Issues in the measurement of Wealth
The experience of the Bank of Italy’s Survey on Household Income and Wealth

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Outline of the presentation

1. Main characteristics of SHIW
2. Definition and characteristics of net wealth
3. Collecting data on net wealth
4. Some results on wealth distribution
5. Wealth variations: definition, data collection issues and some results
The Survey on Household Income and Wealth (SHIW)

Main characteristics of the survey

- Since 1966 (yearly up to 1986; since 1987 every two years)
- Sample of 8,000 households (about 20,000 individuals)
- Face to face interview (use of CAPI)
- Micro data freely available on the Internet (data from 1977 on)
The Survey on Household Income and Wealth (SHIW)

The sample design: a two-stage stratified sample

First stage: selection of 300 municipalities

- Cities with more than 40,000 inhabitants are always selected
- Smaller cities are selected with a probability proportional to size

Stratification by region and demographic size of municipalities

Second stage: selection of 8,000 households

(random sample from official registers of residents of the selected municipalities)
The Survey on Household Income and Wealth (SHIW)

The sample design: a two-stage stratified sample

Have all the units of the population the same probability to be extracted (as in SRS - Simple Random Sample)?

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Population</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rome</td>
<td>250</td>
<td>2,800,000</td>
<td>0.009%</td>
</tr>
<tr>
<td>Sorrento</td>
<td>30</td>
<td>50,000</td>
<td>0.060%</td>
</tr>
</tbody>
</table>

Unbiased estimators are obtained by using weights

Weights are defined as the inverse of the probability of inclusion (Horwitz Thompson estimator - the lower the probability to be selected, the higher the weight in the sample)

Design weights are adjusted (i.e. post-stratification) to take into account non-response and other external information (i.e. known margins)

Design effect index - \( \text{Deff} = \frac{s.e_{DES}}{s.e_{SRS}} \) = around 1.5-2.0
The Survey on Household Income and Wealth (SHIW)

The panel

Until 1987 the survey was conducted with time-independent samples (cross sections) of households.

In order to facilitate the analysis of the evolution of phenomena over time, since 1989 part of the sample (40-50%) has comprised households interviewed in previous surveys (panel households).

Panel data allow:

• the analysis of gross flows
• more efficient estimators of changes (and means)
• econometrics analysis (unobservable variables)

The management of a panel can be costly. Moreover, the attrition may lead to biased estimates.
The Survey on Household Income and Wealth (SHIW)
The panel: example of gross flows

Mobility of household among income classes, 2014-2016

<table>
<thead>
<tr>
<th>Income 2014</th>
<th>Less than 1st quintile</th>
<th>1st - 2nd quintile</th>
<th>2nd -3rd quintile</th>
<th>3rd - 4th quintile</th>
<th>Over 4th quintile</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1st quintile</td>
<td>73.9</td>
<td>18.5</td>
<td>5.7</td>
<td>1.0</td>
<td>0.8</td>
<td>100.0</td>
</tr>
<tr>
<td>1st - 2nd quintile</td>
<td>18.6</td>
<td>49.5</td>
<td>24.8</td>
<td>5.1</td>
<td>2.0</td>
<td>100.0</td>
</tr>
<tr>
<td>2nd -3rd quintile</td>
<td>5.1</td>
<td>22.3</td>
<td>41.6</td>
<td>26.7</td>
<td>4.3</td>
<td>100.0</td>
</tr>
<tr>
<td>3rd - 4th quintile</td>
<td>1.4</td>
<td>6.7</td>
<td>22.3</td>
<td>47.5</td>
<td>22.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Over 4th quintile</td>
<td>1.0</td>
<td>2.8</td>
<td>5.7</td>
<td>19.7</td>
<td>70.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>20.0</td>
<td>20.0</td>
<td>20.0</td>
<td>20.0</td>
<td>20.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The Survey on Household Income and Wealth (SHIW)

