HDR10 Technical Meeting: Multidimensional Poverty and Inequality.
UNDP office in New York,
14-15 December 2009

The meeting started with a brief exposition by Jeni Klugman, HDRO director, on a subset of the main ideas for the 2010 report. Specific attention was given to the missing dimension of human development – in particular to inequality and multidimensional poverty. The goals for the meeting were established, namely, to discuss the different technical proposals to re-evaluate the indicators of multidimensional poverty as well as the proposal to include the inequality in the measurement framework of the HDR as well as to help set out a longer term measurement agenda that could feed into future HDRs.

The first day (Monday December 14) was devoted to the discussion of multidimensional poverty and wellbeing.

Sabina Alkire and James Foster presented the methodological underpinning of a new measure of multidimensional poverty. They compared the HPI and the so-called MPI – the MPI is based on household survey data (DHS-MICS and EU-SILC) while the HPI uses aggregate measures. The method for the MPI starts out by identifying who is poor –define within achievements who is deprived and who is not (setting a "poverty line" for each dimension); then it defines how many dimensions you have to be deprived in to be poor. The method needs to establish number of deprivations ("K") in which an individual has to be poor. But a single deprivation can be due to things other than poverty. Adjusted headcount includes measure for number of deprivations while using only ordinal data, and is decomposable across dimensions. It can also add cardinal data and build an adjusted FGT measure, as well as build weights in the dimensions to reflect their importance. However, it does not allow trade-offs among dimensions.

Feedback:

- This measure does take into account correlations among deprivations, but a structural change that leads to an increase in correlation among deprivations, may not increase the index. Some noted a deep ethical concern to take into account a conjoint deprivation.

- Additionally, it was suggested to use the Arrow impossibility theorem to understand some of the implications of this method.

- Concerns about the use of censored data were raised as it seems that when you impose cutoffs then you are missing trade-offs. The response mentioned that this is a standard characteristic of poverty line measures (commonly known as the focus axiom)

Gonzalo Hernandez Licona, from the National Evaluation council in Mexico, applied the method presented by Alkire/Foster. As part of the Social Development Law in Mexico, a multidimensional poverty index was developed and presented. This measure includes six dimensions of deprivation (placing a 50% weight on income) and it combines the social rights and economic well-being approach. Interestingly, using this measure allows us to evaluate shares of groups (such as indigenous people) in multidimensional poverty. All individuals are assigned

to quadrants (multidimensional poor, vulnerable, and non vulnerable) and he pointed out that different quadrants suggest different social policy responses.

Feedback:

- Use gaps in all dimensions (instead of dichotomous variables).

- "Vulnerable" for those in the upper end of the income distribution who do not score perfectly in the five other dimensions is misleading.

- The share of expenditure in consumption is much higher than the one used in the HDI, thus in a neo-classical setting with a given utility function, the weights given to education and health would be much lower than the ones currently used in the HDI.

Sabina Alkire then presented some initial applications for a broader set of countries. The main purpose of the discussion was to select the indicators to be used in a new MPI. Some data problems included few indicators had sufficient data and were in both DHS and MICS, e.g. tthere is no measure of man's BMI, and other measures are child dependent. As the exercise was in the first stages, some inconsistencies were present (large drops in poverty when changing the number of indicators, for instance).

Feedback:

- Define a subsistence level of consumption (fairly high) and to set subsistence levels of health and education at zero; then utility function's exponents will be more evenly spread across the dimensions.
- Strong preference for health output as opposed to input. On standard of living strong preference for more indicators rather than less as that will probably be a better correlate of measures of wealth. If there is a correlate of income, that would be useful.
- If a household is making decisions in multiple dimensions with a Cobb Douglas utility function, you get massively high weights on income – certainly not equally weighted - it depends on the input-output relationship between income and human capital

In the afternoon session, Emma Saman presented a summary of existing poverty measures (HPI-dollar a day) and trends, including what we know about subjective well-being.

Feedback:

- Participants were mostly in agreement that the value added of the HPI is marginal and that HDRO should tackle with care any discussion about subjective wellbeing. Adaptive preferences are problematic; moreover, the fact that subjective well-being is a result from the objectivist capabilities approach. Support for a dashboard approach of indicators (but keeping the main indices) was also expressed.

- Specific references were made, in particular to "The Emperor's New Suit on Global Poverty Data" by S Reddy, who also mentioned that the measurement problems are very deep-seated – including timidity by the UN and excessive deference to the 1 and 2-dollar-a-day measures. It was suggested to cardinalize the gaps in multidimensional poverty

- Then the discussion moved to issues of political freedom and empowerment. The participants requested an overview of the pros and cons of including an element of political freedom in the new measurement exercises. The HDRO noted apolitical risks even if conceptually it makes senses. Data have improved since the last attempt to include political freedom in 2002. It was suggested to choose a very minimum common denominator if we are to move forward with this. Discussion – but not agreement- of different variables such as the number of journalist killed.

