HDCA Summer School
on Capability and Multidimensional Poverty

27 August - 8 September 2009
Lima
Peru
Welcome!

Welcome to the HDCA Summer School on Capability and Multidimensional Poverty. We are very pleased to be able to share with you our interest in these important topics. We hope that you find your experience at the Summer School an interesting and valuable one. We are sure that we will learn a lot from you at the same time that you are learning from us. Please do not hesitate to ask questions or request clarifications on any matter at any point during the course. We will present the course content through lectures but there will also be exercise and working group sessions that will help you to incorporate the new content from the lectures through learning-by-doing. It is important that you take the time to work on the exercises since they will help you to understand things better.

All of you are invited to present a piece of your work at the “Students’ Presentations” Sessions. We have planned six sessions for this. The available time for presentation will depend on the number of people willing to present, but we estimate it to be about 20 minutes. This is a great opportunity to get feedback on your work, so we strongly encourage you to make use of it.

Bon Voyage!

The Instructors.

1 Instructors

Alkire, Sabina (SA)
Sabina directs the Oxford Poverty & Human Development Initiative (OPHI) in the University of Oxford, and is a Research Associate at Global Equity Initiative, Harvard. Her research interests include multidimensional poverty measurement and analysis, human development, and Sen’s capability approach.

Calvo, Cesar (CC)
Cesar Calvo is Professor of Economics at the Faculty of Economic and Business Sciences at the Lima Campus of the University of Piura, Peru. His research interests include theoretical and measurement aspects of the analysis of risk, poverty and vulnerability.

Roche, José Manuel (JMR)
José Manuel is a Research Officer at the Oxford Poverty & Human Development Initiative (OPHI) in the University of Oxford. He has research and consultancy experience in human development, social inequality, poverty, and geographical inequalities. He has taught undergraduate and postgraduate courses on statistical methods, international development and inequality.

Santos, María Emma (MES)
María Emma is a Research Officer at the Oxford Poverty and Human Development Initiative at the Department of International Development, Oxford University and a Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) post-doctoral fellow in Argentina. Her research interests include the measurement and
analysis of chronic and multidimensional poverty, the quality of education, its determinants, and its role for poverty persistence. She is particularly interested in Latin American countries.

**Seth, Suman (SS)**
Suman is a doctoral student in the department of economics at Vanderbilt University, USA. His current research interest is in the area of development economics – especially – multidimensional measurement and weighting of inequality, poverty, and well-being.

**Yalonetzky, Gaston (GY)**
Gaston Yalonetzky is a member of the Oxford Poverty and Human Development Initiative (OPHI) based at Queen Elizabeth House, University of Oxford. His current research interests include topics of intergenerational and intra-generational economic mobility with an emphasis on methodological aspects.
## 2009 HDCA Summer School on Capability and Multidimensional Poverty (27 August – 8 September 2009, Lima, Peru)

### 26 August: Arrive, register, meal.

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<td>Exercises on Unidimensional Dominance, Inequality and Poverty Measurement (MES)</td>
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<td>11.30 – 13.30</td>
<td>Exercises on Multivariate Data Reduction Techniques (JMR)</td>
<td>Inequality Adjusted HDI (SS)</td>
<td>An Introduction to Latent Variable Model with Multiple Indicators (MIMIC) (GY &amp; MES)</td>
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<td>14.00 – 16.00</td>
<td>Multidimensional Dominance (GY)</td>
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<tr>
<td>16.30 – 18.00</td>
<td>Multidimensional Dominance (with exercises) (GY)</td>
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2 Syllabi

**Topic: Stata Features**

**Session:** Thursday 27 August, 10.30-12.30

**Instructor:** María Emma Santos and Gaston Yalonetzky

**Contents:** This session will present an overview of the commands that will be required for the exercises session during the summer school. **Please note that it will not be an introduction on how to use Stata.** Students are supposed to have at least a basic knowledge on this. If you are not familiar enough with using Stata and specially with writing do-files we strongly recommend that you complete an on-line course prior to the summer school. Additionally, we recommend that you go through the notes named ‘Introduction to Stata’ that we provide prior to the Summer School and that you complete the exercises outlined at the end of those notes. Additionally, we would request that you install in your computer: a) the free-downloadable program DASP and b) a package of Stata commands for calculating poverty and inequality measures. Please see the instructions below to do this.

**INSTRUCTIONS TO GET YOUR STATA READY**

Install Stata 9.2 or higher in your computer.

