

# Measuring Income

## Why measure income in a health survey?

- Strong linkages between health status and economic status.
- Poverty is a determinant of poor health.
- Ill-health linked to declines in functional capacity and economic productivity.
- Income inequality related to inequalities in health status.
- Need information on economic status of respondents to be able to explore these linkages.



# Measuring Income

## Problems with self-reported income:

- Systematic measurement error.
  - For a variety of reasons, income is often *under-reported*.
  - Respondents perceive income-related questions as being invasive, fear tax-related problems.
  - In developing countries, income and expenditure surveys yield estimates of savings that are absurdly low compared with estimates derived from national accounts.
  - Reported expenditure often exceeds reported income for the bottom deciles of the population.



# Measuring Income

Monthly Per Capita Income and Expenditure  
Household Expenditure Survey (HES) and National Accounts (Malaysia)

Variable	HES (M\$)	National Accounts (M\$)	Percentage Difference
Income per capita	67.6	100.9	-33.0%
Expenditure per capita	57.2	67.5	-15.3%

Monthly Per Capita Income and Expenditure  
Socio-Economic Survey (SES) and National Accounts (Sri Lanka)

Variable	SES (Rs)	National Accounts (Rs)	Percentage Difference
Income per capita	47.2	73.0	-35.3%
Expenditure per capita	50.6	58.5	-13.6%



# Measuring Income

Ratio of Per Capita Expenditure to Per Capita Income  
in Different Deciles of Households

Decile	Ratio of Expenditure to Income (Malaysia)	Ratio of Expenditure to Income (%) (Sri Lanka)
1	3.638	134.0
2	1.241	124.7
3	1.115	118.8
4	1.070	114.5
5	0.987	110.0
6	0.987	107.2
7	0.882	101.2
8	0.844	97.6
9	0.808	93.6
10	0.581	77.2



# Measuring Income

- Expenditure data seems less prone to error than income data.
- Expenditure seems to be easier to recall than income.
- Expenditure seems to be more stable over time than income (more closely related to “permanent income”).
- Downside: Expenditure data is difficult and expensive to collect, requiring long, detailed questionnaires on different categories of consumption.



# Measuring Income

## Problems with self-reported income:

- Lack of information content: In non-monetized subsistence economies, monetary income and expenditure data does not have meaning.
- Lack of cross-population comparability: Reported income and expenditure is not easily comparable across countries because of problems relating to differing purchasing power of currencies.
- Lack of availability: Dedicated health surveys often do not contain information on income and expenditure of respondents.



# Measuring Income

## Other strategies to estimate economic status:

- Use Mincerian wage equation -- utilize information on measured covariates -- and predict economic status.

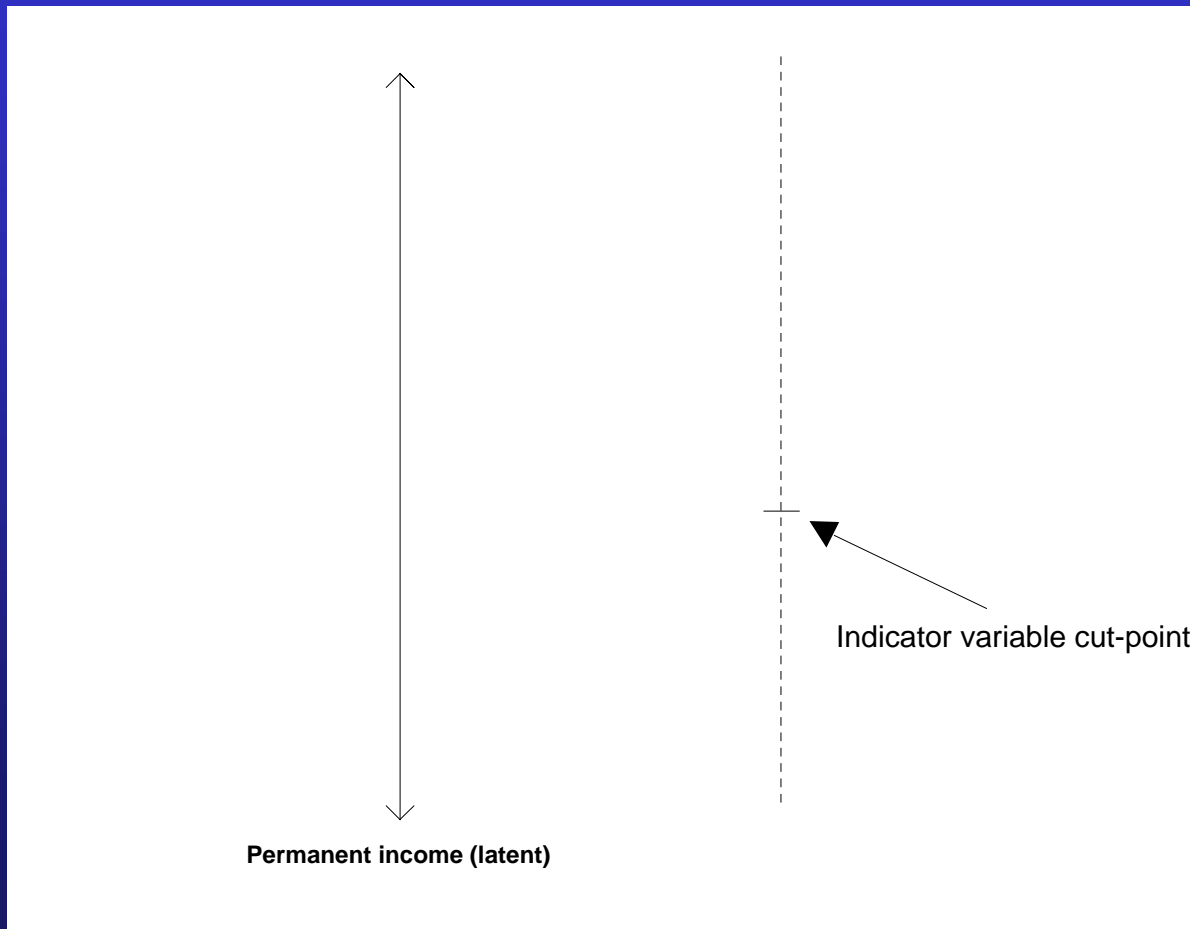
$$\text{Economic Status} = f(\text{Age, Education, Sex, ...})$$

