Tajikistan

EquityTool: Released April 7, 2017

Source data: DHS 2012

# of survey questions in original wealth index: 48
# of variables in original index: 111

# of survey questions in EquityTool: 16
# of variables in EquityTool: 17

Questions:

	Question	Option 1	Option 2	Option 3
	DETERMINE IF THE RESPONDENT LIVES IN AN URBAN OR RURAL AREA	Urban	Rural	
Q1	Does your household have … a washing machine?	Yes	No	
Q2	… a vacuum cleaner?	Yes	No	
Q3	… a computer?	Yes	No	
Q4	… a refrigerator?	Yes	No	
Q5	… a table/hon-tohta?	Yes	No	
Q6	… a chair?	Yes	No	
Q7	… a sofa/divan?	Yes	No	
Q8	… a bed?	Yes	No	
Q9	… a buffet/curio cabinet/wall unit?	Yes	No	
Q10	… a Satellite antenna/dish?	Yes	No	

Q11	… an electric fan?	Yes	No	
Q12	Does any member of this household own a car or truck?	Yes	No	
Q13	What is the main source of drinking water for members of your household?	Piped into the dwelling	Any other source of drinking water	
Q14	What kind of toilet facility do members of your household usually use?	Flush to piped sewer system	Pit latrine with slab	Any other type of toilet
Q15	What is the main material of the floor in your household?	Earth / sand	Other flooring material	
Q16	What is the main material of the roof in your household?	Roofing shingles/shifer	Other roofing	

Technical notes:

Recreating the full index

To create the EquityTool, we simplify the original, full wealth index that is found in the relevant DHS dataset. In the case of Tajikistan DHS 2012, we noticed an error in the original wealth index used in the DHS dataset. This led us to recreate the full wealth index without this error, using 111 variables from 48 questions. We then created a simplified version of this corrected full wealth index.

Separate urban and rural indices to create a national EquityTool

We were unable to achieve agreement of kappa>=0.75 between the full DHS wealth index and a simplified index using our standard simplification process (detailed in this article). Using a revised approach, detailed below, high agreement (kappa>=0.75 for both urban and national indices) was achieved. The data used to identify important variables came from our corrected full wealth index described above.

We were unable to achieve a reduction in questions or an agreement of kappa>=0.75 between the original DHS wealth index quintiles and quintiles created using factor weights from the the national factor weights for Tajikistan DHS 2012. These national factor weights come from an analysis of the national population, and contain only those variables which are related to the construct of wealth in the same way in both rural and urban areas. These national factor weights are usually used in EquityTools to calculate national quintiles, as they reduce some known areas of respondent error in the survey.

To overcome this problem of low agreement, we instead used the factor weights from the rural and urban analyses, which select variables that relate to wealth differently in urban and rural areas. For example, in an urban area, ownership of chickens may be associated with being relatively poor, while in rural areas, it may be associated with being relatively wealthy. This is the case in Tajikistan. A short list of variables, common to both urban and rural areas, are iteratively selected to find those which result in high agreement (kappa>=0.75) against the original wealth index quintiles for national and urban populations. For Tajikistan, the scores for urban and rural residents were combined into a national score using linear regression, in a process similar to that used by ICF. Specifically, a score from the simplified index for urban residents (Uscore) was regressed against the wealth index score variable created for the corrected full wealth index analysis (Nscore), the same was done for rural residents (Rscore), and the resulting coefficients are used to create a single national score (NatScore).

$$Nscore = \beta_1 Uscore + \alpha_1$$
$$Nscore = \beta_2 Rscore + \alpha_2$$
$$NatScore = \beta_1(Uscore)(Urban) + \alpha_1(Urban) + \beta_2(Rscore)(Rural) + \alpha_2(Rural)$$

Where Urban=1 if respondent lives in urban area and 0 if otherwise, and Rural =1 if respondent lives in rural area and 0 if otherwise.

Respondents quintile assignments resulting from NatScore, the national wealth index score created from a simplified list of questions, were compared to the quintile assignments resulting from the original wealth index with 111 variables using the kappa statistic.