**Steps to install the Inequal adofiles in your Stata:**

1. Open Stata. In the Stata command window, type the syntax: `findit inequal`
2. Select gr0001_2 and click on ‘click here to install’.
   Do the same with: `gr0001_1`
   `sq115`
   `sq117`
   `sg30`
   `ainequal` from [http://fmwww.bc.edu/RePEc/bocode/a](http://fmwww.bc.edu/RePEc/bocode/a)
3. Analogously: Type: `findit sg108`, click on the link [http://www.stata.com/stb/stb48](http://www.stata.com/stb/stb48), and then click on ‘click here to install’.

**Steps to follow to install DASP in your computer:**

Before using modules of this package, users have to update the executable Stata file to Stata 9.2 or higher:


update the ado files:

http://www.stata.com/support/updates/stata9/ado/

Or by typing in the command window: `update query`, and then: `update al`.

Then:

1. Go to [http://dasp.ecn.ulaval.ca/](http://dasp.ecn.ulaval.ca/), create your account. You will receive an e-mail with your username and password.
2. Go again to the page and login.
3. Download DASP V2.0
4. Unzip the dasp.zip in the directory C:
5. Copy the folder dasp in the directory c:
6. Make sure that you have c:/dasp/dasp_p1.pkg, c:/dasp/dasp_p2.pkg, c:/dasp/dasp_p3.pkg and c:/dasp/stata.toc;
7. Open Stata. In the Stata command window, type the syntax:
   net from c:/dasp
   net install dasp_p1, force
   net install dasp_p2, force
   net install dasp_p3, force
8. To add DASP submenu to STATA main menu (so that when you select ‘User’ in your Stata window, at the bottom appears DASP), it is possible that this is automatically done, but in case it is not, check that the file profile.do (which is provided with the DASP package) is copied into the directory c:/ado/personal (create a new folder "personal" if this does not exist). To check if the file profile.do exists, type the command: findfile profile.do
9. Open again Stata and select from the mainmenu USER => DASP
For further explanations, please check the DASP Manual, which comes in the package you will download from the website.

If you are using a Mac, follow the same instructions above, with the following exception:
• With Stata 9, copy the "dasp" folder and the "profile.do" file in the folder /Users/your_name/data
• With Stata 10, copy them in the folder where the Stata executable file is, usually /Applications/Stata 10.

Suggested basic textbook on Stata:
STATA Press. *Getting Started with Stata for Windows.*

Suggested resources Stata:
There are a lot of useful resources on 'how to use Stata' that you can access online. In general, in the website, [http://www.stata.com/links/resources.html](http://www.stata.com/links/resources.html) you can find links to other online websites where you will find tutorials on Stata. Moreover, Stata’s Frequently Asked Questions (FAQs) section of the website [http://www.stata.com/support/faq](http://www.stata.com/support/faq) and the email discussion group with contributions and answers from StataCorp staff available at [http://www.stata.com/support/statalist](http://www.stata.com/support/statalist) can also be very useful.
In particular, very good online resources are:
The UCLA Academic Technology Services available at [http://www.ats.ucla.edu/stat/stata](http://www.ats.ucla.edu/stat/stata)
Topic: Unidimensional Inequality Measurement

Session: Thursday 27 August, 14.00-16.00

Instructor: Maria Emma Santos

Contents:

- The Lorenz Curve and Lorenz Dominance. Atkinson’s theorem.
- The four basic properties of unidimensional inequality measures. Lorenz consistent inequality measures.
- Other properties (Transfer Sensitivity, Consistency and Decomposability).
- Unidimensional inequality measures and their properties.

Suggested basic readings on this topic:


A more advanced reading for both topics is:


Further readings:


FOSTER, J. E. (1985): “Inequality Measurement” in H. Peyton Young (ed.) Fair Allocation. Providence, RI: American Mathematical Society. (It provided the first proof that “Lorenz consistency” is equivalent to the four basic axioms of inequality measurement.)


**Topic: Unidimensional Poverty Measurement**

**Session:** Friday 28 August, 16.30-17.30

**Instructor:** Maria Emma Santos

**Contents:**

- Conceptual differences between the measurement of inequality and the measurement of poverty.
- The two steps in poverty measurement: identification and aggregation.
- Properties of unidimensional poverty measures.
- Unidimensional poverty measures and their properties.

**Suggested basic readings on this topic:**


A more advanced reading for this topics is:


**Further readings:**


Suggestions on applied research on the topic:
There is a huge literature of empirical application of unidimensional inequality and poverty measures to different countries and regions.