- Use indicator variables to construct an asset index based on ownership of consumer durables and other physical assets. As long as indicators are “normal” goods, higher levels of ownership of indicators: greater likelihood of being non-poor.

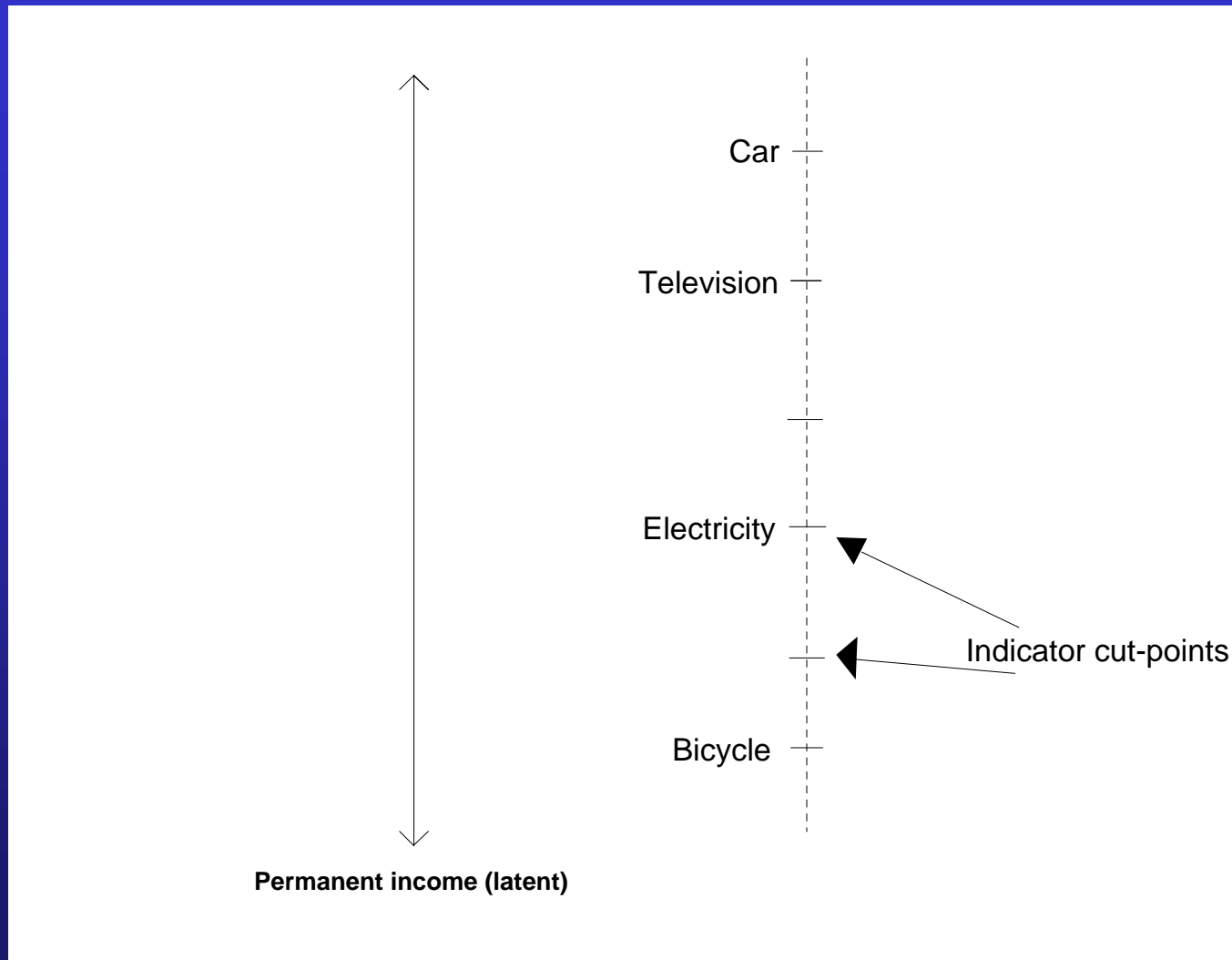


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Latent variable conceptualization: View the observed indicator variable ownership data as related to the underlying latent variable of permanent income.