The questionnaire: permanent sections

A. **Structure of the household** at the end of the year (number of components, sex, age, education, place of birth,…)

B. **Employment and incomes** (job-status, hours at work, wages, incomes from self-employment, from pensions)

C. **Payment instruments and forms of saving** (current accounts, credit cards, financial assets ….)

D. **Principal residence and other property** (tenure, value, rent, owner, size, location, …)

E. Non-durable and durable **consumer goods**

F. Forms of **insurance**

G. **Assessment of the interview** (to be provided by the interviewer)

**Variable sections:** Inheritances, Capital Gains, Risk Aversion, Housework, Intergenerational Mobility, Use of Public Services, Social Capital, Tax Evasion, Income and Employment Expectations, Retirement Expectations, Financial Choices, New Technologies

The variable sections are sometimes submitted to random sub-samples (i.e. those born in a odd year answer to the section A while those born in a even year answer to the section B)

This technique is very useful to limit the respondent burden but provides data on smaller samples and does not allow for the joint use of the responses to the alternative sections A and B
The Bank of Italy actively supports projects to improve the international comparability of survey data:

- Household Finance and Consumption Survey (HFCS) is a comparable framework of household surveys developed by most National Central Banks of the Euro Area and the European Central Bank.

- SHIW data are included in the LIS and LWS database. The LIS (Luxembourg Income Study) and the LWS (Luxembourg Wealth Study) are comparable datasets containing income and wealth variables to enable cross-country comparisons.
Definition and characteristics of net wealth

What is wealth and why is it important?

Wealth is the whole amount of material and immaterial goods with a market value that can be changed against money or other goods.

- **Savings** → **Wealth** → **Consumption** *(destination)*
  - *(origin)*
  - **Capital income**

It is important to consider its ...

- Amount (vulnerability, well-being, tax base, finance)
- Composition (preferences/effects of policies)
- Distribution (cohesion/opportunities)

Today even more *(greater variability of income, population aging)*
Definition and characteristics of net wealth

What is wealth and why is it important?

• Wealth can generate wellbeing directly. The homeowner benefits directly from the wealth possessed (the accommodation). The same way, owners of durable consumer goods (such as cars, household appliances, or valuable artworks) enjoy a "service" from using these goods (imputed income).

• Wealth can create wellbeing when it is turned into current consumption (by liquidating part of its wealth on the market).

• Wealth is a safety net (i.e. disease, pandemics)
Definition and characteristics of net wealth

What is wealth and why is it important?

- Wealth may facilitate access to credit (making it easier for individuals to obtain bank loans to start a business)
- Wealth provides the owners with power, influence, and prestige (especially in considerable amounts)
Definition and characteristics of net wealth

What is wealth and why is it important?

Income and consumption may fail to provide a complete picture of an individual wellbeing. Wealth can be used to refine the analysis.

Let’s consider 2 cases:

• High income/consumption and low wealth, i.e. young people, no safety net (exposed to unpredicted events)

• Low income/consumption and high wealth (out of poverty? Illiquid wealth?)
Is wealth important for well-being? An example
A comparative analysis of poverty indicators

Step 1: Defining various indicators of well-being with SHIW data

- **Y** = income
- **C** = consumption
- **YW** = Y augmented by the flow of income that would be obtained if the household converted its wealth into a life annuity (estimated using mortality tables at the age of the reference person) (Weisbrod and Hansen, 1968)
- **YFA** = Y augmented by the flow of income that would be obtained if the household converted only financial assets into a life annuity
- **Other combined indicators of Y and W or Y and AF** (Haveman and Wolff, 2004)

Indicators are then adjusted with various equivalence scales
Is wealth important for well-being? An example
A comparative analysis of poverty indicators

Step 2: Defining a subjective indicator of well-being as benchmark of actual poverty status (*Is your household’s income sufficient for you to get through to the end of the month... very easily, easily, fairly easily, with some difficulty, with difficulty, with great difficulty*)

Step 3: Looking for the indicator maximizing the association with the subjective indicator, i.e. the objective indicator that goes along the subjective feeling of the population.