The questions in the simplified index which resulted from this process differ from our standard approach. We need to know whether the respondent lives in an urban or rural area. An additional question was added to the EquityTool: 'DETERMINE IF THE RESPONDENT LIVES IN AN URBAN OR RURAL AREA'. In principle, the definition of 'urban' and 'rural' should match the definition used in the Tajikistan DHS 2012. In reality, the user needs to decide how to determine if each respondent lives in an urban or rural area. Three approaches are presented below, with some notes on each. Whichever method is chosen, it should be uniformly applied across all surveys conducted.

1. Ask the respondent directly - 'is your home in an urban or rural area'. This relies on the respondent's understanding of what 'urban' and 'rural' is.
2. Allow the data collector to determine, based on guidance provided. This will work best if interviews take place in or very near to people's homes, and if the data collectors can be trained on the same rules to determine if an area is urban or rural. One example of a rule is to classify 'peri-urban' areas on the edges of a city or town as urban. Another rule might be to classify an area as urban if it has a market center which operates daily.
3. If the interviews are taking place outside the home, then classify respondents based upon the location of the interview. For example, if interviews occur in health facilities,

classify respondents as urban if the facilities are located in urban areas. Individuals may travel, so this method is also subject to error.

Level of agreement:

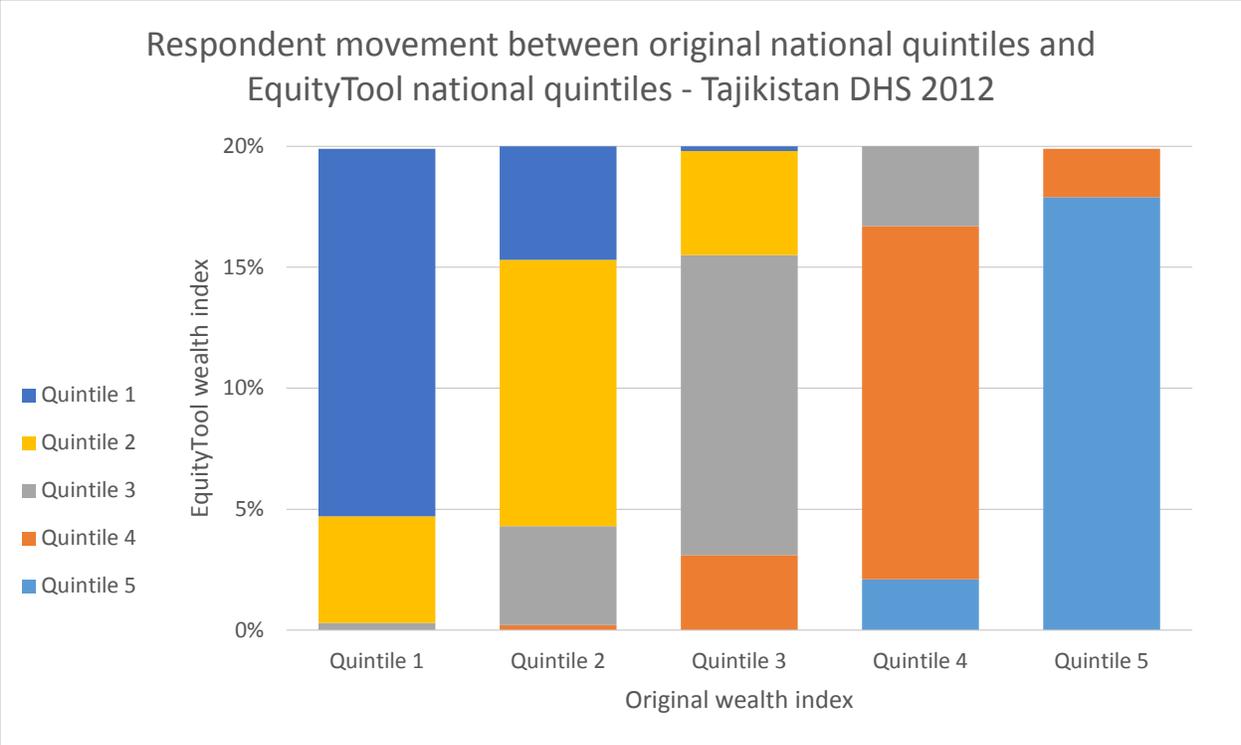|	National Population (n=6432)	Urban only population (n=2675)
% agreement	84.4%	84.9%
Kappa statistic	0.756	0.763