# Measuring Income

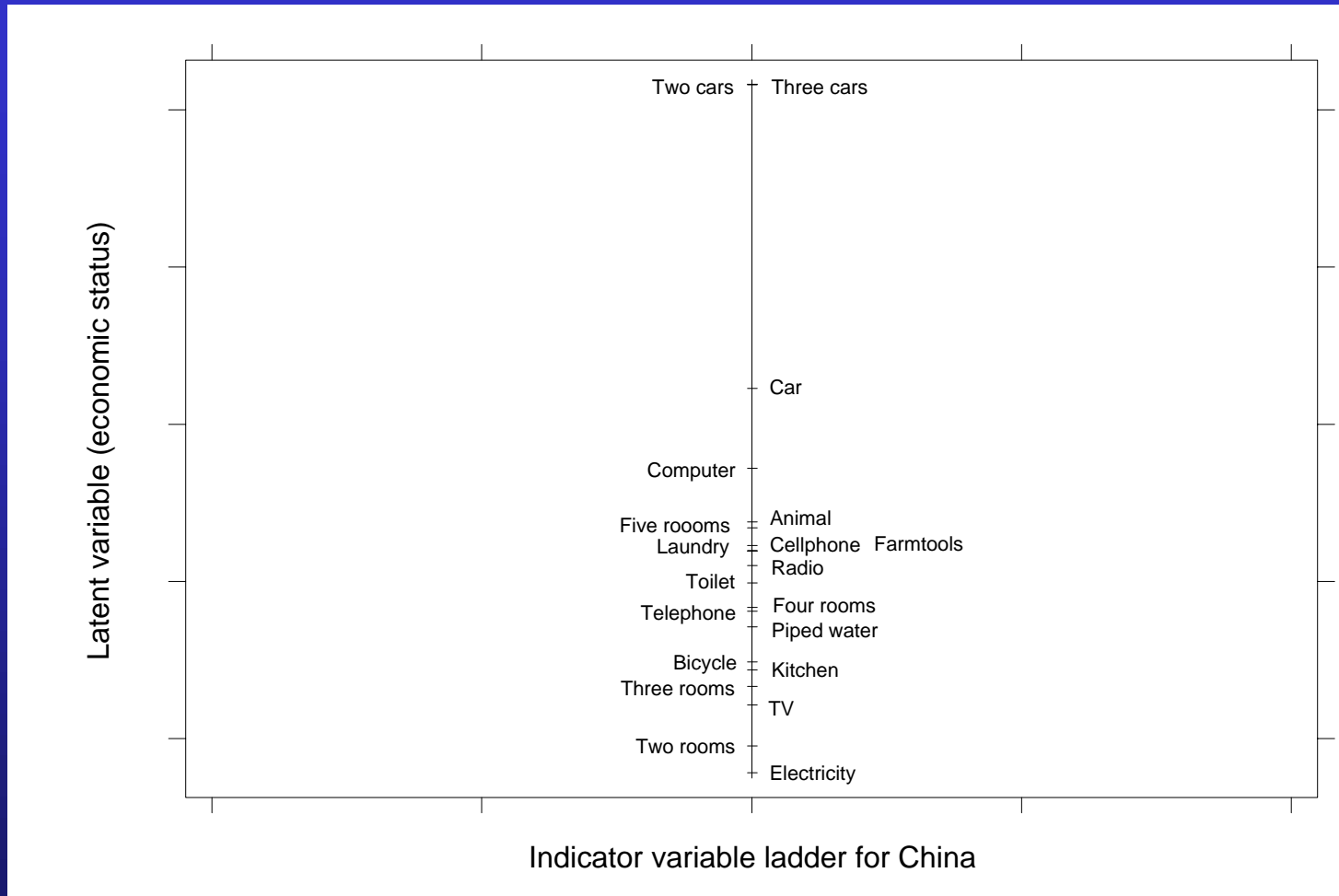


# Measuring Income

- Given information on observed patterns of ownership of indicator variables for a given household -- combined with information on the likelihood of ownership at different levels of the latent variable -- yields estimates of an index measuring permanent income for the household.
- High permanent income households will likely be observed to own most of the indicator variables on the ladder, whereas low permanent income households will likely own indicator variables that are on the lower end of the indicator variable ladder.



# Measuring Income



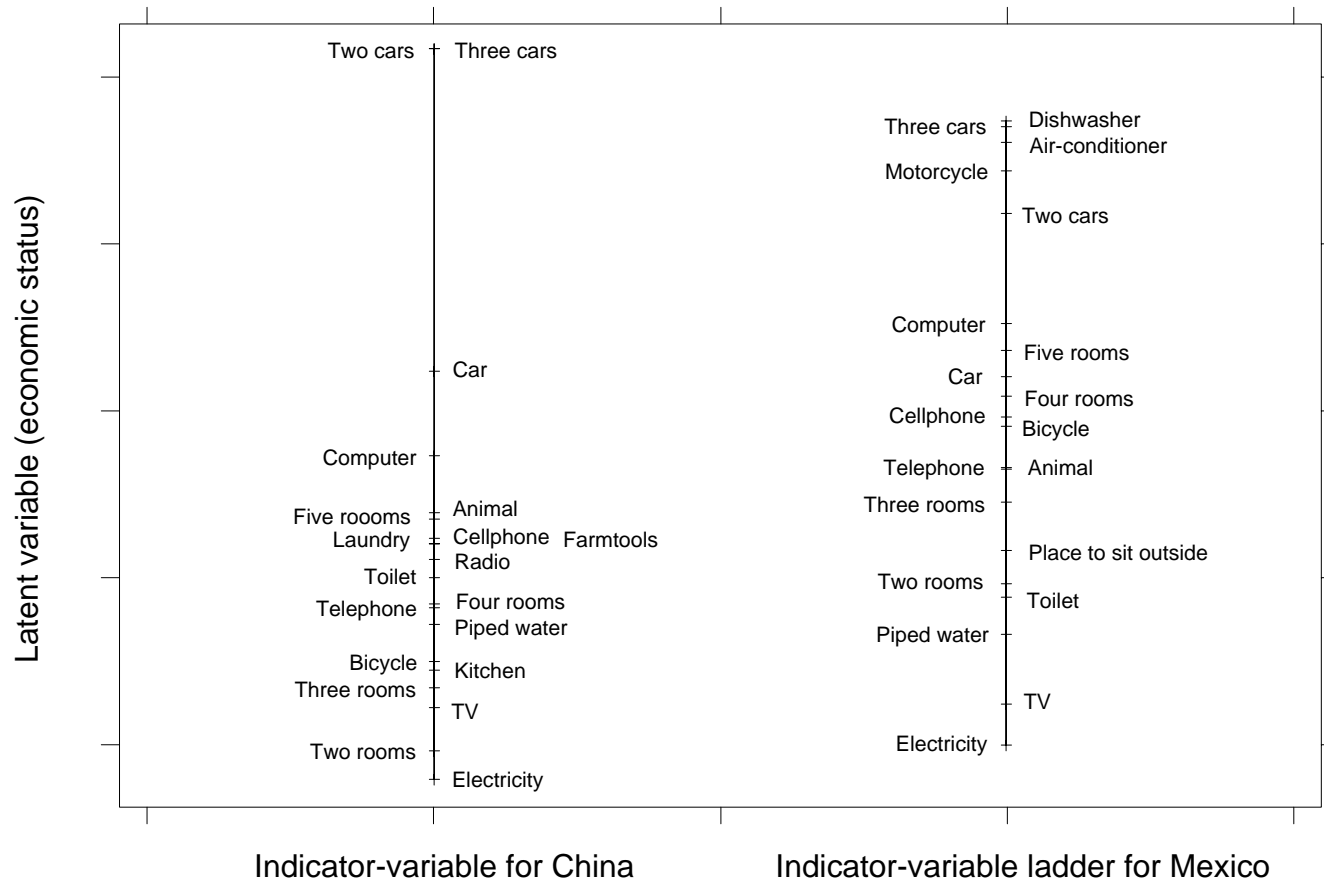
# Measuring Income

## Advantages of using indicator approach:

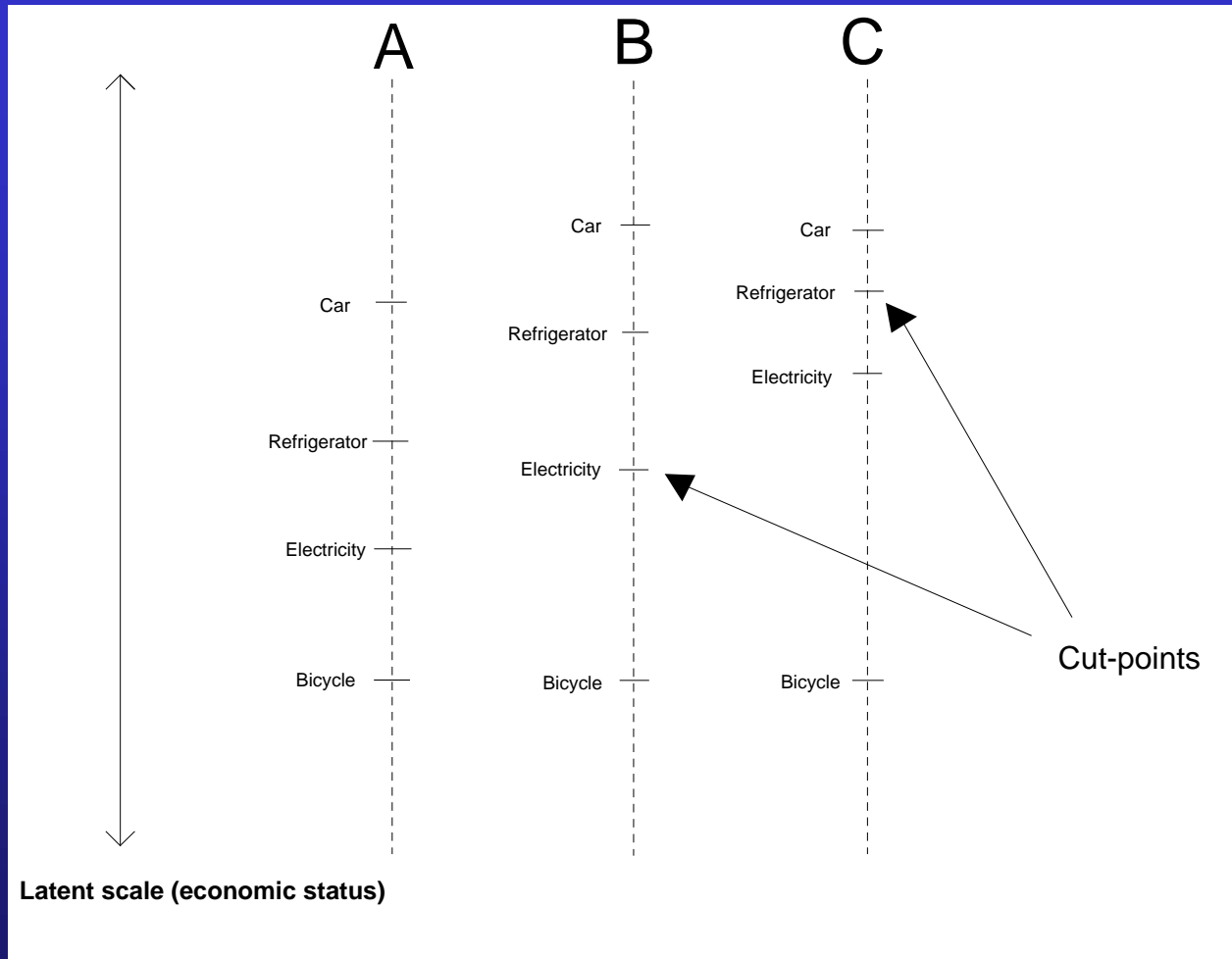
- Data very easy to collect: high test-retest reliability, low measurement error, simple questionnaire design.
- Can be tailored to different regions/countries: can pick different indicators that are more “discriminating” of economic status in different countries.
- Validation studies: show the estimates collected using this method to be highly correlated with expenditure.
- Can help in the development and validation of purchasing-power parity (PPP) indices.



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