Poor individuals should be conscious of their own condition and declare «great difficulty» or «difficulty» in getting through the end of the month)
Is wealth important for well-being? An example

**A comparative analysis of poverty indicators**

Association between poverty indicators and perceived bad economic conditions

(share of households declaring perceived bad economic condition in the left tail of distribution)
Wealth is important for well being ... and for policy too

Public authorities have usually information on income and wealth (contrary to consumption) on registries and this info can be subject to control (tax evasion)

In Italy, wealth is included in the indicator for the eligibility of household public services and subsidies (ISEE)

Definition and characteristics of net wealth

What is wealth and why is it important?
Definition and characteristics of net wealth

Wealth components

Net wealth = RA + FA - FL

Net wealth can be negative!

Real assets + Financial assets - Financial liabilities

- **Real assets** (houses, other buildings, land, valuables, business, livestock, **durables**)
- **Financial assets** (Deposits, bonds, shares, private pensions, life-insurances, other fin. assets)
- **Financial liabilities** (Mortgages and other bank debts, debts towards other families or companies)
Definition and characteristics of net wealth

Consumer Durables (CD)

A CD (i.e. a car) is a good that may be used for purpose of consumption repeatedly over a period of 1 year or more (SNA)

OECD guidelines for microdata on wealth suggest to include CD in household wealth (even if SNA excludes CD from wealth)

In LMIC it can be useful to account for CD
The inclusion of CD in the net wealth has an impact on the amount of net wealth (+7-10%). The share is decreasing over time.
The inclusion of CD in the net wealth has an impact on the concentration index too (from 0.61 to 0.59 in 2014)
The impact is decreasing over time (0.06 in 1991 vs 0.02 in 2014)
## Aggregation of variables: Net Wealth

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Description (1)</th>
<th>Questionnaire reference (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>W</strong></td>
<td>Net wealth</td>
<td></td>
</tr>
<tr>
<td><strong>RA</strong></td>
<td>Real assets</td>
<td></td>
</tr>
<tr>
<td>RA1</td>
<td>Property</td>
<td>D1/9<em>D1/2 + D/28</em>D/4 + D/33</td>
</tr>
<tr>
<td>RA3</td>
<td>Valuables (and consumer durables)</td>
<td>E/5(1) + E/5(2) + E/5(3)</td>
</tr>
<tr>
<td><strong>FA</strong></td>
<td>Financial assets</td>
<td></td>
</tr>
<tr>
<td>FA1</td>
<td>Deposits</td>
<td>C/24 (A,B)</td>
</tr>
<tr>
<td>FA2</td>
<td>Government securities</td>
<td>C/24 (C)</td>
</tr>
<tr>
<td>FA3</td>
<td>Other securities</td>
<td>C/24 (D,E,F,G,H)</td>
</tr>
<tr>
<td>FA4</td>
<td>Trade credit or credit due from other households</td>
<td>B2/11(5) + B3/10(5) + C/32(1)</td>
</tr>
<tr>
<td><strong>FL</strong></td>
<td>Financial liabilities (-)</td>
<td></td>
</tr>
<tr>
<td>FL1</td>
<td>Liabilities to banks and financial companies</td>
<td>C/31(a,b,c,d,e) + B2/11(1,2,3) + B3/10(1,2,3)</td>
</tr>
<tr>
<td>FL2</td>
<td>Trade debt</td>
<td>B2/11(4) + B3/10(4)</td>
</tr>
<tr>
<td>FL3</td>
<td>Liabilities to other households</td>
<td>C/32(2)</td>
</tr>
</tbody>
</table>

\[ W = RA + FA - FL \]

(1) A minus sign indicates that the item is included with a negative sign in calculating the aggregate of which it is a component.

