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Subject: Can the wealth index be used to measure wealth inequality?

Posted by [Akib](#) on Sun, 13 Dec 2015 08:44:11 GMT

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Hi,

I am in a tricky situation while doing some equity decomposition exercises and have to be able to respond to the query posted in the title, namely -

Can the DHS-provided wealth index score be used to measure wealth inequality (for a given round)?

In a bit more technical terms, I know that the scores have the property of 'ordinality', but what about 'cardinality'?

Would really appreciate a kind and prompt response

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Reduced-For\(u\)m](#) on Sun, 13 Dec 2015 23:47:11 GMT

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I'm not sure exactly how you want to use the wealth index, but there are definitely measures of inequality you could use depending on the context. Do you want to ask something like how the variance of wealth index affects some other variable? Is the comparison within-regions of some country, or inequality within a country relative to other countries, or...? If you give a little more context I might be able to help better, but here are a few thoughts to get you started:

As to the specific question - the wealth index is a principle component analysis of various characteristics/assets of the household. In the theoretical world where this is latching on to some real, underlying wealth parameter, than I think you can argue they have cardinal properties (within each survey round at least). But I don't think anyone really believes that (whether they believe it "enough" to think it is useful, I'd say depends on the person). In another world where you just think it gives a generally good ranking of households, you could still use it to estimate inequality effects in some round-about kind of way (maybe by using differences in how many people in some area are in the top or bottom quintile or something).

One other possibility is to bring in inequality data from another source and merge it with DHS data - that is, if there is some outcome in the DHS you are interested in that you think might vary by wealth inequality.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Akib](#) on Mon, 14 Dec 2015 03:44:59 GMT

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Reduced-For(u)m wrote on Mon, 14 December 2015 05:47

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One other possibility is to bring in inequality data from another source and merge it with DHS data - that is, if there is some outcome in the DHS you are interested in that you think might vary by wealth inequality.

Excellent response! Thanks so much. Let me be a bit more precise.

1. Could someone estimate the concentration index based on the wealth index scores? More importantly, would it be a valid measure of wealth inequality then?
2. If answers to 1) are in the affirmative, then, could one compare the conc. index estimates between rounds to comment on trends in wealth inequality (in my case, within a country)?

Thanks in advance for your response.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Reduced-For\(u\)m](#) on Mon, 14 Dec 2015 05:27:30 GMT

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I'm looking at this description of concentration index:

<http://siteresources.worldbank.org/INTPAH/Resources/Publications/459843-1195594469249/HealthEquityCh8.pdf>

It seems to me you need two kinds of information: 1) a health outcome of interest; 2) a ranking of household wealth.

I assume you want to use wealth index for (2). In that case, you don't need a cardinal measure at all, just a ranking (ordinal measure). At least that is my reading (and since it only enters as a rank and not as an actual covariate value in the formula, best as I can tell). From the WB paper on concentration index I linked to above (my bold).

"Note that the concentration index depends only on the relationship between the health variable and the rank of the living standards variable and not on the variation in the living standards variable itself. A change in the degree of income inequality need not affect the concentration index measure of income-related health inequality."

Am I mis-understanding something you are trying to do? If not, the second question doesn't make much sense - If you were interested in trends in wealth inequality, why not compute a Gini coefficient or something. In that case, your question makes sense, and I think the answer is probably no, but with a caveat. While you probably can't use the regular wealth index, maybe you could use the comparative wealth index that DHS has been working on, but a DHS expert would have to weigh in on whether or not that made sense (assuming you did want something more like a Gini than what I am thinking of as a "concentration index"):

Link to information on Comparative Wealth Index (might be out of date):  
<http://www.dhsprogram.com/pubs/pdf/MR9/MR9.pdf>

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Akib](#) on Mon, 14 Dec 2015 05:48:25 GMT

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Thanks again for your kind and elaborate reply. Re: 1) I failed to communicate my query properly: I want to estimate a concentration index of the wealth index itself (not of any health variable) and therefrom arises the issue of cardinality. Hope I'm more clear now.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Akib](#) on Mon, 14 Dec 2015 06:25:54 GMT

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Also, just to add: DHS documents say that these scores can be used in a regression? What are its implications for 'cardinality'?