The World Bank has produced a lot of applied research on these topics. The most common measures such as the FGT Indices as well as the Gini Coefficient are periodically estimated and released through the World Development Indicators. There is also a big amount of World Bank Policy Research Working Papers done on specific countries. Two recent World Bank Development Reports are worth noting: the World Development Report 2000/2001, Attacking Poverty: Opportunities, Empowerment and Security and the World Development Report 2006: Equity and Development. For all these information please visit www.worldbank.org. These documents can be found either on ‘Data and Research’ or on ‘Publications’.

Examples of applications of inequality and poverty measurement to specific cases include:


http://www.csae.ox.ac.uk/workingpapers/pdfs/9807text.pdf


**Topic: Poverty Orderings**

**Session:** Friday 29 August, 9.00-10.00

**Instructor:** Maria Emma Santos

**Contents:**
- Conditions for first, second and third order stochastic dominance in the unidimensional space
- Link between these conditions and the FGT class of poverty measures

**Suggested basic readings on this topic:**


**Further readings:**


**Topic: Statistical Tests for Unidimensional Dominance**

**Session:** Friday 29 August, 10.30-12.30  
**Instructor:** Gaston Yalonetzky

**Contents:**  
- Statistical tests for unidimensional dominance in the unidimensional space

**Suggested basic readings on this topic:**

**Further readings:**

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**Topic: Introduction to the Capability Approach**

**Session:** Saturday 29 August, 10.30-12.30  
**Instructor:** Sabina Alkire

**Contents:**  
- History and Motivation  
- Capabilities  
- Functionings  
- Agency  
- Implications for economics  
- Issues for measurement

**Suggested basic readings on this topic:**

Further readings:
ATKINSON, A.B. (2003), “Multidimensional Deprivation: Contrasting Social Welfare and Counting Approaches.” Journal of Economic Inequality. 1:1 from p 51. (This article identifies the problem of aggregating multiple attributes, and some of the methods in use to address them).
NARAYAN, D, CHAMBERS, R., SHAH, M.K. and P. PETESCH (2000), Voices of the poor: Crying out for change. New York: Oxford University Press for the World Bank. – (This influential study tries to synthesise participatory poverty assessments in order to identify the dimensions of “ill-being” and of “well-being” that emerge across contexts).
ROBEYNS, I. (2003), “Sen’s capability approach and gender Inequality: Selecting Relevant Capabilities.” Feminist Economics. 9:61-92. (This more philosophical article argues that, to select capabilities (or dimensions), we need to observe four procedural criteria.)

Topic: Normative Issues in Multidimensional Poverty Measurement

Session: Saturday 30 August, 14.00-16.00
Instructor: Sabina Alkire

Contents:
- Choice of the unit of analysis
- Order of aggregation
- Choice of dimensions
- Choice of variables/indicators for dimensions
- Choice of poverty lines
- Choice of weights
- Choice of identification criterion & aggregate measures

Suggested basic readings on this topic:
ALKIRE, S. (2002), “Dimensions of Human Development” World Development 30: 181-205. (This article surveys the ‘lists’ of dimensions of human development that have been proposed – on the basis of participatory planning or research, philosophy, synthesis of existing literature, cross-cultural psychology, psychology of human development, and so on).
ALKIRE, S. (2007), “Choosing Dimensions: The Capability Approach and Multidimensional Poverty.” (This paper observes how researchers have, in practice, selected dimensions of poverty, and finds they generally use one of five methods).

Further readings:
On the choice of dimensions:
SEN, A. K. (1992), Inequality Reexamined. Chapter 7: “Poverty and Affluence”. (This Chapter lays out the case for considering multiple dimensions of well-being or poverty – in Sen’s cases, through measures of capability – rather than focusing on income or utility).
RANIS, G., F. STEWART, and E SAMMAN. (2006). "Human Development: Beyond the Human Development Index." Journal of Human Development 7(3): 323-358. (This paper draws on various approaches to well-being, proposes eleven
categories of human development, and identifies and examines certain indicators).