(2) The questionnaire reference is coded as follows: section or annex/question (where necessary, line of question).
Wealth evaluation refer to a specific point in time (usually \textit{end of year} or \textit{time of interview})

The end of the year represent a common point in time: it improves the comparability across respondents, surveys and with aggregate statistics, but it may produce less reliable answers (compared to the time of interview) due to memory bias

In the SHIW the stock variables (i.e. net wealth) refer to the \textit{end of the year}, while the flow variables (income and consumption) refer to the \textit{year preceding the interview}

There are some exceptions to the general rule (i.e. houses values: hypothetical questions usually refer to the time of interview)
Collecting data on wealth

Timing of interview and evaluation of assets

It is important to consider:

a) how long it takes the field (in SHIW 4-5 months)
b) the dynamic of asset prices
c) if you can rely on documents (i.e. bank statements)

The bias in the evaluation induced by the time lag between the interview and the reference point can be ex post adjusted (knowing the date of interview and information on asset price dynamic)
### Collecting data on wealth

**Timing of interview and evaluation of assets**

<table>
<thead>
<tr>
<th>Year</th>
<th>Unadj</th>
<th>Adj</th>
<th>(A-U)/U</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>206,913</td>
<td>206,791</td>
<td>-0.10%</td>
</tr>
<tr>
<td>2010</td>
<td>220,478</td>
<td>219,675</td>
<td>-0.40%</td>
</tr>
<tr>
<td>2012</td>
<td>206,359</td>
<td>210,353</td>
<td>1.90%</td>
</tr>
</tbody>
</table>

#### Percentage changes and differences

<table>
<thead>
<tr>
<th>Period</th>
<th>ΔU</th>
<th>ΔA</th>
<th>ΔU-ΔA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2008</td>
<td>6.60%</td>
<td>6.20%</td>
<td>-0.40%</td>
</tr>
<tr>
<td>2012-2010</td>
<td>-6.40%</td>
<td>-4.20%</td>
<td>2.20%</td>
</tr>
</tbody>
</table>

Changes in the estimates of levels and variations
Collecting data on wealth

How the questions should be asked

- Interests/priorities
- Context
- Respondent burden
- How the question is asked in similar surveys (and in the past) (comparability!)
Collecting data on wealth
Real estate: principal residence

(Questions D01 to D22 refer to the household’s principal residence on 31-12-2020)

D01. How long has your family lived in this house?
   - Since ...(Year) ______________

D02. The household’s home on 31-12-2020 was……... ?
   (Interviewer! Read aloud)

   - owned by the household ...... 1 ➔ Quest. D03
   - rented or sublet .................. 2 ➔ Quest. D11
   - under redemption agreement 3 ➔ Quest. D03
   - occupied in usufruct ............ 4
   - occupied free of charge, i.e.
     loaned by friends or relatives or
     given in exchange for services,
     such as caretaking, cleaning and
     so on .................................. 5 ➔ Quest. D15
Collecting data on wealth

Principal residence (and other houses held)

D18. How large (in square meters) is the house/flat? (Consider the usable area)

M² |___|___|___|___|

D19. When was it built?

Year |___|___|___|___|

D20. How many bathrooms are there?

- 1 bathroom ........................................... 1
- 2 or more bathrooms ................................. 2
- none ..................................................... 3

D21. In your opinion, how much is your house/flat worth (unoccupied)? In other words, if you could sell it today how much would you think would be the price of it (including any cellar, garage or attic)? Please consider the value of the entire residence, not just your/your household’s share.

Please give your best estimate.

€ |___|___|___|___|___|___|

- Valuation: current value in the market (general SNA framework)
- Pros and cons of subjective estimates (knowledge of the house vs knowledge of the market prices)
- Similar questions on other residential and non-residential properties
Collecting data on wealth
Principal residence (and other properties held)

Other characteristics of the properties are collected

- Verify the coherence between the amount provided and data on its characteristics: location, size, original acquisition price, imputed rents… (checks, edits)

- Allow item non-response model imputation
Collecting data on wealth

Business wealth

How much do you think your business would be worth if you wished to stop working and sell it? Include any equipment used, stocks and goodwill but exclude the value of buildings and land and any debts.

€ |__|__|,|__|__|__|,|__|__|__|__|

Be careful in considering what is included or excluded!
Collecting data on wealth

Valuables and consumer durables

Can you give an estimate, even a rough one, of the value of all the goods owned by the household at the end of 2020 in the following categories: valuables, means of transport, furniture/furnishings/household appliances? (SHOW CARD)

Think of what you would have received in 2020 if you had sold them.

