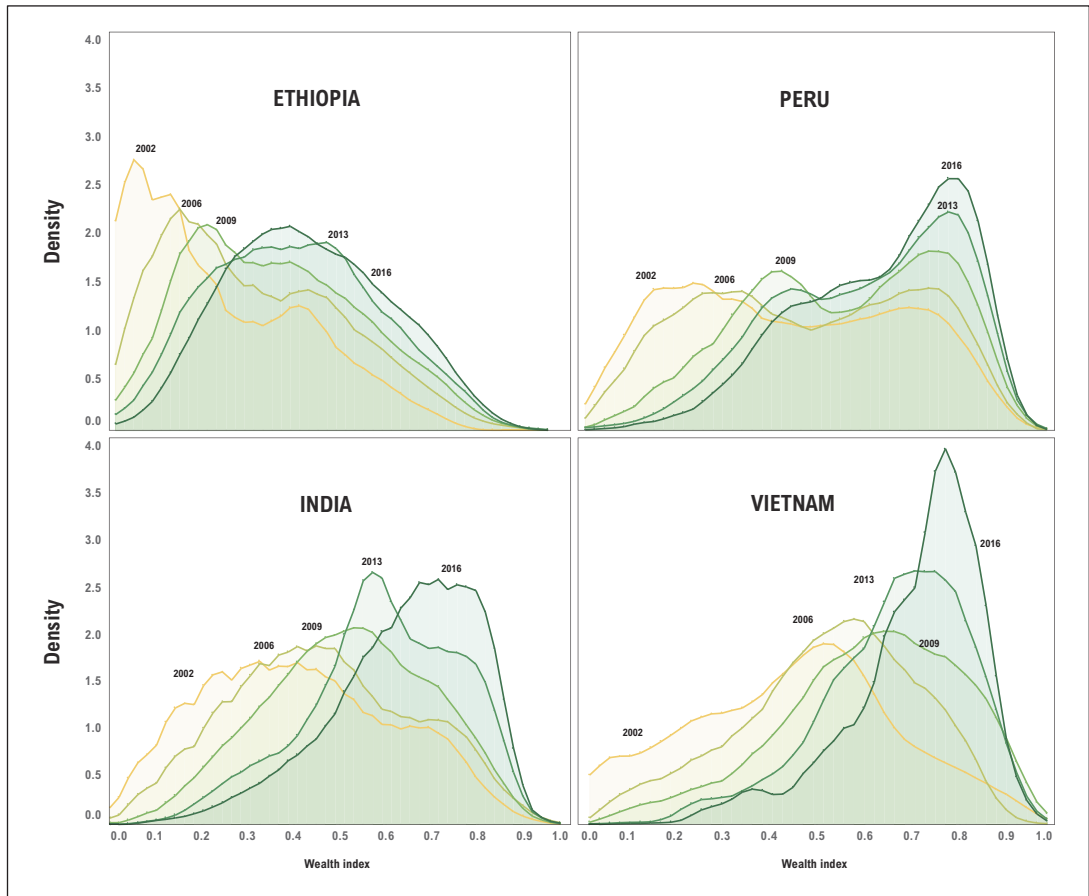
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6. Appendix. Country-specific definitions of the wealth index components

Table A1. *Ethiopia*

Housing quality			
Good-quality wall	**Good-quality roof**	**Good-quality floor**	**Crowding definition**
• Brick/concrete	• Concrete/cement	• Concrete/cement/tile	Number of rooms/person (rescaled)
• Mud and bricks/stones	• Galvanised/corrugated iron	• Laminated material	
• Stone	• Tiles/slates	• Marble stone	
Access to services			
Safe drinking water sources	**Safely managed sanitation service**	**Adequate fuel for cooking**	**Electricity**
• Piped into own dwelling/yard/plot	• Flush toilet/septic tank	• Gas/electricity	Household has electricity
• Piped into neighbour's dwelling/yard/plot*	• Pit latrine (household/communal**)	• Kerosene/paraffin	
• Public standpipe/tube well			
• Tube well in own dwelling/yard/plot			
Consumer durables (10 items)			
Radio; Television; Bicycle; Motorbike; Automobile; Landline phone; Mobile phone; Table and chair; Sofa; Bedstead			

* In the old wealth index definition, this option was not considered as a safe source of drinking water.
** In the old wealth index definition, communal pit latrines were not considered as a safely managed sanitation service. This option is now considered to be a safely managed sanitation service to reflect the Ethiopian Ministry of Health definition of access to sanitation facilities.