Respondents in the original dataset were divided into three groups for analysis – those in the 1st and 2nd quintiles (poorest 40%), those in the 3rd quintile, and those in the 4th and 5th quintiles (richest 40%). After calculating their wealth using the simplified index, they were again divided into the same three groups for analysis against the original data in the full DHS. Agreement between the original data and our simplified index is presented above.

What does this mean?
When shortening and simplifying the index to make it easier for programs to use to assess equity, it no longer matches the original index with 100% accuracy. At an aggregate level, this error is minimal, and this methodology was deemed acceptable for programmatic use by an expert panel. However, for any given individual, especially those already at a boundary between two quintiles, the quintile the EquityTool assigns them to may differ to their quintile according to the original DHS wealth index.

The graph below illustrates the difference between the EquityTool generated index and the full DHS wealth index. Among all of those people (20% of the population) originally identified as being in the poorest quintile, approximately 76% are still identified as being in the poorest quintile when we use the simplified index. However, approximately 22% of people are now classified as being in Quintile 2. From a practical standpoint, all of these people are relatively poor. Yet, it is worthwhile to understand that the simplified index of 16 questions produces results that are not identical to using all 48 questions in the original survey.

Respondent movement between original national quintiles and EquityTool national quintiles - Tajikistan DHS 2012
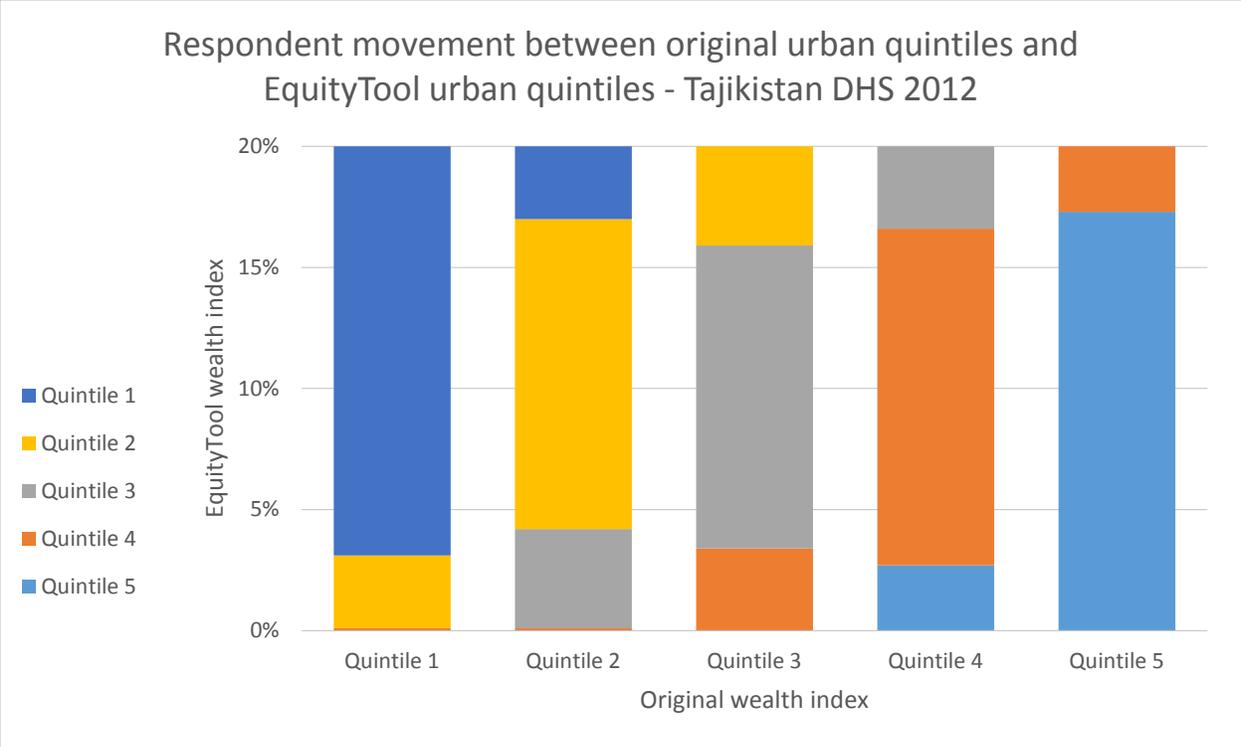
The following table provides the same information on the movement between national quintiles when using the EquityTool versus the original DHS wealth index:

		EquityTool National Quintiles					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Original DHS National Quintiles	Quintile 1	15.2%	4.4%	0.3%	0.0%	0.0%	20%
	Quintile 2	4.7%	11.0%	4.1%	0.2%	0.0%	20%
	Quintile 3	0.2%	4.3%	12.4%	3.1%	0.0%	20%
	Quintile 4	0.0%	0.0%	3.3%	14.6%	2.1%	20%
	Quintile 5	0.0%	0.0%	0.0%	2.0%	17.9%	20%
	Total	20.1%	19.8%	20.1%	20.0%	20.0%	100%

The following graph provides information on the movement between urban quintiles when using the EquityTool versus the original DHS wealth index:

Respondent movement between original urban quintiles and EquityTool urban quintiles - Tajikistan DHS 2012

The following table provides the same information on the movement between urban quintiles when using the EquityTool versus the original DHS wealth index:

		EquityTool Urban Quintiles					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Original DHS Urban Quintiles	Quintile 1	16.9%	3.0%	0.0%	0.1%	0.0%	20%
	Quintile 2	3.0%	12.8%	4.1%	0.1%	0.0%	20%
	Quintile 3	0.0%	4.1%	12.5%	3.4%	0.0%	20%
	Quintile 4	0.0%	0.0%	3.4%	13.9%	2.7%	20%
	Quintile 5	0.0%	0.0%	0.0%	2.7%	17.3%	20%
	Total	20.0%	20.0%	20.0%	20.1%	20.0%	100%

Data interpretation considerations:
1. This tool provides information on relative wealth – 'ranking' respondents within the national or urban population. The most recent available data from the WorldBank

indicates that 19.5% of people in Tajikistan live below $1.90/day[1]. This information can be used to put relative wealth into context.

2. People who live in urban areas are more likely to be wealthy. In Tajikistan, 59.5% of people living in urban areas are in the richest national quintile, compared to only 7.5% of those living in rural areas[2].
   a. If your population of interest is predominantly urban, we recommend you look at the urban results to understand how relatively wealthy or poor they are, in comparison to other urban dwellers.
   b. If the people you interviewed using the EquityTool live in rural areas, or a mix of urban and rural areas, we recommend using the national results to understand how relatively wealthy or poor they are, in comparison to the whole country.
3. Some districts in Tajikistan are wealthier than others. It is important to understand the country context when interpreting your results.
4. In most cases, your population of interest is not expected to be equally distributed across the five wealth quintiles. For example, if your survey interviewed people exiting a shopping mall, you would probably expect most of them to be relatively wealthy.

Metrics for Management provides technical assistance services to those using the EquityTool, or wanting to collect data on the wealth of their program beneficiaries. Please contact support@equitytool.org and we will assist you.

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[1] From povertydata.worldbank.org, reporting Poverty headcount ratio at $1.90/day at 2011 international prices.

[2] From the Tajikistan DHS 2012 dataset household recode, available at http://dhsprogram.com/