- **Valuables** (jewellery, ancient or gold coins, works of art, antiques)
  € ___|___|___|___|___|___|___]

- **Cars**
  € ___|___|___|___|___|___|___]

- **Other means of transport** (motorcycles, caravans, motorboats, boats, bicycles)
  € ___|___|___|___|___|___|___]

- **Furniture, furnishings, household appliances, sundry equipment** (furniture, furnishings, rugs and carpets, lamps, small household appliances, washing machine, dishwasher, vacuum cleaner, floor polisher, TV, PC, fridge, cooker, heater, air conditioner, radio, video-recorder, CD player, HI-FI equipment, mobile phone, fax machine, camera, camcorder, etc.)
  € ___|___|___|___|___|___|___]
Collecting data on wealth

Financial assets

Strategy for complex and sensitive questions: **stepwise selection** of respondents meeting criteria + use of **unfolding brackets** technique (Juster, 2006)

Did the household **have** … (list of different forms of saving and investment) at 31-12-2020? (*Code in column code 1=Yes or 2=No*)

(*For each form of saving or investment held at 31-12-2020*). What was the value on 31 December 2020? Answer using one of the **ranges** on this card. (*Write in column the code for the value range*)
Collecting data on wealth

Financial assets

(For each form of saving or investment held at 31-12-2020) Can you tell us the approximate value on 31 December 2020?

(If no value is given) Could you at least tell me whether the value of the household’s savings or investments was closer to …. (lower bound), to …. (upper bound) or about halfway between the two? (Interviewer, enter the code: I=lower, C=middle, S=upper in column)

The SHIW list of financial assets is very detailed (according to the Financial Accounts breakdown): it could be simplified according to LMIC contexts
Collecting data on wealth

Financial liabilities

1. Did you take a mortgage/loan for the purchase or for the renovation of your residence?
   - Yes .................................................................................................1
   - No ................................................................................................. 2

... 

19. What was the amount outstanding of debt on 31/12/2020 (How much would you have had to repay to extinguish the mortgage)? Please consider only the capital to be repaid and not the interest |___|,|_______|,|_______|

Similar question for other debts connected to real estate properties, business wealth, ...
Collecting data on wealth

Financial liabilities

D28. Let us now talk about other loans, such as consumer credit for the purchase of a specific good, usually obtained at the point of sale, or any other loan for consumer spending. Again, do not consider any loans connected with your business.
By the end of 2020 did the household have any…? (N.B. Read aloud one at a time and enter codes) (If “Yes”) How many? For each debt: What was the amount outstanding of debt on 31-12-2020 (How much would you have had to repay to extinguish the mortgage)? Please consider only the capital to be repaid and not the interest

YES NO   Number of debts

c) loans for the purchase of motor vehicles (car, etc.) ..............................1 2 (If “Yes”)   
   
d) loans for the purchase of furniture, household appliances, etc ..............1 2 (If “Yes”)   
   
e) loans for the purchase of non-durable goods (holidays, etc). ...............1 2 (If “Yes”)   
   
f) loans for the purchase of other goods or for daily expenses ...............1 2 (If “Yes”)   
   
g) loans for education (university, master’s) .............................................1 2 (If “Yes”)   
   
D32. On 31-12-2020, did the household have credits or debts with relatives or friends not living with the household? (If “Yes”) What was the amount?
YES NO AMOUNT
- credits ................................................................. 1 2 (If “Yes”) €   
- debts ................................................................. 1 2 (If “Yes”) €
Let’s imagine we measure a variable \( X \) with an error \( e \):

\[ Y = X + e \]

The measure \( Y \) differs from the true value \( X \) due to a random error that we can assume to have the following properties (uncorrelated errors):

\[
\begin{align*}
E(e) &= 0 \\
E(X, e) &= \sigma_{X,e} = 0 \\
E(e, e) &= \sigma^2_e
\end{align*}
\]

In such a case the mean of the measure \( Y \) in unbiased,

\[ E(Y) = E(X) \]

but the variance is inflated by measurement errors.