The final session was devoted to the presentation of indicators (the index versus dashboard debate). A three level approach – index, dashboard and under the hood - which translates to present the aggregate indexes of human development, a limited dashboard and then the statistical tables (under the hood).

Feedback:

- Some argued that some countries are left out by a partial ordering. However, the approach has the advantage of being easily understood. There was not a clear conclusion but with the suggestion to use graphs and networks to present the resulting partial orderings (with the specific reference to *Social and Economic Networks,* Matthew O. Jackson, 2008)
- Regarding partial ordering approach you can take a set of "pivot points". There will be countries left out by the nature of the partial ordering. It has the advantage of being easily understood. Also, it could be presented as how many people in the world have living standards which are better than those of some baseline and it would be useful to aggregate with functions that make explicit comparability, weights and substitutability – but they need a cardinal interpretation.
- On the politics of weighting you should do nothing as the MDGs tried to come up with weights and were unsuccessful. On the missing dimensions it would be useful to take two countries and apply the framework of multiple deprivations. It should be noted that institutional politics could hamper the possibility to do something interesting but bringing in centrality of political processes to other dimensions is relevant.
- Other comments were about specific indicators, namely school enrolments better than years of schooling because it is policy more responsive.

The **second day (Tuesday December 15)** was devoted to **Multidimensional Inequality**.

Kenneth Harttgen and Stephan Klasen (who joined by videoconference) presented a household-based HDI based on Demographic and Health Survey data, which includes information about mortality, assets and education. In using this data, they were faced with the problem that DHS did not contain income or expenditure information. To calculate a GDP component, they applied

an asset index and combined with an income simulation approach, assuming that income is log-normally distributed, and then rescaled income to GDP with GDP/capita data from HDRO.

Similarly to the calculation of the GDP component for the household data, they also encountered problems calculating the education component of the HDI: missing data on enrolment in households without children and that enrolment strongly depended on age of the children. They imputed the missing value with a stochastic regression method. They pointed out problems due to possible underestimations of the standard error and proposed a multiple imputation as the solution. Similarly, they also imputed the missing values for literacy rate, and gross enrolment index.

In calculating the life expectancy component, they combined information on child mortality with model life tables and calculated the under five years old child mortality rate. They regressed child mortality on socioeconomic characteristics with a hazard model to control for censoring.

Once all three sub-indexes were calculated, equivalent HDIs were established at the household level, based on the same assumptions as the HDI. The results for 15 countries showed higher HDIs for household heads in urban and with older age. They found that Gini is much lower for HDI than for income.

Feedback:

- Implicit utility function the HDI (it is not a Cobb Douglas function, but in fact a linear function - which implies perfect substitution amongst its subcomponents - people proposed a way to discount the last years in all of the sub-measures, as they declared them to be less important.) Some suggested that, similar to the log transformation of income in the HDI, one might also consider the same for education and health.
- Whether to cap income per capita at $40,000 is an issue. The authors did this as their intention is to make the new inequality adjusted HDI comparable with the aggregate index; however, there was a long debate as this capping artificially diminished the extent of inequality, such that it is better not to cap income.
- Data set is synthetic; moreover the analysis estimates the margins of the joint distribution but make inference about the joint distribution.

A joint presentation was made in turn by James Foster, Luis Felipe Lopez-Calva and Sabina Alkire, who used a different empirical approach to estimate the distribution of human development at the household level. The main theme was that there ought to be a measure besides the measure of central tendency reported in HDR. A number of other indicators exist, amongst which are: General Entropy, Gini Index and the Atkinson Index. The aim here was to obtain distribution sensitive HDI that are directly comparable to the global HDI. Data for the inequality adjusted HDI (DSHDI), could come from the household data as produced by the Goettingen group. Alternatively one could integrate different income and education micro data and for health micro and group data. It was stressed that probably the best way to go about measuring DSHDI would be via globally conducted health surveys, such as the one conducted by WHO in 2003. (Unfortunately this was a one-off). Due to the lacuna of this data, Sabina mentioned that child mortality remains the most accurate proxy for health.

Some empirical results were presented using the Living Standard Measurement Study (LSMS). The LSMS survey contains information on income and education (for which they use literacy for adults and years of schooling for people under 16). However, the LSMS typically does not contain information on health. Lopez-Calva circumvents this problem using alternative data sources for which health indicators are available at the municipality level.

Feedback:

- The issue of aggregation (how to add up the estimated distributions of the three dimensions into a single indicator) was discussed. Several options (ratio of top to bottom quintile or a generalized means approach) were discussed.

- That the correlation between indicators is missing in the methodology was regarded by some as major gap. The authors responded that Suman Seth's measure could be used to incorporate this element (Seth, S (2010) "A Class of Association Sensitive Multidimensional Welfare Indices" unpublished).