Table A2. *India*

Housing quality			
Good-quality wall	**Good-quality roof**	**Good-quality floor**	**Crowding definition**
• Brick/concrete	• Concrete/cement	• Concrete/cement/tile	Number of rooms/person (rescaled)
• Stone	• Galvanised/corrugated iron	• Laminated material	
• Concrete blocks	• Tiles/slates	• Stone (granite/marble)	
		• Polished stone	
		• Stone/brick	
Access to services			
Safe drinking water sources	**Safely managed sanitation service**	**Adequate fuel for cooking**	**Electricity**
• Bore well	• Flush toilet/septic tank	• Gas/electricity	Household has electricity
• Bought water (delivery/bottled)	• Pit latrine (household/communal)	• Kerosene/paraffin	
• Piped into own dwelling/yard/plot	• Toilet in health post		
• Piped into neighbour's or relatives' dwelling/yard/plot			
• Protected spring water/well			
• Public standpipe/tube well			
• Tube well in own dwelling/yard/plot			
• Water tank (community/ protected)			
Consumer durables (9 items)			
Radio; Television; Bicycle; Motorbike; Automobile; Landline phone; Mobile phone; Refrigerator; Fan			

Table A3. *Peru*

Housing quality			
Good-quality wall	**Good-quality roof**	**Good-quality floor**	**Crowding definition**
• Brick/concrete • Concrete blocks	• Concrete/cement • Galvanised/corrugated iron • Tiles/slates	• Cement/tile • Laminated material • Stone (granite/marble) • Polished stone • Parquet	Number of rooms/person (rescaled)
Access to services			
Safe drinking water sources	**Safely managed sanitation service**	**Adequate fuel for cooking**	**Electricity**
• Piped water to the house/plot (public network) • Well/tube well with hand pump	• Flush toilet/septic tank • Pit latrine (household)	• Gas/electricity • Kerosene/paraffin	Household has electricity
Consumer durables (12 items)			
Radio; Television; Bicycle; Motorbike; Automobile; Landline phone; Mobile phone; Refrigerator; Stove; Blender; Iron; Record player			

Table A4. *Vietnam*

Housing quality			
Good-quality wall	**Good-quality roof**	**Good-quality floor**	**Crowding definition**
• Brick/concrete • Concrete blocks	• AC (asbestos cement) roofing sheets • Asbestos sheets • Concrete/cement • Galvanised/corrugated iron* • Tiles/slates	• Concrete/cement/tile • Laminated material** • Stone (granite/marble) • Polished stone • Stone/brick	Number of rooms/person (rescaled)
Access to services			
Safe drinking water sources	Safely managed sanitation service	Adequate fuel for cooking	Electricity
• Piped into own dwelling/yard/plot	• Flush toilet/septic tank • Pit latrine (household)	• Gas/electricity • Kerosene/paraffin	Household has electricity
Consumer durables (9 items)			
Radio; Television; Bicycle; Motorbike; Automobile; Landline phone; Mobile phone; Refrigerator; Fan			

* In the old wealth index definition for Round 2, galvanised iron was not considered as a good-quality roof.
** In the old wealth index definition for Rounds 3 and 4, laminated material was not considered as a good-quality floor.

'How Many Rooms Are There in Your House?' Constructing the Young Lives Wealth Index

The Young Lives wealth index is intended to be the primary measure of socio-economic status of households within the Young Lives sample. This technical note outlines the construction of the wealth index. The construction draws on work undertaken by the World Bank and Macro International used to develop the wealth index cited in the UNICEF Multiple Indicator Cluster Surveys (MICS). The wealth index positions Young Lives households on a continuous scale of wealth, with higher values reflecting higher household wealth. It was introduced in the Young Lives Round 1 (2002) country reports to determine household poverty status.

The Young Lives wealth index has allowed researchers to investigate the impact of material well-being on child health and education outcomes, among others. It has also been used to investigate the representativeness of the Young Lives sample in each of the four survey countries. A comparison of wealth indices between the Young Lives sample and nationally representative data reveals that Young Lives households are slightly wealthier than average households in Ethiopia, Andhra Pradesh in India, and Peru, while Young Lives households are slightly poorer than average households in Vietnam.

Young Lives