On the choice of weights:


**Topic: Multidimensional Data Reduction Techniques**

**Session:** Monday 31 August, 10.30-12.30

**Instructor:** José Manuel Roche

**Contents:**
- Confirmatory Factor Analysis and multidimensional indices
- Factor Analysis vs. Principal Component Analysis
- Exploratory Factor Analysis and multidimensionality
- Other techniques: Multiple Correspondence Analysis and Cluster Analysis
- Strengths and weaknesses of multidimensional data reduction techniques

**Suggested basic readings on this topic:**


**Further readings:**


**Online sources:**

Multivariate data analysis in STATA: http://www.stata.com/capabilities/mv.html

Annotated STATAOutput FA: http://www.ats.ucla.edu/stat/stata/output/fa_output.htm

Annotated SPSS Output FA: http://www.ats.ucla.edu/stat/spss/output/factor1.htm
Topic: Multidimensional Poverty: Properties and Measurement

Session: Monday 31 August, 14.00-16.00 and 16.30 and 17.30

Instructor: Sabina Alkire and María Emma Santos

Contents:
- Properties of multidimensional poverty measures that are natural extensions of the unidimensional framework.
- Properties specific to multidimensional measures.
- Multidimensional Poverty Measures

Suggested basic readings on this topic:

Further readings:


Suggestions on applied research on the topic:

ALKIRE and FOSTER (2008) contains an empirical illustration of the proposed measures to the US and Indonesia. Other applications of these measures to China, India, Bhutan, six African countries and eight Latin American countries are currently being developed at OPHI and will be posted as OPHI Working Papers soon.


BOURGUIGNON and CHAKRAVARTY (2003) contains an empirical application of the proposed family of multidimensional poverty indices to the case of rural Brazil.


Suggested books on this topic:


Topic: Multidimensional Dominance

Session: Wednesday 2 September, 14.00-16.00 and 16.30-18.00

Instructor: Gaston Yalonetzky

Contents:
- Unidimensional versus multidimensional stochastic dominance.
- Statistical inference techniques: Duclos et. al. (2006).
- Some discussion of discrete variables (if there is time).

Suggested basic readings on this topic:

Further readings:

Topic: Robustness in Weighting

Session: Thursday 3 September, 9.00-10.00 and 10.30-12.30

Instructor: Suman Seth

Contents:
- Importance of the choice of weights.
- Various methods for determining weights.
  - Normative methods Vs. Statistical methods
- Importance of robustness check of weights
- Various techniques for robustness check
Suggested basic readings on this topic:

Further readings:
Topic: Multidimensional Inequality Measurement

Session: Thursday 3 September, 14.00-16.00

Instructor: Suman Seth

Contents:

- Conceptual Issue: Why multidimensional inequality.
- Different forms of multidimensional inequality
  - Distribution sensitive inequality
  - Association sensitive inequality
- Classes of inequality indices satisfying different forms

Suggested basic readings on this topic:

Further readings:

Topic: Inequality Adjusted HDI

Session: Thursday 3 September, 16.30-18.00

Instructor: Suman Seth
Contents:
- Introduction to Human Development Index (HDI)
- Various limitations of HDI
- Incorporating inequality into HDI
  - Distribution sensitive inequality
  - Association sensitive inequality

Suggested basic readings on this topic:

Further readings:

Topic: Vulnerability

Session: Friday 4 September, 14.00-16.00

Instructor: Cesar Calvo

Contents:
- Concept of Vulnerability to Poverty in the Multidimensional Space
- Measurement of Vulnerability
- Empirical Applications

Suggested basic reading on this topic:


Further readings:


Topic: Latent Variable Model with Multiple Indicators (MIMIC Model)

Session: Friday 4 September, 10.30-12.30

Instructor: Gaston Yalonetzky and Maria Emma Santos

Contents:
- Introduction to the MIMIC Model
Suggested basic reading on this topic:

Suggested textbooks:

Suggestions on publications that relate or apply this topic to the capability approach:

Topic: Missing Dimensions

Session: Saturday 5 September, 10.30-12.30

Instructor: Sabina Alkire

Contents:
- Informational Analysis of moral principles
- Review – the choice of dimensions
- The problem of ‘missing data’
- Four survey instruments producing most MDG-type data
- Various search engines and initiatives to improve data
- Characteristics of internationally comparable data
- OPHI’s Missing Dimensions: Employment, Empowerment, Safety from Violence, Ability to go about without Shame, Psychological and Subjective well-being
Suggested basic readings on this topic:

Further readings:

**Topic: Fuzzy Sets Approach**

**Session:** Saturday 5 September, 14.00-16.00

**Instructor:** Jose Manuel Roche

**Contents:**
- An overview of fuzzy methodologies and some conceptual issues
- Membership functions and membership degrees
- Aggregation operators
- Potentiality and limits of FST vis-à-vis with other tools

**Suggested basic textbook on this topic:**
Suggestions on publications that relate or apply this topic to the capability approach:


