Housing

LECTURE 10

Outline

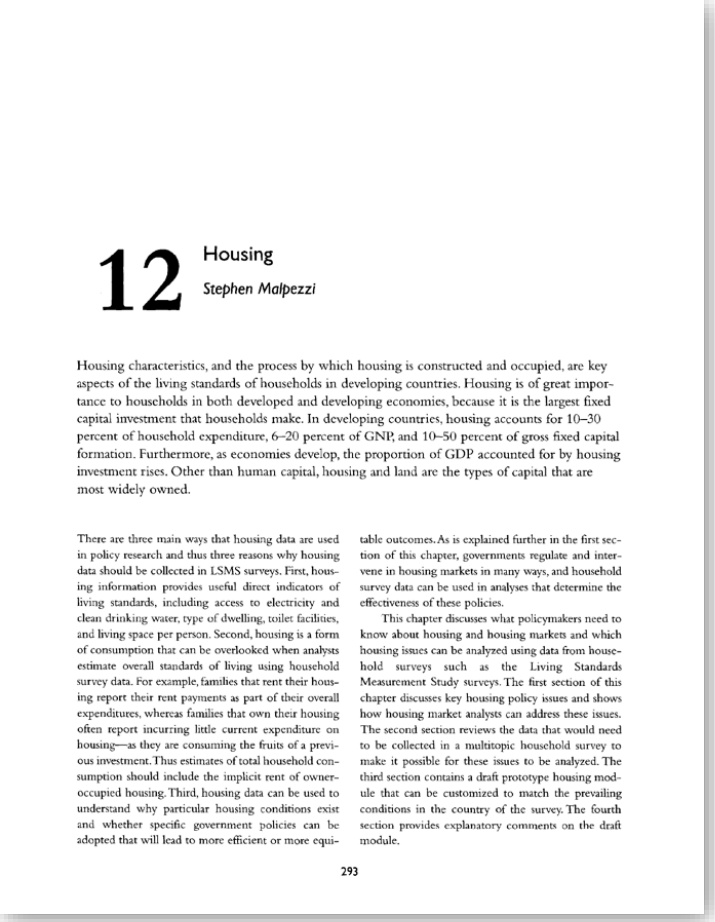
1. Concepts
   What makes housing special?

2. Practice
   How to deal with housing when measuring living standards?

3. Data
   How to design the housing module in household surveys?

1. Concepts

What makes housing special?



12 Housing

Stephen Malpezzi

Housing characteristics, and the process by which housing is constructed and occupied, are key aspects of the living standards of households in developing countries. Housing is of great importance to households in both developed and developing economies, because it is the largest fixed capital investment that households make. In developing countries, housing accounts for 10–30 percent of household expenditure, 6–20 percent of GNP, and 10–50 percent of gross fixed capital formation. Furthermore, as economies develop, the proportion of GDP accounted for by housing investment rises. Other than human capital, housing and land are the types of capital that are most widely owned.

There are three main ways that housing data are used in policy research and thus three reasons why housing data should be collected in LSMS surveys. First, housing information provides useful direct indicators of living standards, including access to electricity and clean drinking water, type of dwelling, toilet facilities, and living space per person. Second, housing is a form of consumption that can be overlooked when analysts estimate overall standards of living using household survey data. For example, families that rent their housing report their rent payments as part of their overall expenditures, whereas families that own their housing often report incurring little current expenditure on housing—as they are consuming the fruits of a previous investment. Thus estimates of total household consumption should include the implicit rent of owner-occupied housing. Third, housing data can be used to understand why particular housing conditions exist and whether specific government policies can be adopted that will lead to more efficient or more equitable outcomes. As is explained further in the first section of this chapter, governments regulate and intervene in housing markets in many ways, and household survey data can be used in analyses that determine the effectiveness of these policies.

This chapter discusses what policymakers need to know about housing and housing markets and which housing issues can be analyzed using data from household surveys such as the Living Standards Measurement Study surveys. The first section of this chapter discusses key housing policy issues and shows how housing market analysts can address these issues. The second section reviews the data that would need to be collected in a multitopic household survey to make it possible for these issues to be analyzed. The third section contains a draft prototype housing module that can be customized to match the prevailing conditions in the country of the survey. The fourth section provides explanatory comments on the draft module.

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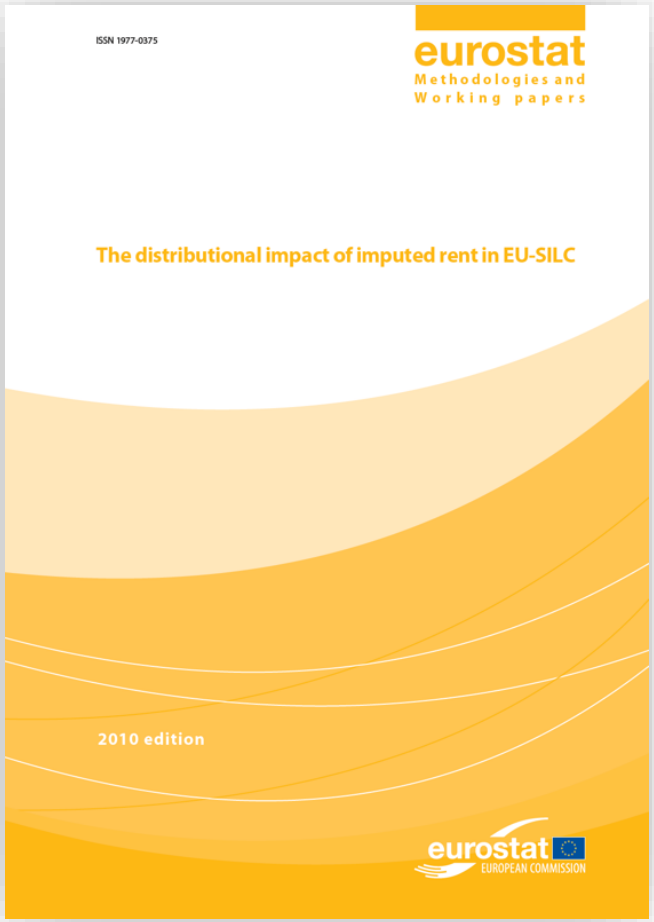
- Conceptually, a house is a perfect example of a durable good.
- Empirically, housing matters. Housing expenditures absorb between 10-30% of total household expenditure.

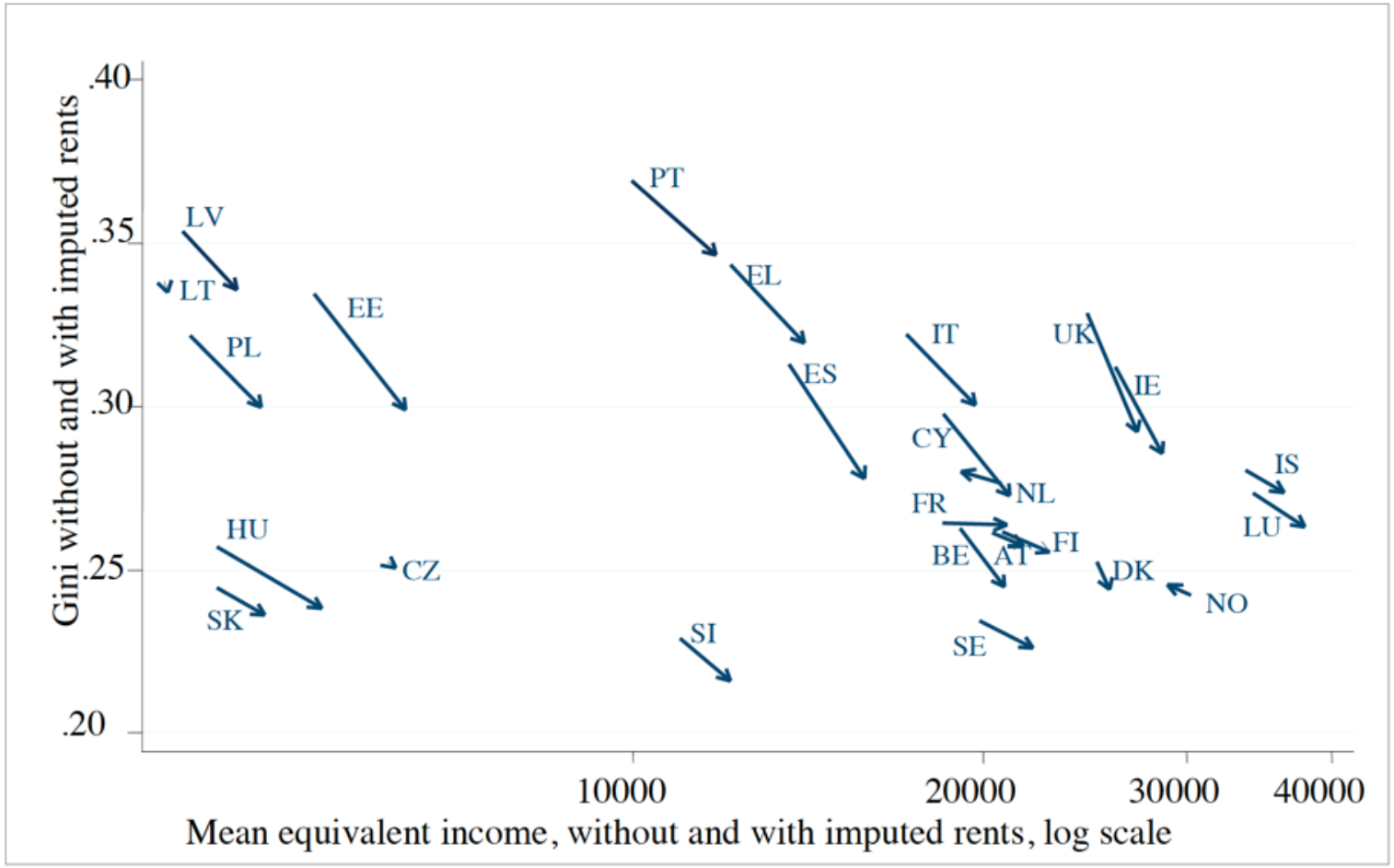
The European experience

Törmälehto and Hannele Sauli (2010)



- Nearly 80% of European households either own their main residence or their rent is below the prevailing market rent
- Imputed rent decreases inequality in all (but two) European countries
- A similar result applies to income-based measures of the at-risk-of-poverty rate

Changes in income inequality and average income (without imputed rent –> with imputed rent), 2007



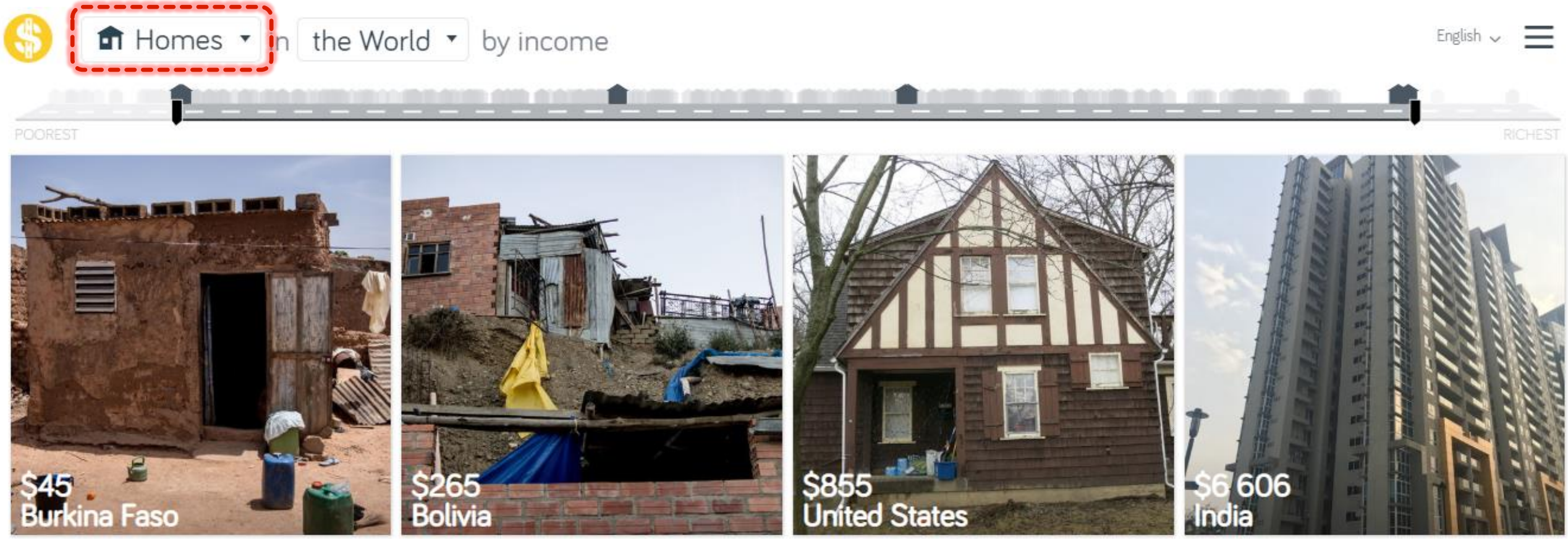
Why collect data on housing?

Motivation #1:

Housing characteristics are direct indicators of the household's standard of living.

Dollar street, useful for illustrating

You can check it out here:
https://www.gapminder.org/dollar-street/matrix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Kitchens in the World by income

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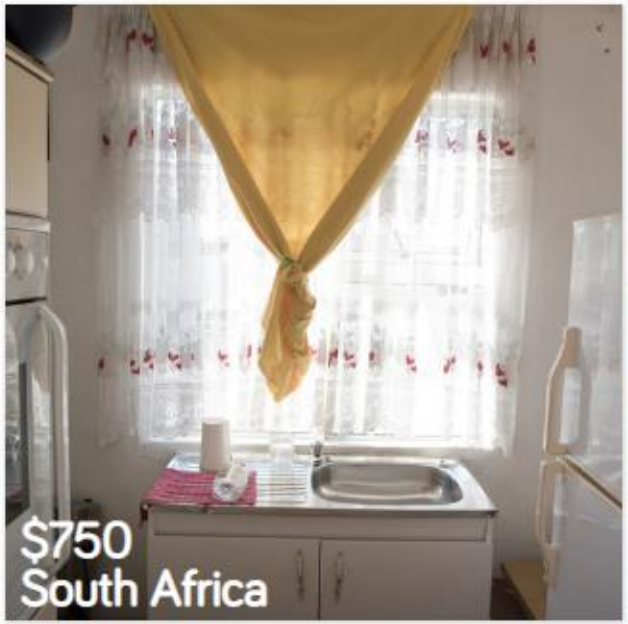

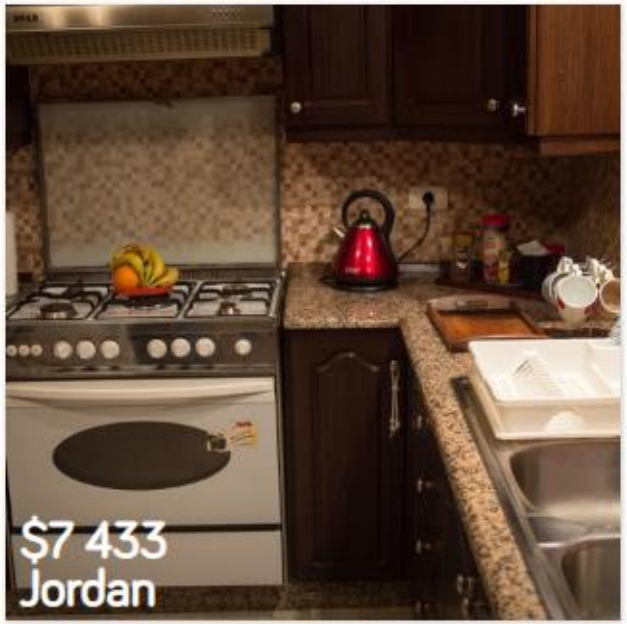

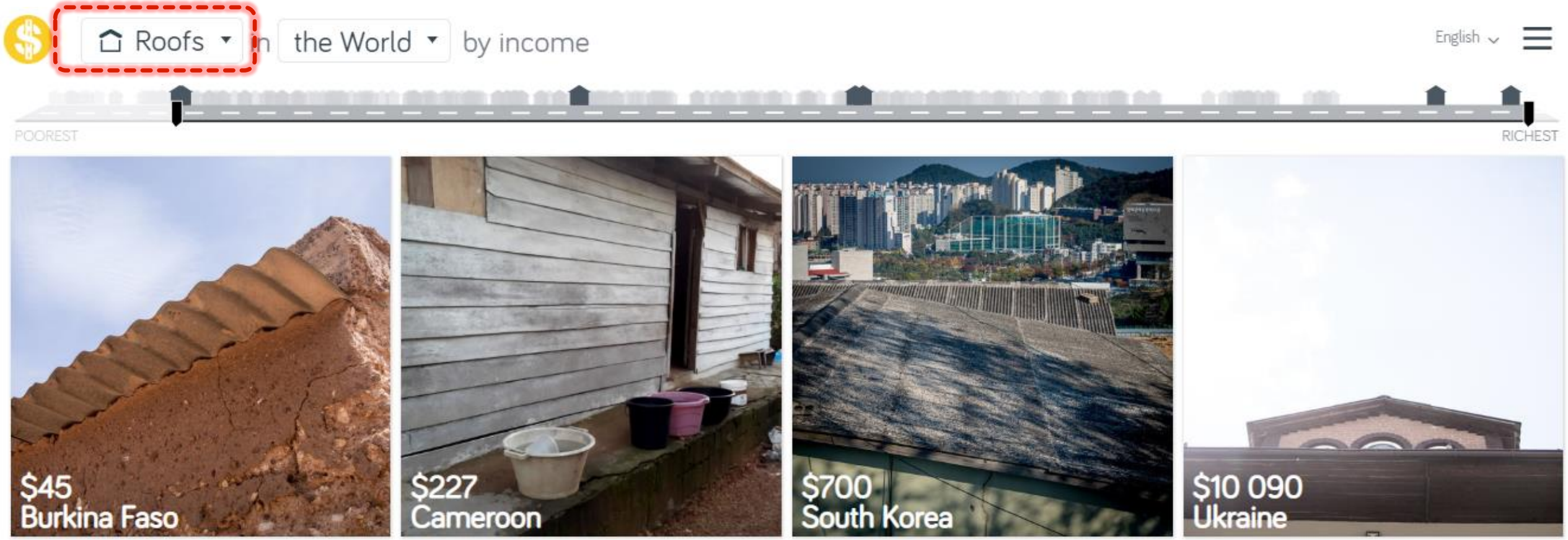
Roofs
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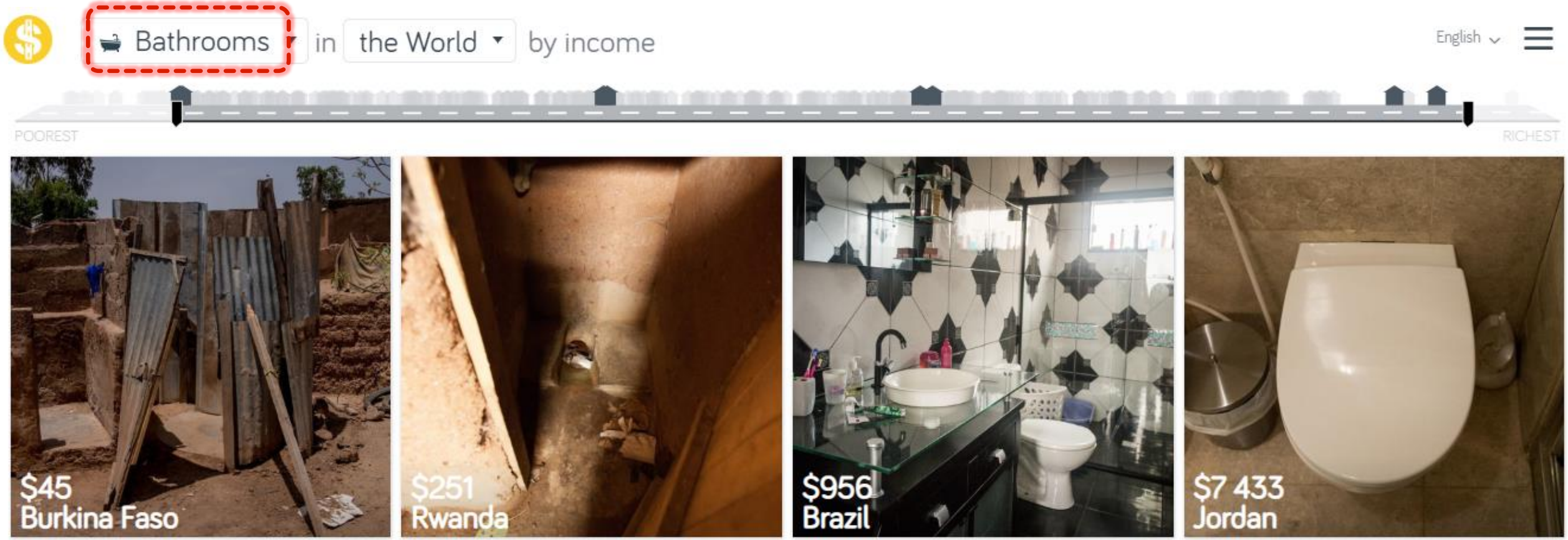
Bathrooms
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Rwanda
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Brazil
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Jordan

Why collect data on housing?

Motivation #2:

Housing consumption must be accounted for properly when defining living standards and comparing them across households.

Why collect data on housing?

Motivation #3:

- Understanding housing market behavior, to help analysts and policymakers understand how housing markets work and how government policies affect housing outcomes.
- See Malpezzi (2002: 295) for more details

- In this lecture, the focus is on motivations 1 (housing characteristics) and 2 (housing consumption)

Some general implications for data collection

- The questionnaire should contain a dedicated housing module
- The module should collect data on (at least):
  1. The characteristics of the household's dwelling
  2. Expenditures on utilities
  3. All pieces of information needed to estimate the use-value of the dwelling (the flow of housing services)
- Point 3 requires further elaboration

A key general principle

- The theory covered for durable goods applies to housing, too
- We are not interested in the purchase value of the house: we want the value of using the dwelling during the survey period (flow of housing services)
- Take three households, A, B, and C, living in identical homes. All other things being equal, they should be classified as equally well off (they enjoy the same flow of housing services)
- Imagine A pays market rent, B owns the home, while C pays subsidized rent

A
mkt rent

B
owner

C
non-mkt rent

How to estimate the flow of housing services?

A
mkt rent

- Easy
- In principle, actual rent paid is a good proxy for the flow of housing services during the survey period
- Most surveys collect data on it

B
owner

- Difficult
- Owners do not pay rent…
- Need to estimate the price that owners would pay if they had to rent their home
- This is what we refer to as imputed rent

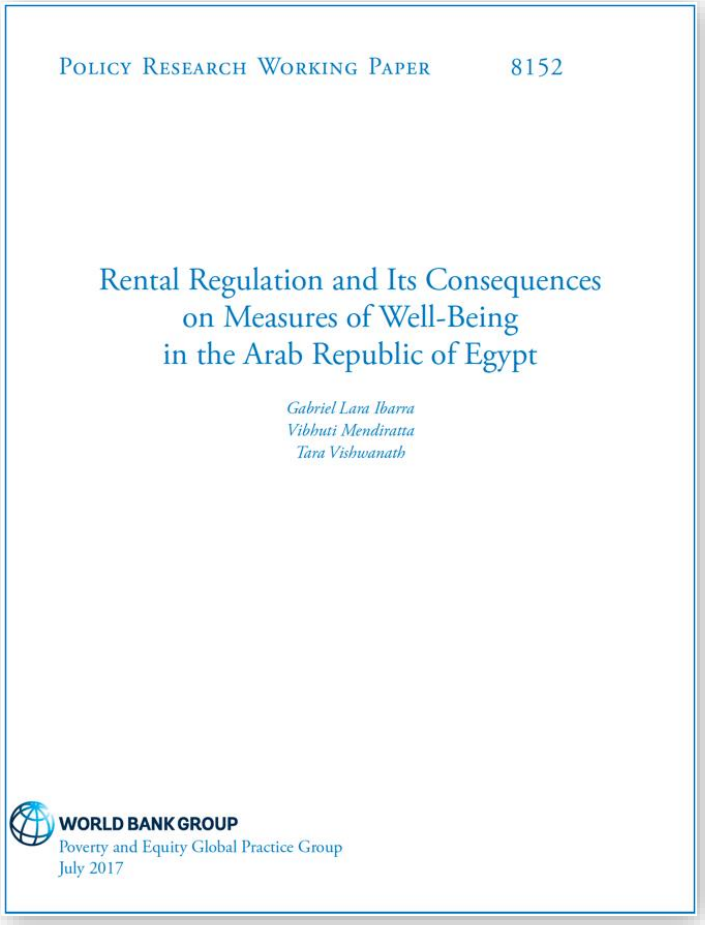
C
non-mkt rent

- Difficult
- If rent is subsidized, it is does not represent the actual value of services enjoyed from residing in the dwelling, but something less than that
- We need imputed rent

The importance of imputed rent

- Imputed rent is an estimate of the value of the benefit accruing to the household due to not paying full rent
- It is crucial for consistent welfare comparisons: without imputed rent, A, B and C would appear to have different living standards, when in fact they are identical in everything but housing tenure status
- Homeowners and non-market tenants (households receiving housing free of charge or at rates subsidized by their employers, friends, relatives, the government) require special attention

The case of Egypt


POLICY RESEARCH WORKING PAPER 8152

Rental Regulation and Its Consequences on Measures of Well-Being in the Arab Republic of Egypt

Gabriel Lara Ibarra
Vibhuti Mendiratta
Tara Vishwanath

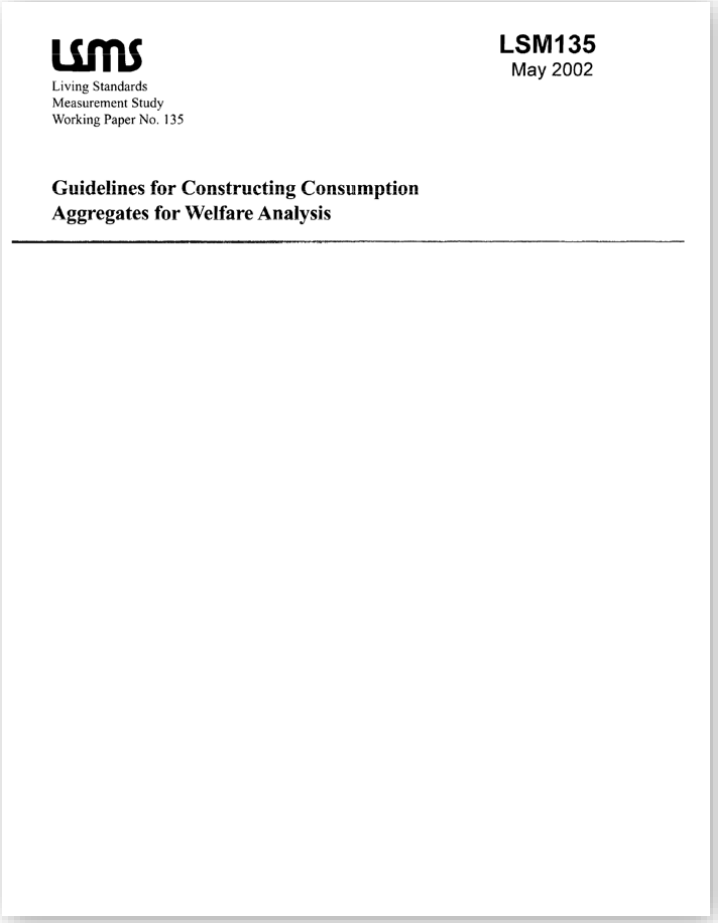
WORLD BANK GROUP
Poverty and Equity Global Practice Group
July 2017

- A common situation is the presence of housing market regulation, rent controls
- The presence of regulated housing in a market creates a set of tenants who benefit from housing at a subsidized price.
- As we saw in lecture 7, this requires a correction

2. Practice

How to deal with housing when measuring living standards?

- Of all components of the household consumption aggregate, the housing sub-aggregate is often one of the most problematic. (p. 35)
- Deaton and Zaidi (2002), pages 35-38 is a must read.



LSMS
Living Standards
Measurement Study
Working Paper No. 135

LSM135
May 2002

Guidelines for Constructing Consumption Aggregates for Welfare Analysis

An updated review article

the review of income and wealth

Review of Income and Wealth
Series 63, Number 4, December 2017
DOI: 10.1111/roiw.12312

RENT-IMPUTATION FOR WELFARE MEASUREMENT: A REVIEW OF METHODOLOGIES AND EMPIRICAL FINDINGS

BY CARLOS FELIPE BALCÁZAR, LIDIA CERIANI, SERGIO OLIVIERI* AND MARCO RANZANI

The World Bank

Housing should always be included in the construction of the welfare aggregate for welfare analysis. However, assigning a value to the flow of services from dwellings is problematic. Many households own the dwelling in which they live, making this value unobserved; others receive free housing or face prices lower than those at the market. Over the last decades, several estimation techniques have been proposed and implemented by practitioners to overcome this issue. This paper provides a review of methods commonly used to impute rent and discusses the relative advantages and disadvantages of each. We find no consensus on which imputation method is the most appropriate for welfare analysis, as well as a lack of evidence regarding the distributional impact of including rents in the welfare aggregate, particularly in developing countries. Moreover, practices for imputing rents vary across countries, calling for the future development of a unified framework.

- Review of methods commonly used to impute rent
- Important read in order to collect the best data required by imputation methods

The challenge of imputing rent

Three main options:

1. Self-reported rent
   owners are asked the “implicit rental value”, that is, how much it would cost to rent their unit on the market
2. Hedonic housing regression
   Regress actual rents on dwelling characteristics, and predict the rent that owners would pay if they had to rent their unit
3. Non-hedonic methods
   apply a capitalization rate to the self-reported current value of the unit

Today we focus on 1. and 2.

Self-reported rent

- Respondents (typically homeowners) are asked to estimate how much it would cost to rent their home at full price

South-Africa, 2014/15

Living Conditions Survey

Household Questionnaire (p.38)

6.6	Imputed rent
6.6.1	If you were to rent this dwelling, how much would you pay for it per month?.....

Reliability of self-reported rent

- This approach relies on the assumption that owners are informed and objective about the value of their dwelling, and the amount they would have to pay to rent a home with similar quality and location attributes
- In practice, this assumption may be unrealistic:
  - "Thin" rental markets
    No comparable dwellings rented in the area in which respondents live, no information
  - "Owner pride" factor
    Homeowners may have above-market valuations of their housing, based on subjective reasons, such as special attachment to specific characteristics of their homes

Hedonic housing regression

- The general idea is to assume that rent is a function of the characteristics of the dwelling, including location, structural attributes (*e.g.* type of construction, number of rooms, age of the building, etc.) and neighborhood characteristics
- Focusing on market tenants, the relationship between dwelling characteristics and rent can be estimated (for instance: a house with tile floors goes for a rent that is x% higher than average, all else equal)
- This relationship is then used to predict the implicit rental value for households who do not pay (full) rent for their homes, based on their dwelling's characteristics

The econometric model

- A popular choice is to use a log-linear functional form:

$$\log(y) = X\boldsymbol{\beta} + \varepsilon$$

where y is rent (actual and/or self-assessed by owners), and X is housing characteristics (number of rooms, roof, floor, wall, type of toilet, location variables…)

- Predict for the rest of the population:

$$\hat{y} = X\widehat{\boldsymbol{\beta}}$$

Main takeaways

- Estimating an “implicit” rent for all those households who do not pay actual market rent is one of the main challenges facing welfare analysts
- Several estimation approaches, based on different assumptions: choice depends on context
- Methodology aside, success of estimation rests on the availability of the necessary information from surveys (data availability) and its accuracy (data quality)
- Self-reported rent and dwelling characteristics emerge as crucial data requirements

3. Data

The housing module

- First off, questions should refer to the household's primary residence
- Second, as usual, clarity and consistency of concepts and definitions are essential
- Each person has a commonsense notion of what is meant by such terms as "house," "household," "room," and so on, but these notions may differ from person to person.
- For example, is a "bathroom" to be counted as a "room"?

Examples of definitions for the housing module

Malpezzi (2002: 307)

Definitions are context-specific: this is just a potential starting point

- Structure
  "A structure is a physically separate entity such as a house, an apartment building, or a tent. It may contain one or more dwelling units."
- Dwelling unit
  "A dwelling is an accommodation unit that contains one or more households. There may be several dwellings in a structure."
- Room
  "Whole rooms used for living purposes, such as living rooms, dining rooms, bedrooms (…). Not included are bathrooms (…). If a room is used by occupants of more than one unit, the room is included with the unit from which it is most easily reached."

Components of the housing module

Malpezzi (2002: 305-310)

Given our focus on living standards measurement, we summarize recommendations for the following components of the housing module:

1. Dwelling characteristics and housing services
2. Dwelling expenditures

Dwelling characteristics and housing services

- Characteristics of the structure or dwelling
  - Building materials (roof, walls, floor…)
  - Age and size of the structure
  - Number of rooms/bedrooms/bathrooms
- Characteristics of the neighborhood, availability of services
  - Location of the dwelling
  - Availability and distance from services (water, sanitation…)

Dwelling expenditures

a. Questions about expenditures are closely linked with questions about housing tenure

b. Main expenditure to be recorded: rent (actual and self-reported)

c. Other housing expenditures: utilities, maintenance and repairs

Housing tenure

- Property rights and tenure vary considerably depending on the country's context: these questions must be customized
- At a minimum, questionnaire should differentiate owning vs. renting
- Length of tenure is important because it often impacts rent paid

Rent

- Actual rent (for renters)
  - "How much does the household pay towards rent?"
    - Data must be collected on "arms-length transactions", i.e. transactions between two counterparts who have no special relationship that would suggest that rent paid differs from market prices
  - Crucial to differentiate between households that pay market rent, and households under rent controls or subsidy, related to the landlord, etc.
- Self-reported rent (for non-renters)
  - "How much would you charge if you were to rent out this dwelling?"

Utilities, maintenance and repairs

- May be collected elsewhere in the questionnaire (together with other expenditures with same recall period)
- Distinction between housing expenditures inclusive of utilities or not is crucial
- *E.g.* some renters pay for utilities separately, but others pay a monthly rent that includes utility charges
- Questionnaire must be designed to distinguish between these cases

Housing

Ghana Living Standards Survey (2012/2013)

SECTION 7: HOUSING
THE RESPONDENT: THE HEAD OF THE HOUSEHOLD

Now, I would like to ask you about your dwelling

PART A: TYPE OF DWELLING

1. In what type of dwelling does the household live?

   Separate house (Bungalow).....01
   Semi-detached house.....02
   Flat/Apartment.....03
   Compound House.....04
   Huts/Buildings [same Compound].....05
   Huts/Buildings [different Compound].....06
   Tents.....07
   Improvised home (kiosk, container).....08
   Living quarters attached to office/shop.....09
   Uncompleted building.....10
   Other (specify).....11

2. How many rooms does this household occupy? (COUNT LIVING ROOMS, DINING ROOMS, BED ROOMS BUT NOT BATHROOMS, TOILET & KITCHEN)

3. How many of the rooms are used for sleeping? **IF MORE THAN 1, GO TO PART B**

4. Do other households share this room with you?

   Yes.....1
   No.....2 (>> PART B)

