Measuring Consumption

Introduction

Broad objective of this course

- Improve the quality of household survey data used for measuring living standards (poverty and inequality measurement)

- Data quality: many definitions, but some criteria are recurrent:

  - Relevance   meeting user goals
  - Accuracy   no mistakes
  - Timeliness   punctuality in disseminating results
  - Comparability   consistency across time and space
  - Accessibility   easy access for users

clear definition of the research objective

Specific objectives

- Provide a conceptual framework for the measurement of living standards.

- Provide guidelines for survey design and data collection, in the specific context of household consumption and expenditure modules.

Inequality and poverty measurement
five building blocks

1) a measure of living standards

2) high-quality data on households' living standards

3) a distribution of living standards (inequality)

4) a critical level (poverty line) below which individuals are classified as "poor"

5) one or more poverty measures

persons
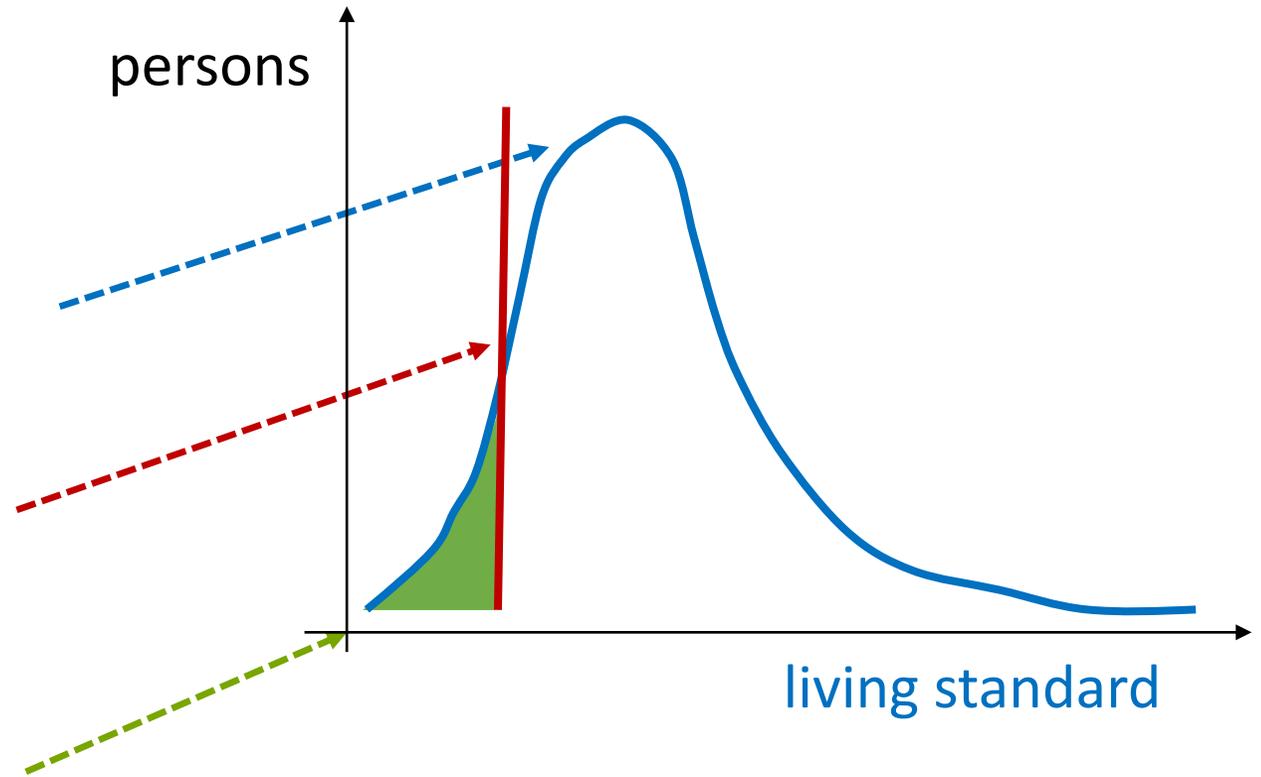
living standard

Focus of this course

1) a measure of living standards

2) high-quality data on households' living standards

3) a distribution of living standards (inequality)

4) a critical level (a poverty line) below which individuals are classified as "poor"

5) one or more poverty measures

persons

living standard

C4D2 TRAINING
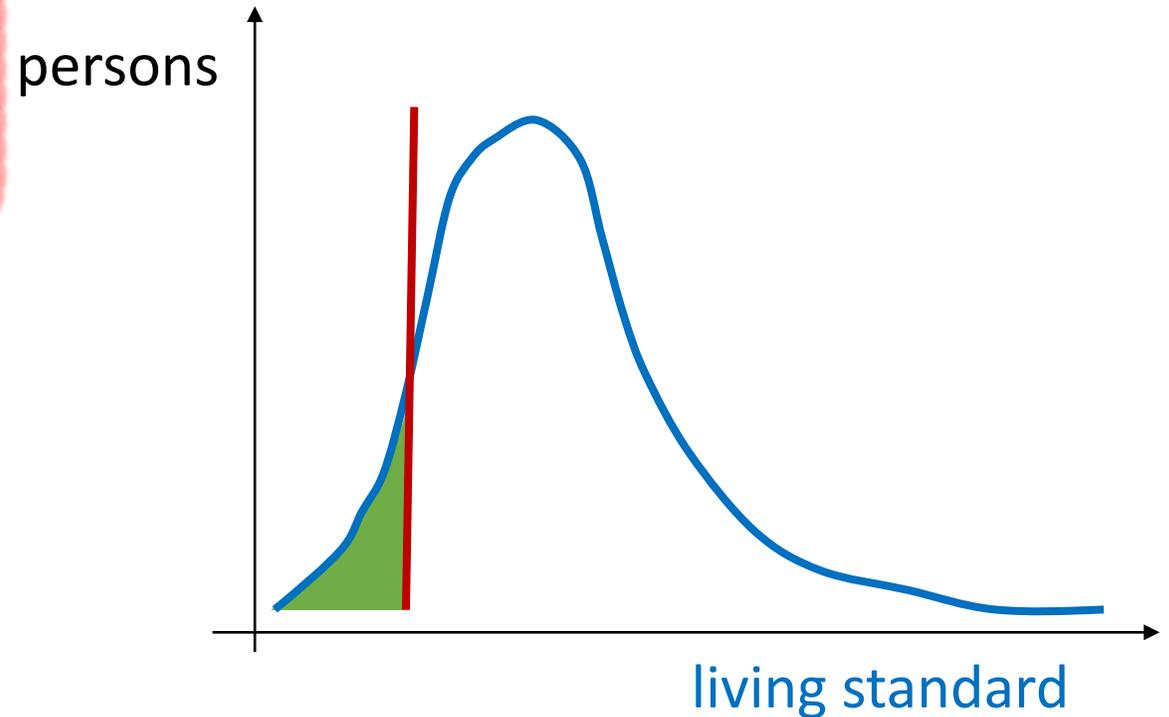
Course overview
fifteen two-hour lectures