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Liz-DHS](#) on Tue, 15 Dec 2015 16:45:48 GMT

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Dear User,

Here is a response from Dr. Shea Rutstein:

Quote:The DHS Wealth Index is relative with a mean of zero and a standard deviation of 1.0. Thus it is different from an absolute measure of wealth in that a household with no net worth

would have zero wealth. Net worth cannot be determined with a DHS (or maybe any other survey), since it involves assigning monetary values to everything owned and subtracting every owed. Many household may owe more than they own, and in that case their net worth is negative.

The DHS wealth index has two forms of data: the wealth index score assigned to each household and the wealth index quintile, derived from the wealth index score, to which a household is assigned. The wealth index score is an interval rather than a ratio scale since the zero point does not mean zero wealth. A concentration index, Gini coefficient and Lorenz curve can be calculated from the wealth index score. To calculate them, add a constant to each score that is the value of the lowest score with its sign changed such that the lowest score would then be zero. To measure changes in inequality over time or across countries, first apply the comparative wealth index transformations to the scores for each survey.

However, the wealth index does not handle extremely wealthy households well as the data on number of possessions and their values are not obtained by the DHS, and may thus underestimate wealth inequality for all households in the country. That is, the most wealthy households may appear to have the same scores as the next most wealthy households. To estimate these

For the inequality calculations, cardinality does not enter in since the number of members of the group is the number of households interviewed and the interval scale can theoretically have an infinite number of values.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [user-rhs](#) on Tue, 15 Dec 2015 23:48:34 GMT

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Akib, have you seen O' Donnell et al.'s (2008) Analyzing Health Equity Using Household Data? Link here: <https://openknowledge.worldbank.org/handle/10986/6896>. It's a good resource to have on hand and includes sample Stata code. There's a chapter in there on concentration curves (Ch. 7) and the concentration index (Ch. 8) that may be helpful to you. This is probably just ignorance on my part, but the research I've seen on decomposing the CI (at least in my own research) have generally looked at the CI of some health outcome/health care access measure in relation to wealth. I'm curious what DHS variables would go on the right hand side of the model in your decomposition analysis if inequity in wealth is the variable under observation, though.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Akib](#) on Sat, 19 Dec 2015 05:51:34 GMT

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Thanks so much, and please convey my thanks to Shea as well. This was super helpful.

Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Akib](#) on Sat, 19 Dec 2015 05:57:59 GMT

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First of all, thanks for your kind reply and the references within. I'm familiar with them and have utilized to the fullest for the project at hand. Re: your last query, please take a look at Table 13.1 in that book. I think you'll get your answer.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [owraza](#) on Mon, 11 Jan 2016 09:36:57 GMT

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Thanks for sharing many insightful comments to this post.

Regarding comparison of concentration index (CI) from various region of a country, do we need to re-calculate wealth index separately for each region and then calculate CIs or the wealth index given in DHS data set can be used for comparison of CIs across DHS regions?

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Liz-DHS](#) on Tue, 12 Jan 2016 16:03:21 GMT

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Dear User,

Here is a response from Dr. Shea Rutstein:

Quote: The wealth index score can be used directly to calculate the concentration index. There is no need to recalculate by region since it is nationally comparable for a given survey.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [owraza](#) on Wed, 13 Jan 2016 12:29:56 GMT

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Thanks.

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [thuda](#) on Thu, 28 Apr 2016 01:51:21 GMT

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Hi, i am trying to see the impact of socioeconomic determinants on nutritional outcomes, and pooling 4 round of surveys. For the wealth index variable do you think i should reconstruct the

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wealth index score based on same set of assets across all four surveys? or can i use the existing wealth index score which was calculated separately for each round of survey?

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Liz-DHS](#) on Fri, 03 Feb 2017 20:24:02 GMT

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Dear User, Do you still need assistance with this post?

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Subject: Re: Can the wealth index be used to measure wealth inequality?

Posted by [Hassen](#) on Mon, 07 May 2018 00:46:48 GMT

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Thanks all!!

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