5. How many households, including your household, share this sleeping room?

PART B: OCCUPANCY STATUS OF THE DWELLING

1. What is the present holding/tenancy arrangement of the dwelling?

   Owning.....1 (>> 7C Q.7)
   Renting.....2
   Rent-free.....3
   Perching.....4 (>> 7D)
   Squatting.....5

2. Who owns this dwelling?

   Owned by household member.....1
   Being purchased (e.g. Mortgage).....2
   Relative not household member.....3
   Other private individual.....4
   Private employer.....5
   Other private agency.....6
   Public/Government ownership.....7
   Other (specify).....8

PART C: HOUSING EXPENSES

1. How much does the household pay in cash towards the rent?
   (IF FREE, PUT ZERO FOR AMOUNT AND THE TIME UNIT)

   AMOUNT TIME UNIT

   Time Unit: Daily.....1 Monthly.....3
   Weekly.....2 Quarterly.....4
   Half Yearly.....5 Yearly.....6
   N/A.....0

2. Does your household also supply goods or services in exchange for this dwelling?

   Yes.....1
   No.....2 (>> 4)

3. What is the appropriate value of these goods and services provided by your household?

   VALUE TIME UNIT

4. Is part or all of the rent paid by someone who is not a member of your household?

   Yes, All.....1
   Yes, Part.....2
   No.....3 (>> 7)

5. Who pays?

   Relative.....1
   Private individual.....2
   Government.....3
   Private employer.....4
   Other (specify).....5

6. How much is paid?

   AMOUNT TIME UNIT

7. How much did your household spend for construction or repair cost and painting in the last 12 months on this dwelling?

7.1

C4D2 TRAINING

PART F: CHARACTERISTICS OF THE DWELLING

1. What is the main construction material used for the outer wall?

Mud bricks/earth……01
Wood……02
Metal sheet/slate/asbestos……03
Stone……04
Burnt bricks……05
Cement blocks/concrete……06
Landcrete……07
Bamboo……08
Palm leaves/Thatch (grass/Raffia…09

Other (specify)……10

2. What is the main construction material used for the floor?

Earth/Mud……1
Cement/Concrete……2
Stone……3
Burnt bricks……4
Wood……5
Vinyl tiles……6
Ceramic/Porcelain/Granite/
Marble tiles……7
Terrazzo/Terrazzo tiles……8
Other (specify)……9

3. What is the main material used for the roof?

Mud bricks/earth……1
Wood……2
Metal sheet……3
Slate/Asbestos……4
Cement blocks/concrete……5
Bamboo……6
Palm leaves/Thatch (grass/Raffia…7
Roofing Tiles……8
Other (specify)……9

Nigeria, 2015

General Household Survey Panel, Wave 3

SECTION 8A - HOUSING

1.	2.	3.		4.		5.	6.
Do you own or purchase this dwelling, is it provided to you by an employer, do you use it for free, or do you rent this house? OWNED.....1 EMPLOYER PROVIDES....2 (▶Q3) FREE, AUTHORISED.....3 (▶Q3) FREE, NOT AUTHORISED.4 (▶Q3) RENTED .....5 (▶Q4)	If you sold this dwelling today, how much would you receive for it?	Estimate the rent you could receive if you rented this dwelling? (▶Q5)		How much do you pay to rent this dwelling?		In what year was this house built? IF DON'T KNOW, WRITE 9999	THE OUTER WALLS OF THE MAIN DWELLING OF THE HOUSEHOLD ARE PREDOMINANTLY MADE OF WHAT MATERIAL? GRASS.....01 MUD.....02 COMPACTED EARTH...03 MUD BRICK (UNFIRED) ... . ..04 BURNT BRICKS..... 05 CONCRETE..... 06 WOOD..... 07 IRON SHEETS . ... 08 CONCRETE OR CEMENT BLOCKS.....09 STONE.....10 OTHER (SPECIFY)...11
	NAIRA	NAIRA	TIME UNIT MONTH....1 YEAR.....2	NAIRA	TIME UNIT MONTH... 1 YEAR. ...2	YEAR	

7.	8.	9.	10.	11.	12.	13.	14.		15.
THE ROOF OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL? GRASS.....1 IRON SHEETS....2 CLAY TILES.....3 CONCRETE....4 PLASTIC SHEET.....5 ASBESTOS SHEET.....6 OTHER (SPECIFY)...7	THE FLOOR OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL? SAND/DIRT/ STRAW.....1 SMOOTHED MUD...2 SMOOTH CEMENT..3 WOOD.....4 TILE.....5 OTHER(SPECIFY).6	How many separate rooms do the members of your household occupy? (DO NOT COUNT BATHROOMS, TOILETS, STOREROOMS, OR GARAGE)	What is your main source of lighting fuel? COLLECTED FIREWOOD.....1 PURCHASED FIREWOOD.....2 GRASS.....3 KEROSENE.....4 PHCN ELECTRICITY..5 GENERATOR.....6 GAS.....7 BATTERY/DRY CELL (TORCH).8 CANDLES.....9 OTHER (SPECIFY)...10	What is your main source of cooking fuel? COLLECTED FIREWOOD.....1 PURCHASED FIREWOOD.....2 COAL.....3 GRASS.....4 KEROSENE.....5 PHCN ELECTRICITY...6 GENERATOR.....7 GAS.....8 OTHER (SPECIFY).....9	Do you ever collect firewood? YES..1 NO...2 (▶Q15)	Where do you go to collect firewood? OWN WOODLOT.....1 COMMUNITY WOODLOT.....2 FOREST RESERVE.....3 UNFARMED AREAS OF COMMUN-ITY.....4 OTHER (SPECIFY)....5	How long does it take you to walk from your dwelling to where you usually go to collect firewood? (ONE WAY)		Of the firewood you used in the past week, how much of it did you purchase? DID NOT USE FIREWOOD.....1 (▶Q17b) ALL . . ..2 ALMOST ALL....3 MORE THAN HALF .....4 HALF.....5 LESS THAN HALF .....6 A LITTLE.....7 NONE.....8
		NUMBER OF ROOMS					TIME	UNIT MINUTE..1 HOUR....2	

C4D2 TRAINING

Lessons learned

- We need to collect data on housing characteristics – they are direct indicators of the household's standard of living.
- We need to collect data on housing consumption for inclusion in the consumption aggregate – not an easy task.
- Renters pay a rent. For non-renters we need to estimate imputed rent, the value of the benefit accruing to the household from living in its dwelling.
- Self-reported imputed rent is a key piece of information for household consumption and expenditure surveys to collect.
- Hedonic regression is the recommended approach to estimating imputed rent, when self-reported rent is not available or not trustworthy

Thank you for your attention

References

Required readings

Deaton, A., & Zaidi, S. (2002). Guidelines for constructing consumption aggregates for welfare analysis (Vol. 135). World Bank Publications. p. 35-38

Suggested readings

Balcázar, C. F., Ceriani, L. , Olivieri, S. and Ranzani, M. (2017), Rent-Imputation for Welfare Measurement: A Review of Methodologies and Empirical Findings. Review of Income and Wealth, 63: 881-898.

Heston, A. and A.O. Nakamura (2009), Questions about the equivalence of market rents and user costs for owner occupiedhousing, Journal of Housing Economics, 18, 273—279

Ibarra, G. L., Mendiratta, V., & Vishwanath, T. (2017). Rental regulation and its consequences on measures of well-being in the Arab Republic of Egypt. The World Bank.

Malpezzi, S. (2002). Housing. In Grosh, M. and Glewwe, P. (eds.). Designing Household Questionnaires for Developing Countries, Lessons from 15 years of Living Standards Measurement Study, Volume One: World Bank.

Sirmans, G. S., MacDonald, L., Macpherson, D. A., & Zietz, E. N. (2006). The value of housing characteristics: a meta analysis. The Journal of Real Estate Finance and Economics, 33(3), 215-240.

Homework

Exercise 1 - Engaging with the literature

- Does Törmälehto and Sauli (2013) change the findings of their 2010 paper?
- Write a short essay (not to exceed 3000 characters) where you summarize their main findings.

Exercise 2 – Secondary residences

- The discussion during the lecture has focused on the primary dwelling.
- How do surveys account for secondary residences?
- Visit the World Bank Microdata Library and explore the documentation for recent HCES in search of different approaches to gather housing expenditure data on secondary residences, in addition to primary ones.
- Summarize your findings in a few paragraphs.

Exercise 3 – Housing in theory and practice

- Download the questionnaires from the following surveys
  - Sudan National Baseline Household Survey 2009: http://catalog.ihsn.org/index.php/catalog/2131/related-materials
  - Kenya Integrated Household Budget Survey 2015-2016

  http://statistics.knbs.or.ke/nada/index.php/catalog/88
  - Zambia Living Conditions Monitoring Survey VII 2015

  http://catalog.ihsn.org/index.php/catalog/7105/related-materials
- Analysing the questionnaires alone, comment on the components of the housing modules for the estimation of the flow of housing services
- Read below the analytical choices ultimately made by the countries on whether or not and how to include housing in the consumption aggregate. What are your thoughts about the relationship between the design of the housing module and the implications for poverty measurement?

Exercise 3 – Housing in theory and practice

Sudan 2009

2.18 Housing conditions are considered an essential part of people's living standards. Nonetheless, in most developing countries limited or non-existent housing rental markets pose a difficult challenge for the estimation and inclusion of this component in the consumption aggregate. As in the case of durable goods, the objective is to try to measure the flow of services received by the household from occupying its dwelling. When a household rents its dwelling, and provided rental markets function well, that value would be the actual rent paid. If enough people rent their dwellings, that information could be used to impute rents for those that own their dwellings. On the other hand, if the household does not rent is dwelling, the survey asked how much would they would be willing to pay if they had to rent it. Data on self-reported imputed rent can also be used as an alternative to data on actual rents. Unfortunately estimating a housing component in Sudan may be particularly difficult for two reasons. First, few households rent their dwellings, which means that rental markets are developed at all and more likely they are concentrated in a few cities. Second, even when the NBHS provides information on imputed rent, these data may not be that credible considering that renting a dwelling is not common in most of the country. This will be particularly more serious in rural areas, which account for the large majority of the population. It was decided to exclude this component from the consumption aggregate because its estimation may be quite imprecise. The exclusion of the imputed value of housing is not expected to significantly change the relative ranking of the population in terms of total consumption.

The World Bank (2011) A Poverty Profile for the Northern States of Sudan. (p.18)

Exercise 3 – Housing in theory and practice

Kenya 2015

The consumption aggregate in both surveys was constructed using the approach outlined in Deaton & Zaidi (2002). The food aggregate uses a recall period of 7 days and comprises food consumption from four sources, namely: purchases, own production, own stock and gifts. Prices were imputed using the cluster-level median for each item since a household may have consumed but not purchased an item and household-level prices may contain outliers. The non-food component of the aggregate includes consumption of energy, education, transport and clothing among other item groups. Housing rent is also included in the non-food component, however only for urban households, wherein the rent is imputed for households that own their dwelling. Over-the-counter medication (items such as cough syrup, painkillers and anti-malaria medicine) is the only form of health expenditure included the non-food aggregate.

The World Bank (2018) Kenya Gender and Poverty Assessment 2015/16. Reflecting on a Decade of Progress and the Road Ahead. (p.36)

Exercise 3 – Housing in theory and practice

Zambia 2015

The estimate of the monthly value of expenditure on housing services was based on the data on the rental value of the dwelling. In the case of a household renting their own dwelling, the value of expenditure on housing services was taken to be the actual monthly rental paid. For those households occupying their own dwellings, they were asked to estimate how much their unit would cost if they were to put it on rent. Their estimate was imputed to be the rental value of their dwelling. Other households with free or subsidised housing had their rentals imputed as well. In case of those households occupying their own dwelling who could not make a rental estimate or those in free or subsidised dwellings, a Hedonic Regression model was used to impute rental values.

Republic of Zambia, Central Statistical Office (2016) 2015 Living Conditions Monitoring Survey (LCMS) report. (p.95)