1. Measuring living standards: a conceptual framework

2. The consumption aggregate

3. Understanding household surveys

4. Principles of questionnaire design

5. Measuring Food Consumption – I

6. Measuring Food Consumption – II

7. Measuring Food Consumption – III

8. Measuring consumption of non-durable non-food items

9. Durable goods

10. Housing

11. Data validation and diagnostics

12. Outlier detection and treatment

13. Measuring inequality

14. Measuring poverty

15. Describing data

C4D2 TRAINING

Practical instructions

1. **Breaks**

   Expect a 15-minute break for each lecture

2. **Readings**

   Some compulsory, some optional (reading package available)

3. **Homework**

   No stars is basic, one star (*) is difficult, two stars (**) is very difficult

4. **Final exam**

   Take-home assignment

Contacts

Please add the instructor's email address, office hours, etc.

C4D2 TRAINING

Measuring living standards: a conceptual framework

LECTURE 1

Lectures 1 and 2

- Today's focus is on one question: What are we to measure, exactly?

- The rest of the course focuses on a second question: How to best measure it?

- So, lectures 1 and 2 are about concepts, and the rest of the course will be on measurement (methods and data).

C4D2 TRAINING
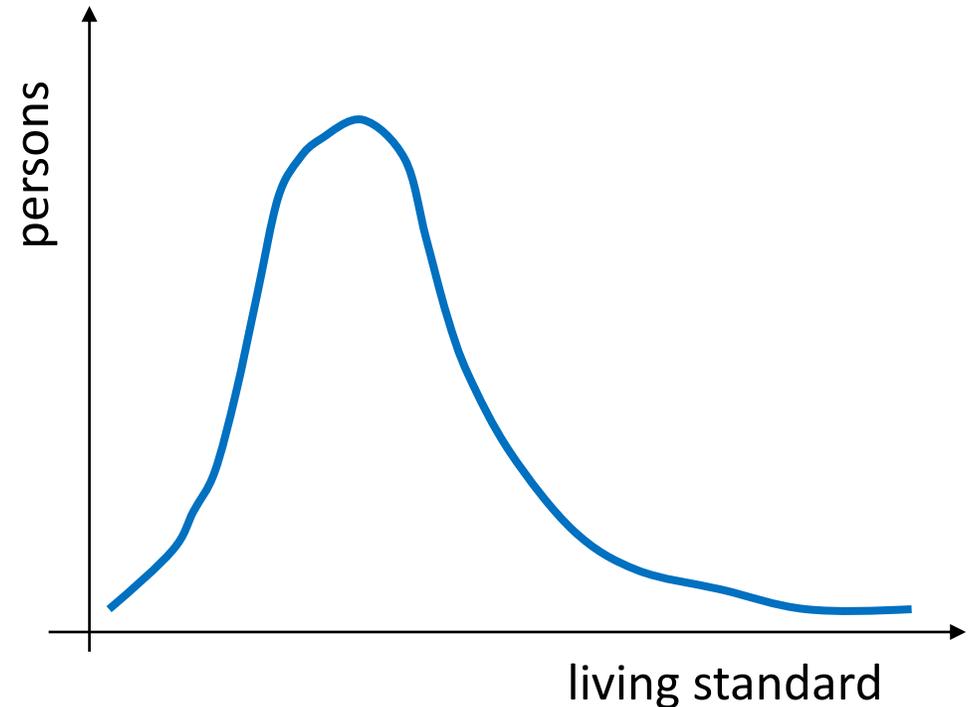
1. What is the standard of living?

A foundational question

- What is the "standard of living"?

- It is a profound question, that (apparently) defies simplification

- Our aim is to provide a quantifiable answer

Amartya Sen

(1933 -)

- 1998 Nobel Prize in Economics

- Why?

- "(...) for his contributions to welfare economics"

Amartya Sen
The standard of living, 1987, p. 2.
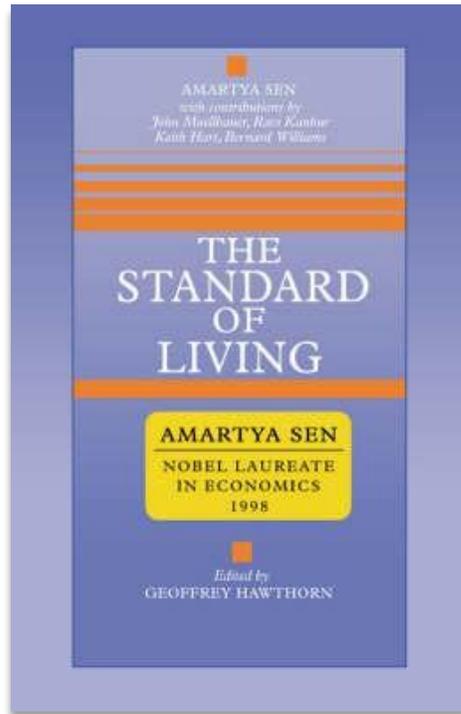
A clear admonition:

«The living standard cannot be defined completely afresh by us 'professionals', and we must not sacrifice all the richness of the idea of the living standard to get something nicely neat and agreeably simple»

Amartya Sen
Commodities and Capabilities, 1987, p. 1.
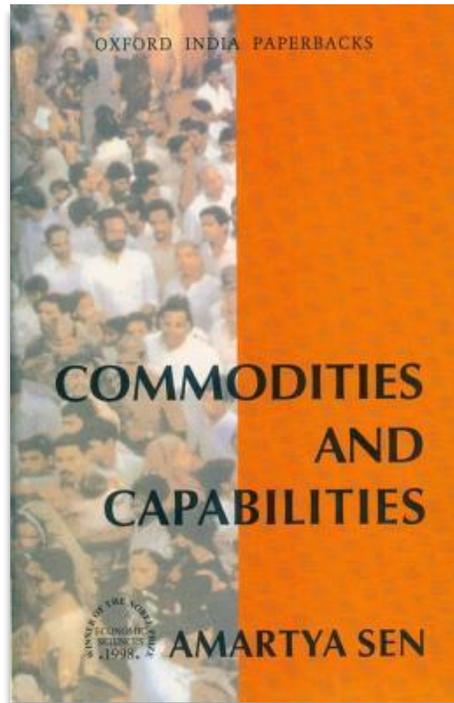
«There are many different approaches (...) to judging whether the person is doing well (...): Is he well off? Is she happy? Does he feel fulfilled? Does she have much freedom? Can he get what he wants? Can she do what she would like to do? Is society being good to him? Is she having a good life? These distinct questions have their own peculiar relevance in particular contexts and each has an importance of its own.»

How to narrow Sen's list down?

- Happiness

- Fulfillment

- Money

- Health

- Freedom

- …

- Q. How did mainstream economics eschew this complexity?

- A. They introduced one more concept: 'utility'.

Mainstream economists

- Economists assume that the standard of living derives from the consumption of goods and services.

- Any given basket of goods and services gives a certain 'utility' to the consumer.

- They assume that utility depends on q.

- The simplest case is with one good: this is how the utility $u(q)$ varies with q.

- 'Utility' is clearly not observable, but provides the foundation for much of the conceptual framework that poverty analysts use.

utility
$u(q)$

$u(q_2)$

$u(q_1)$

q_1 q_2 quantity
q

C4D2 TRAINING
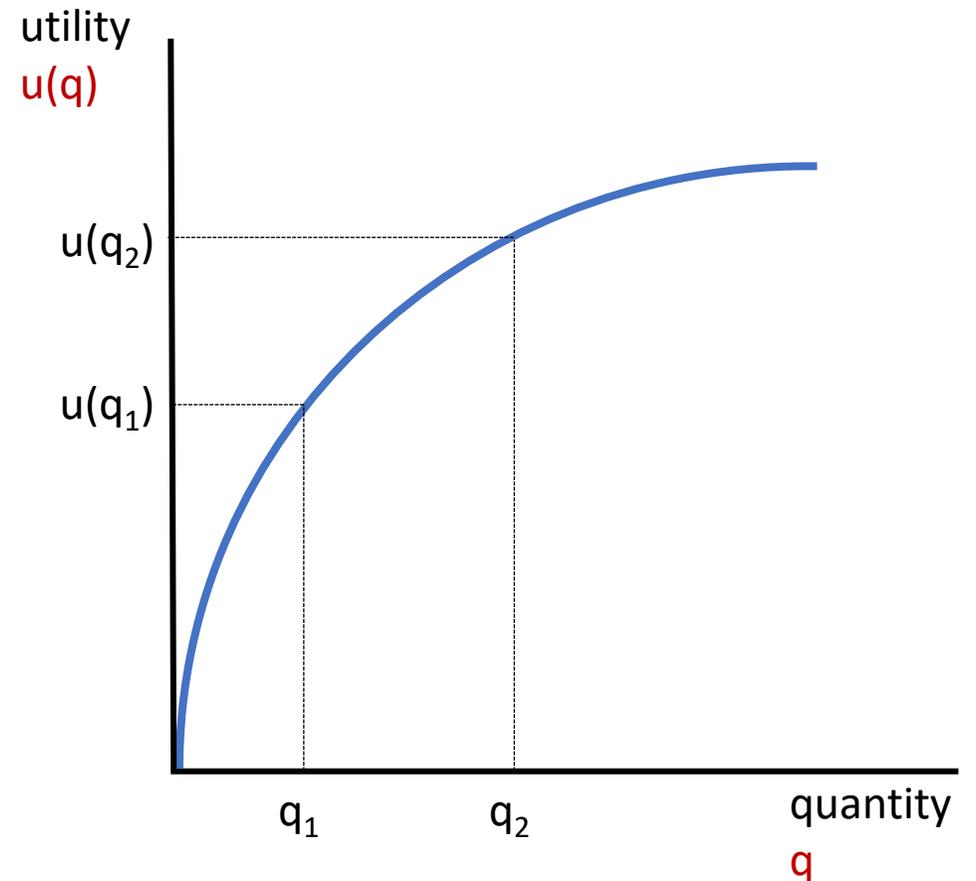
The link between 'utility' and the standard of living

- Consumers are assumed to **maximize utility**

- To do so, the consumer chooses an **optimal bundle** of goods and services: 'optimal' depends on a) her tastes (preferences), b) the prices she faces on the market, and c) her budget.

- Let us denote the optimal bundle with q^*.

- Maximum utility is then $u(q^*)$.

Economics and consumer behavior

ANGUS DEATON and JOHN MUELLBAUER
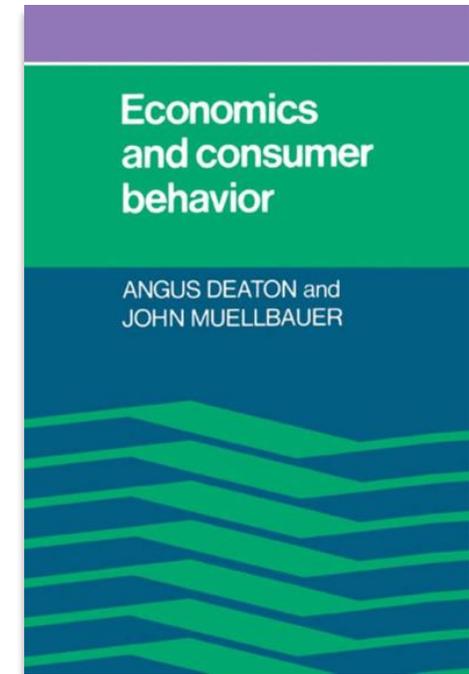
'Utility' in concrete terms

- Maximum utility is u(q^*).