Michael Forster, from the OECD, presented highlights from a recent publication titled Growing Unequal, which focuses on income distribution. The gap between the rich and the poor has widened in most OECD countries. This was largely traced to rich people getting richer relative to low-income and middle-income classes. Developments on the labor market were the key factor in shaping the income distribution. In many countries, redistribution mechanisms such as tax/transfers had become less extensive over time. Wealth is much more unequally distributed than income. Intergenerational earnings mobility is highest in Nordic countries and lowest in USA and Italy.

Feedback:

- Thanks to this work, we know the broad picture of changes. If you take 4 countries – US, Sweden, Mexico, Taiwan/Korea- and look at their factor Ginis, the first 3 countries are not very different but they redistribute very differently. What is interesting is that in Asian countries the factor income distribution follows a different pattern. Globally it is interesting that inequality in wealth is much higher. Asia, Europe and US have much less wealth for a given level of income.
- In the US, some groups with low income have advantages on other dimensions (e.g., Latinos and health).
- How many of the results are driven by technological change? The trends seem different from what is happening in Latin American countries. But it was mentioned that periodization is very important. Inequality rises starting in 80s. Much more than technological change – can't explain why countries with low investment get increasing inequality.

Finally, John Roemer made a presentation about equality of opportunity. He concurs that social welfare cannot be reduced to simple GDP/capita measures, in line with the HDI approach. He focused on what he termed "opportunity equalization" approach in measuring development,

which he argued was closely linked to Sen's idea of capabilities. It has been applied by the WB in 2006 World Development Report and a 2008 publication focusing in Latin America.

He distinguished between two kinds of mechanisms that distinguish how well a person does: efforts and circumstances. policy makers should mitigate differences of circumstances via policies such as land reforms, redistribution, universal healthcare and education in order to level the playing field and provide each individual with the same chances to self-realize. He identified socio-economic status, in particular the single measurement of education level of mother as being the most relevant determinant of an individual's success.

Feedback:

- The circumstances in the model presented are like the capabilities in Sen's models. This model makes precise the distinction between a person's capabilities and the choices that they make. If it attributes too much to effort, this is due to a given set of circumstances. Appeal to addressing inequalities in circumstances beyond your control has a broad political appeal, even in countries like the US.
- There is a potential political problem in presenting results that suggest that equality of opportunity is not an important issue. Another issue is how to disentangle talent from effort too.
- It is necessary to think about the conceptual issues in comparing HD with this approach, which divide outcomes into circumstances and choices. HDRs say that the main goal is to enlarge people's choices; equality of opportunity focuses in what policy interventions are made now that will affect outcomes in the future. Sen would look at choice set, while EoO look at effort. Also, people may differ in values and that affects where they are in the distribution.

Next Steps:

The next steps include a two track approach re **inequality**, 'micro' and 'macro'. The first is detailed analysis using household level data, for a significant but not maximum number of countries – likely about 30. The second is to apply FLS adjustment to maximum number of countries to adjust the HDI.

First track -- complete the micro analysis, including data checks and cross validation, then choosing which data and method to use for an expanded sample, two points in time, and deeper analysis. Initially, for the 15 plus countries where the data is assembled and running, cross checks and data validation are urgently needed – of the Gottingen estimates using DHS; and OPHI estimates using LSMS – both teams need to work on validation of the respective data sets – working with OPHI – to check on marginal distributions, correlations between variables, joint categorical distributions, etc.

Second track- Macro approach, where the Foster-Lopez-Calva-Szekely method will be also applied using the data set on income, health and education available in the World Bank for more than 100 countries. The key aspects of this approach are: data base has been developed over

several years since WDR06. Plan is to provide a platform for queries – like LIS – due to confidentiality constraints, data cannot be shared. Data on several vectors – income/consumption, education, health, labour force participation – drawing on more than 500 surveys. Significant effort into common definitions and indicators – but not unproblematic in that national level analysis may give different results.

These estimates will have to be done by WB with guidance and supervision from OPHI/ HDRO.

On multidimensional poverty, the next steps include the estimation of the MPI for at least 130 countries. This would require OPHI to harmonize the data, and for some countries (e.g. those that only have a CWIQ), the health indicators would not be exactly comparable.

The choice of specification, HDRO prefers a mix of Measure 4 and Measure 6. Namely, years of schooling for education, U5MR/child mortality and BMI for health (as in measure 4 presented on December 14), and the six standard of living variables (as in measure 6 presented on December 14).

In the case in which some of the dimensions are weighted, k will be less than or equal to 3 (e.g., the 6 asset measures count as 1/6 each, so deprivation on all 6 would count as being deprived in one dimension). In that case, HDRO request to experiment with k=1, k=1.5, and k=2, to test for sensitivity.

Regarding developing countries, HDRO would like to calculate the MPI using the above standards, even though the values it will give may be very low. Additionally, it would be necessary to also construct an alternative index of absolute poverty using much higher standards and likely different indicators that are more relevant for developed countries. The question to solve is which indicators and cutoffs to use.