- Q.   How much is u(q^*)?

- A.   We cannot tell – utility is not observable.

- Q.   Alternatively, we can ask: how much does q^* cost?

- A. $x = p \times q^*$
  this is the cost of the optimal bundle, the one that gives the maximum utility to the consumer

- Welfare analysts follow Deaton and Zaidi (2002), a paper that shows how to calculate the value of utility u(q^*), given the cost of the bundle $x = p \times q^*$

A utility-consistent definition of standard of living
Deaton and Zaidi 2002, p. 9, eq. (2.6)

- D&Z show that the value of the utility associated to the optimal bundle can be calculated as household expenditure (x) adjusted for purchasing power. Either:

  $u = x/P$ (P is a Paasche price index)

  or

  $u = x/L$ (L is a Laspeyres price index)

- Economists refer to x/P as to money metric utility (MMU) function.

- The ratio x/L is called welfare ratio (WR).

- D&Z argue that for poverty measurement the best choice is x/P (eq. 2.6).

Deaton and Zaidi (2002)

LSMS
Living Standards
Measurement Study
Working Paper No. 135

LSM135
May 2002

Guidelines for Constructing Consumption Aggregates for Welfare Analysis
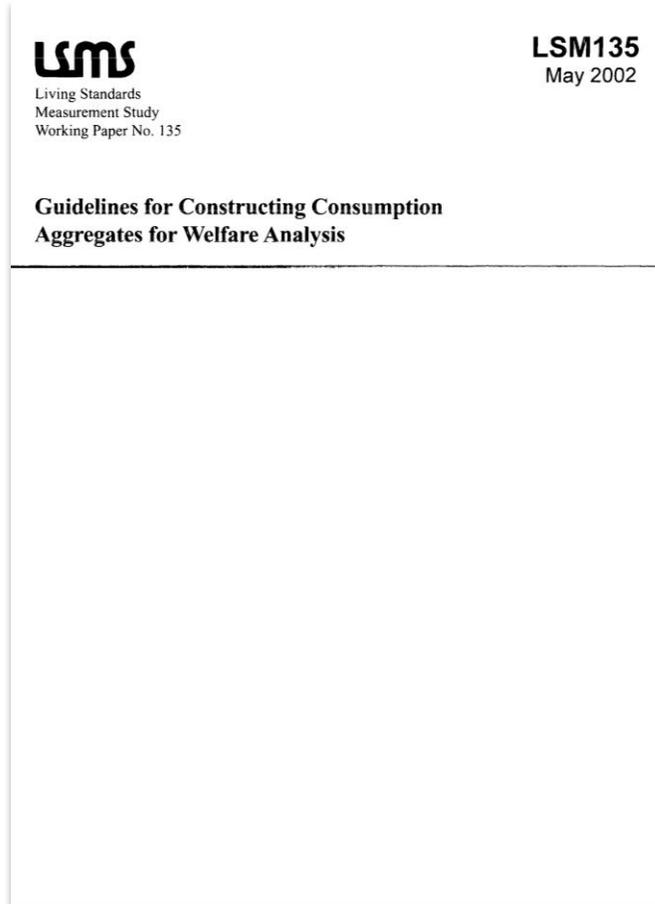
- The *Guidelines* have been downloaded 2,716 times in the last 5 years alone; Doemeland and Trevino (2014) find that only 2% of World Bank "knowledge products" surpass 1,000 downloads over a 5-year period.

- Must read

- A review of the *Guidelines* in light of recent literature is forthcoming: Mancini and Vecchi (2019)

The living standard in practice

- Unlike the utility u(q), the MMU u = x/P is observable and can be calculated based on household budget and price data.

- This is what underlies a key decision: "deriving total consumption expenditure and dividing it by a price index is our basic strategy to measure welfare" (D&Z, p. 10)

- Standards of living can be proxied by x/P, that is using total consumption expenditure adjusted with a Paasche price index.

persons

living standard
x/P

C4D2 TRAINING
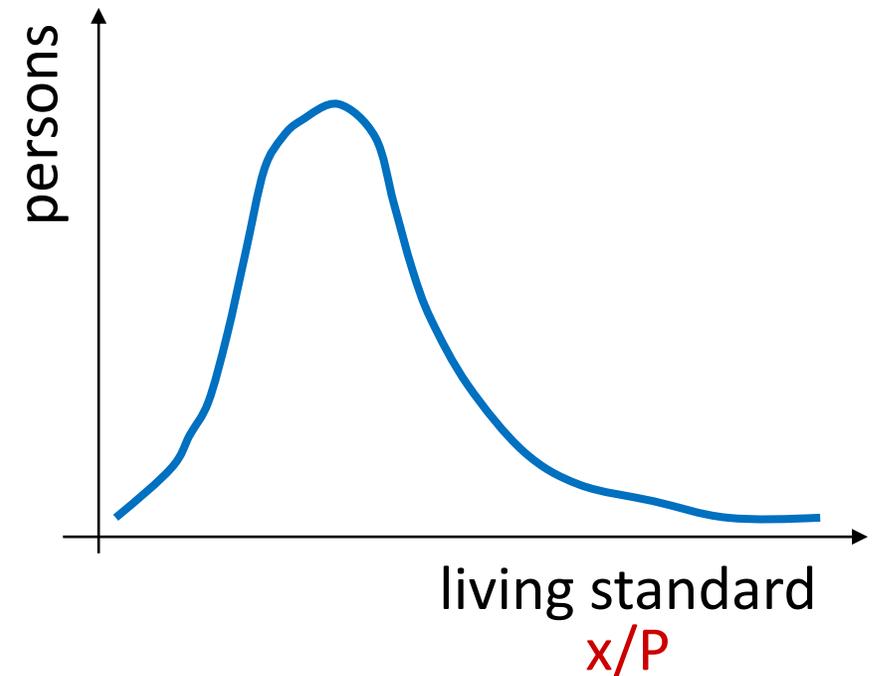
Expenditure, consumption, and consumption expenditure
Browning, Crossley and Winter (2014: 477)

- We define household expenditure as the nominal money outlay of the household.

- Household consumption is the quantity of goods and services that the household enjoys in a given period.

- Household consumption expenditure is those money outlays directed toward consumption (*e.g.,* it excludes outlays for investment purposes).

Recap

- There are a number of approaches to measuring living standards

- Economists seek to measure utility, which they approximate by consumption expenditure, adjusted for purchasing power: x/P

- This consumption-based measure is a simple (remember Sen's critique) but strong candidate to proxy the concept of living standard.

C4D2 TRAINING

This explains why …

POLICY RESEARCH REPORT

A Measured Approach to Ending Poverty and Boosting Shared Prosperity

CONCEPTS, DATA, AND THE TWIN GOALS

WORLD BANK GROUP
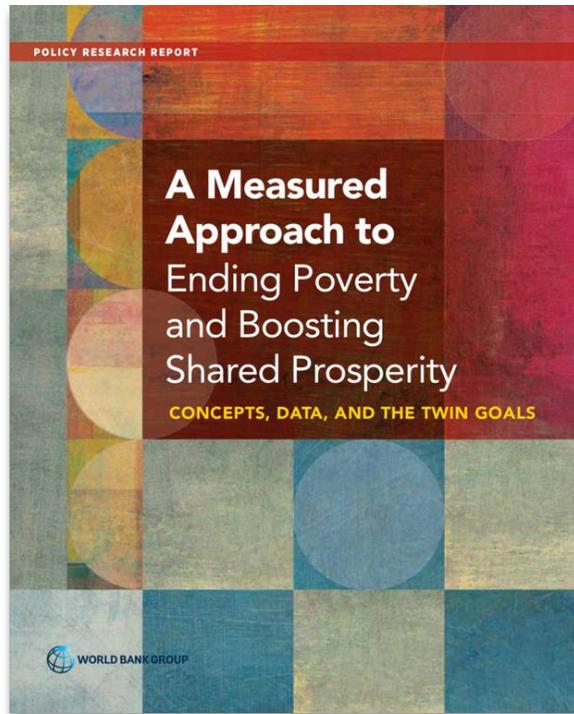
"Consumption per capita is the preferred welfare indicator for the World Bank's analysis of global poverty."

2. Choosing a measure of living standards

Option 1: consumption expenditure

persons

x/P
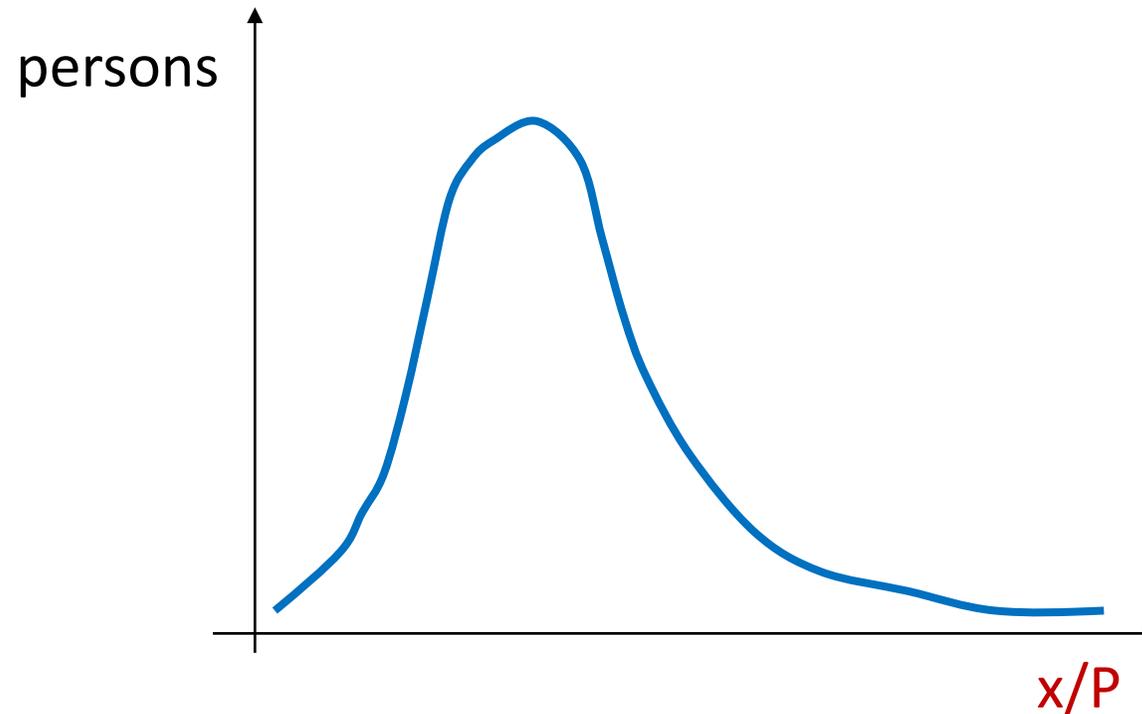
consumption expenditure
adjusted for purchasing power

Are there other options?

Option 2

Income
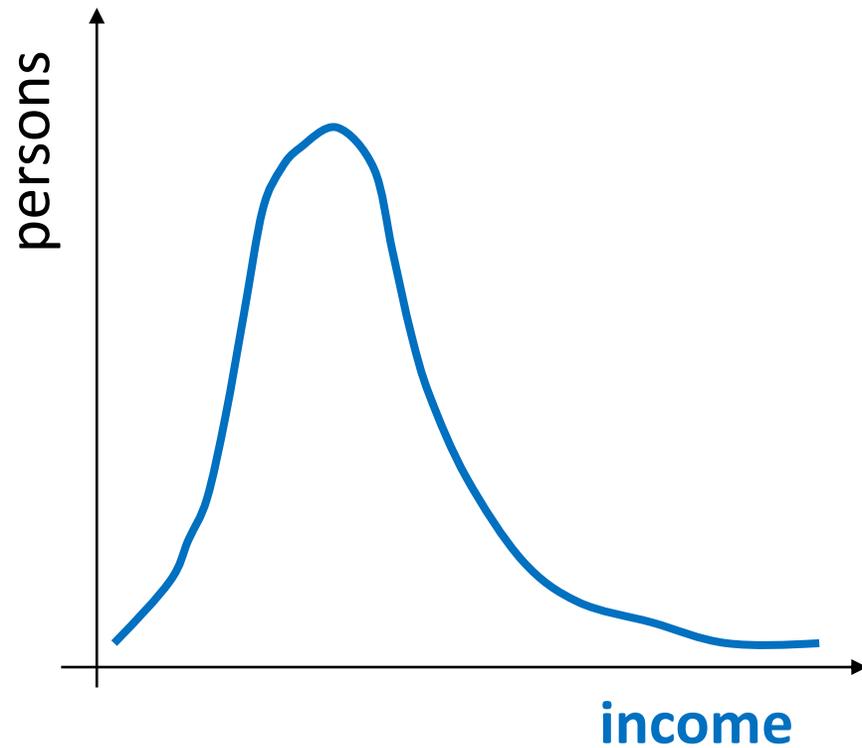
Option 3

Wealth
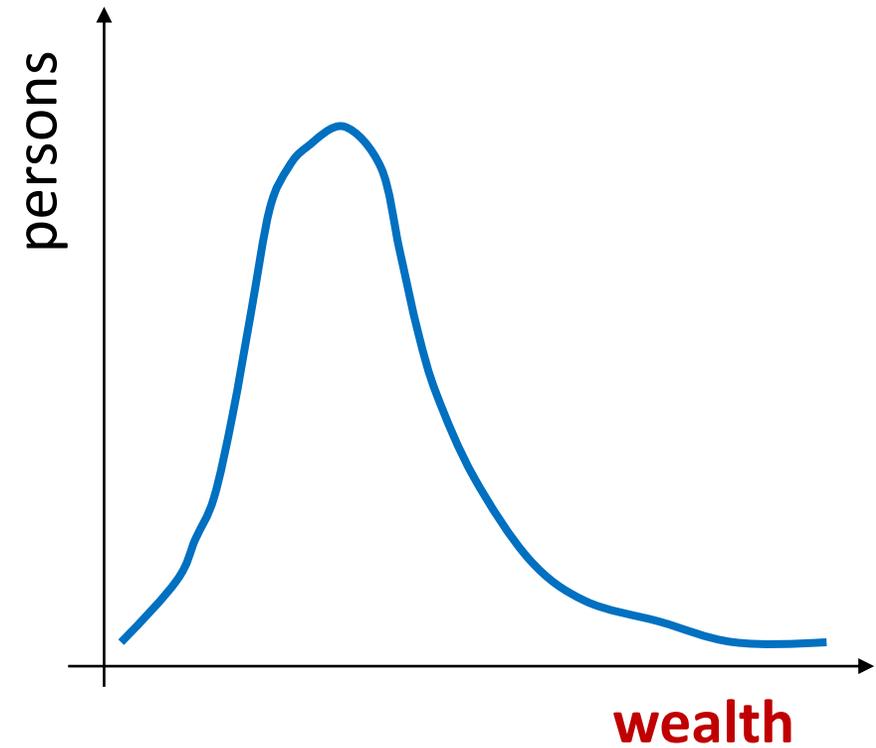
Option 3: Wealth

- Wealth contributes to the standard of living. It does so indirectly, but it certainly does it.

- Economic theory says that wealth is a stock of resources. It is accumulated via past choices, and it may or may not be used to generate consumption in the present, which is what we care about.

- Conclusion: we put wealth aside.

Option 2: Income

- «Among economic measures of living standards, the main competitor to a consumption based measure is a measure based on income» (Deaton and Zaidi 2002: 13)

- «In some countries, notably in Latin America, income is the only available indicator of economic welfare.» (World Bank 2015: 32)

Two identical households: A and B

Example

- Household A has a monthly income of $1,000. This month, members of the household have consumed goods and services for a total value of $900. The leftover $100 is saved.

- Household B runs a family business, which did not do too well this month: income has been $0. However, members of the household have financed their needs by using past savings, so they also have consumed goods for a total value of $900.

- If we used consumption for measuring living standard, A and B would be equally well-off.

- If we used income, A would be better off than B.

- Which of these conclusions is correct?

An answer

- The use of consumption is justified by the concept of standard of living that was covered earlier: it captures the value of use of commodities (money-metric utility function).

- The use of income fits a slightly different concept of standard of living, where the emphasis is on potential rather than actual consumption

- We saw that when it comes to measuring poverty, microeconomic theory suggests to use (price-adjusted) consumption expenditure.

- What if interest were on inequality?

Sir Anthony B. Atkinson

2015, p. 37
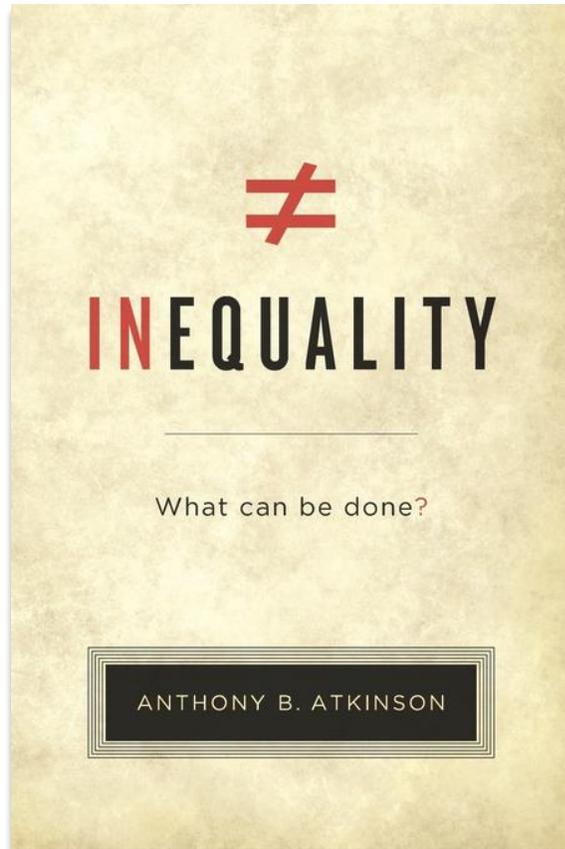
- "I continue to focus on income as an indicator of potential control over resources. The use of income is indeed recognition that the use of resources goes beyond consumption."

- "When measuring inequality, we are concerned not only with the consumption but also with the power that wealth can convey."

Income vs. consumption: which one to choose?

- The choice of the measure depends on:

  1) the question one is addressing

  2) a number of practical considerations

- The next few slides summarize some advantages (▲) and disadvantages (▼) of each measure.

Income
Advantages

▲ Limited number of sources of income (less than items for consumption); in principle, easier to collect the information

▲ It is often possible to assign certain sources of income to specific members of the households

▲ Measures the potential command over resources (an advantage if this is the concept of interest)

C4D2 TRAINING

Income
Disadvantages

▼ May be affected by short-term fluctuations (*e.g.* seasonal fluctuations in rural areas)

▼ Under-reporting (forgetting, reluctance to disclose, difficult to measure, etc.)

▼ Some income components are difficult to observe (*e.g.*, income from informal labor activity, from home agricultural production)

Consumption expenditure
Advantages

▲ Sound theoretical foundations (utility theory)

▲ Shows long-term average well-being, taking both consumption smoothing and insurance opportunities into account

▲ Measures the use of resources (an advantage if this is the concept of interest)

Consumption expenditure
Disadvantages

▼ Households may not be able to smooth consumption (*e.g.* borrowing, insurance, social networks)

▼ Some expenses are not made regularly, which adds noise to the data

▼ Some components (durable goods and housing rents) are difficult to capture

What is the balance of the pros and cons?

- There is no hard-and-fast rule: the choice ultimately depends on the type of analysis, and the context.

- If the focus is on poverty measurement, analysts consider one last and important dimension, time.

- We define as reference period the period over which we want to measure welfare.

C4D2 TRAINING

Time matters

- In the simplest models of textbook economics, time does not exist. Individuals spend all money, and they consume all goods. Hence, the choice of the indicator does not matter:
income = consumption expenditure.

- In real life, time exists and matters (as in other models in textbook economics). If we assume a reference period equal to, say, a year, then income and consumption expenditure can differ:
income = consumption expenditure + savings.

The question then is …

- We must decide whether it is consumption, income, or wealth, or some combination of all three, that permits the best measure of living standards over a year.

- Uncertainty is a key player: both income and consumption are subject to short-term fluctuations, and fluctuations can mislead living standard measurement

- The empirical evidence suggests that consumption is smoother over time than income

C4D2 TRAINING

So, income or consumption expenditure?
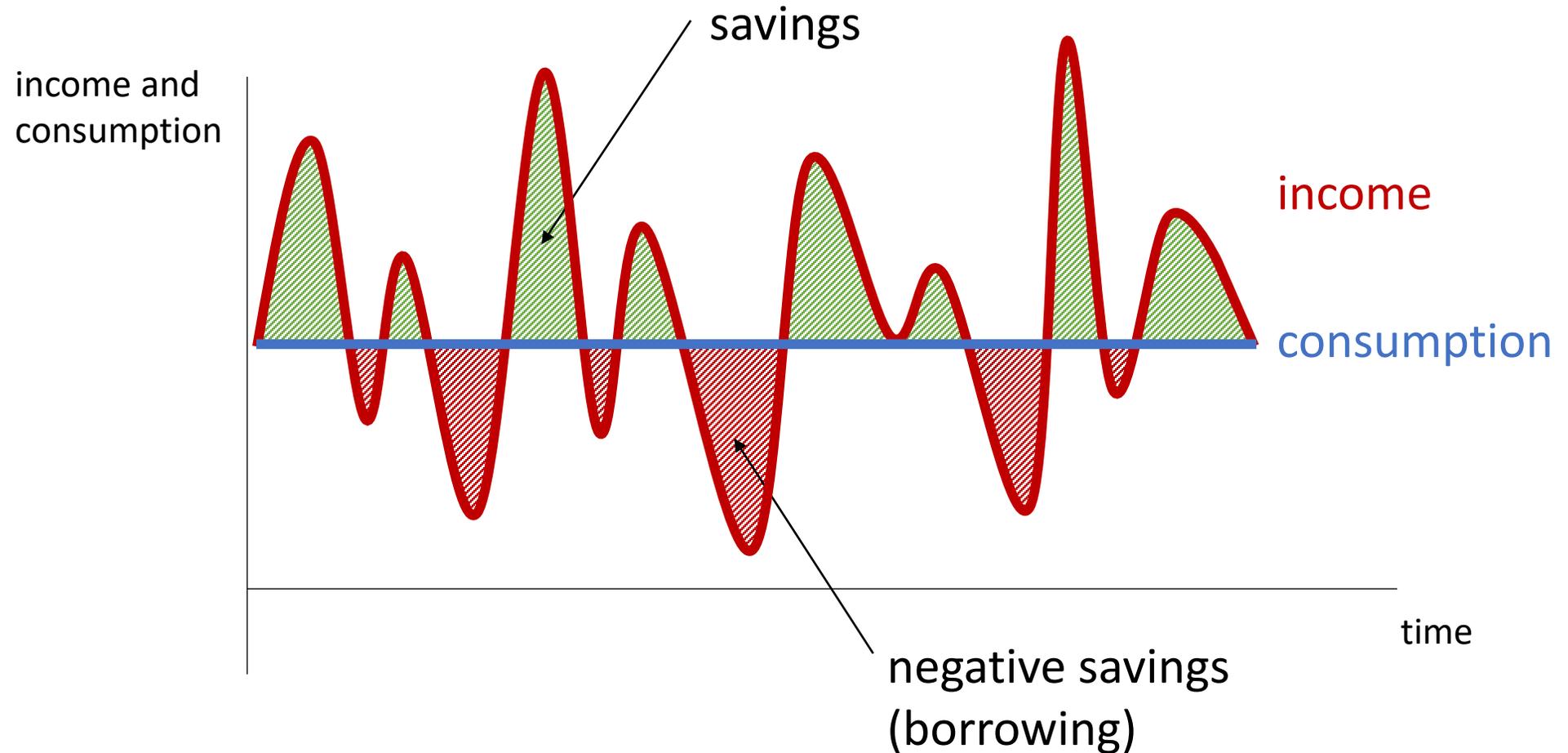
In conclusion

- Smoothing gives consumption a practical advantage over income in the measurement of living standards.

- Observing consumption over a relatively short period – even a week or two – tells us a great deal more about annual (or even longer period) living standards than income can tell.

The international practice

- Where do countries around the world fall when choosing between income and consumption expenditure as the preferred indicator of living standards?

East Asia & Pacific

Surveys	Consumption vs Income
Cambodia 2011	Consumption
Indonesia 2016	Consumption
Lao PDR 2012	Consumption
Malaysia 2016	Income
Mongolia 2016	Consumption
Myanmar 2015	Consumption
Philippines 2015	Income
Timor-Leste 2014	Consumption
Vietnam 2016	Consumption

Europe and Central Asia

Surveys	Consumption vs Income
Armenia 2015	Consumption
Bosnia and Herzegovina 2004	Income
Kosovo 2015	Consumption
Kyrgyz Republic 2013	Consumption
Macedonia 2017	Income
Moldova 2013	Consumption
Russian Federation 2008	Consumption
Tajiskistan 2014	Consumption

C4D2 TRAINING

Latin America & Caribbean

Surveys	Consumption vs Income
Argentina 2016	Income
Bolivia 2015	Income
Colombia 2017	Income
Ecuador 2013	Consumption
Ecuador 2018	Income
El Salvador 2015	Income
Guatemala 2014	Consumption
Haiti 2012	Consumption
Honduras 2018	Income
Mexico 2016	Income
Nicaragua 2014	Consumption
Panama 2008	Consumption
Paraguay 2017	Income
Peru 2017	Consumption

C4D2 TRAINING

Middle East & North Africa

Surveys	Consumption vs Income
Egypt 2008	Consumption
Iraq 2012	Consumption
Jordan 2010	Consumption
Lebanon 2011	Consumption
Djibouti 2017	Consumption
Morocco 2013	Consumption
West Bank and Gaza 2011	Consumption
Yemen 2005	Consumption

South Asia

Surveys	Consumption vs Income
Afghanistan 2016	Consumption
Bangladesh 2016	Consumption
Bhutan 2017	Consumption
Sri Lanka 2016	Consumption
India 2011	Consumption
Nepal 2010	Consumption
Pakistan 2013	Consumption
Maldives 2016	Consumption

Sub-Saharan Africa

Surveys	Consumption vs Income
Côte d'Ivoire 2015	Consumption
Kenya 2015	Consumption
Malawi 2010	Consumption
Mozambique 2014	Consumption
Nigeria 2010	Consumption
South Africa 2014	Consumption
Tanzania 2014	Consumption
Uganda 2011	Consumption
Zambia 2015	Consumption
Zimbabwe 2011	Consumption

C4D2 TRAINING

Lessons learned

- The concepts and vocabulary introduced in this lecture are of paramount importance for data providers, not just for analysts, because data quality depends on relevance for a specific research objective.

- Poverty analysts need a proxy variable for the standard of living. Economic theory combined with practical arguments suggest to use consumption expenditure adjusted for purchasing power.

- Economists call it money-metric utility function, defined as x/P, where x is consumption expenditure and P is a Paasche price index.

- Income remains a strong candidate.

References

Required readings

Deaton, A., & Zaidi, S. (2002). Guidelines for constructing consumption aggregates for welfare analysis (Vol. 135). World Bank Publications. (p. 6-10)

Suggested readings

Atkinson, A. B. (2015). *Inequality: What Can Be Done?* Harvard University Press.

Deaton, A., & Muellbauer, J. (1980). *Economics and consumer behavior*. Cambridge University Press.

Doemeland, D., and Trevino, J. (2014). Which World Bank Reports Are Widely Read?. Policy Research Working Paper No. 6851. Washington, DC: The World Bank.

Meyer, B., & Sullivan, J. (2003). Measuring the Well-Being of the Poor Using Income and Consumption. The Journal of Human Resources, 38.

Mancini, G. and Vecchi, G. (2019), On the Construction of a Welfare Indicator for Inequality and Poverty Analysis, mimeo.

Meyer, B. D., & Sullivan, J. (2009). Five decades of consumption and income poverty. National Bureau of Economic Research.

Meyer, B. D., & Sullivan, J. (2011). Further results on measuring the well-being of the poor using income and consumption. Canadian Journal of Economics, 44(1), 52-87.

Ravallion, M. (2016). The Economics of Poverty. History, Measurement, and Policy. Oxford University Press

Sen, A. (1987). The Standard of Living. (Hawthorne G). Cambridge: Cambridge University Press.

Sen, A. (1987). Commodities and Capabilities. New Delhi: Oxford University Press.

Stiglitz, J. E., Sen, A., & Fitoussi, J. P. (2009). Measurement of economic performance and social progress.

Varian, H. R. (1992). Microeconomic analysis.

World Bank Group. (2015). A Measured Approach to Ending Poverty and Boosting Shared Prosperity: Concepts, Data, and the Twin Goals. Policy Research Report. Washington, DC: World Bank.

World Bank. (2017). Monitoring Global Poverty: Report of the Commission on Global Poverty. Washington, DC: World Bank

C4D2 TRAINING

Thank you for your attention

Homework

C4D2 TRAINING

Exercise 1 – Engaging with the literature

In a series of papers, Meyer and Sullivan (2003, 2009, 2011) discuss the conceptual and practical appeal of consumption with respect to income. Write a short essay (not to exceed 3000 characters) where you summarize – even schematically – the main findings.

Exercise 2 – Income or Consumption?

- Go to the following link:
  https://openknowledge.worldbank.org/handle/10986/2118/discover?filtertype=supportedlanguage&filter_relational_operator=equals&filter=en
  (the link takes you to the World Bank Open Knowledge Repository, and filters the Collection of Economic and Sector Work Studies to find all published Poverty Assessment Reports)

- Choose and download five Poverty Assessments and identify whether income or consumption (or something else) were used to derive the welfare indicator/aggregate.

C4D2 TRAINING

Exercise 3 – Multidimensionality of well-being

- Go to: https://data.worldbank.org/

- Choose five indicators that you think are important to assess the living standard of the population (education, health, trade etc…)

- Draft a short essay on the living conditions in the country of your choice based on these indicators and their trend.