If we measure twice the same variable \( X \), the reliability index is the correlation between the two measures \( r = \lambda_x \)
Measurement errors

Comparing the answers provided by the same panel households on the size of (the same) residence houses, 2012-2014 (squared meters)

<table>
<thead>
<tr>
<th>Obs</th>
<th>2012</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>2</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>3</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>5</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>7</td>
<td>96</td>
<td>90</td>
</tr>
<tr>
<td>8</td>
<td>120</td>
<td>120</td>
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<tr>
<td>9</td>
<td>90</td>
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<td>10</td>
<td>80</td>
<td>90</td>
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<tr>
<td>11</td>
<td>100</td>
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<td>12</td>
<td>95</td>
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<tr>
<td>13</td>
<td>107</td>
<td>107</td>
</tr>
<tr>
<td>14</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>15</td>
<td>300</td>
<td>200</td>
</tr>
</tbody>
</table>

Reliability index (the correlation between the two measures) = 0.8
Measurement errors

Why does it matter?

• This type of measurement errors inflates standard errors.

• Increased variance due to measurement errors inflates estimates of poverty rates and inequality indexes.

• Determines attenuation in correlation and regression analysis: in presence of uncorrelated measurement errors on X, the correlation between two variables X and Z is $r = \lambda_X \rho$, i.e. the coefficient is attenuated according to the reliability index of X. If also the variable Z is measured with error: $r = \lambda_X \lambda_Y \rho$. 
Measurement errors

Reliability for time-varying variables: the Heise index

Defined $X_1$, $X_2$ e $X_3$ the true values of the same variable $X$ at the times 1, 2 e 3 respectively and $Y_1$, $Y_2$ e $Y_3$ the corresponding observed values:

$$Y_t = X_t + e_t \quad \forall t,$$

where for each error term $e_t$ is assumed zero mean, constant variance and no correlation among errors and among errors and true variables $X_t$.

The true values $X_1$, $X_2$ e $X_3$ are assumed to be pairwise related through independent, first-order autoregressive models, which do not need to be stationary:

$$X_1 = \delta_1; \quad X_2 = \beta_2 X_1 + \delta_2; \quad X_3 = \beta_3 X_2 + \delta_3$$

where $\beta_{t+1,t}$ is the autoregressive coefficient and $\delta_t$ the innovation term of the process; innovations are uncorrelated pairwise.

Under the above hypotheses, assuming a constant reliability across the measures:

$$\lambda^2 = r_{12} r_{23} / r_{13}$$
Measurement errors

Reliability for time-varying variables: the Heise index

- Total net income: 0.82
- Income from capital: 0.72
- Income from self-employment: 0.74
- Pensions: 0.94
- Wages and salaries: 0.95
- Fringe benefit: 0.41
- Net wealth: 0.82
- Real estate: 0.86
- Dwelling of residence (owner only): 0.84
- Family-owned businesses: 0.56
- Valuables: 0.47
- Financial wealth: 0.68
- Deposits: 0.38
- Government securities: 0.74
- Shares and other securities: 0.64
- Debts: 0.54
- Stock of durables: 0.43
- Means of transports: 0.89
- Furniture, ...: 0.23
## Collecting data on wealth

### Consumer durables: a more detailed section

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Does your household own any item?</th>
<th>How much do you think could obtain if you sell the … you presently own?</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1. Motor Car</td>
<td>Yes ……1  No ……2 ► D2</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D2. Motorbike</td>
<td>Yes ……1  No ……2 ► D3</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D3. Bike</td>
<td>Yes ……1  No ……2 ► D4</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D4. Refrigerator</td>
<td>Yes ……1  No ……2 ► D5</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D5. Electrical/gas stove</td>
<td>Yes ……1  No ……2 ► D6</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D6. Washing machine</td>
<td>Yes ……1  No ……2 ► D7</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D7. Generator</td>
<td>Yes ……1  No ……2 ► D8</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D8. Television</td>
<td>Yes ……1  No ……2 ► D9</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D9. TV decoder (e.g. DSTV GoTV)</td>
<td>Yes ……1  No ……2 ► D10</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D10 Radio</td>
<td>Yes ……1  No ……2 ► D11</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D11. Computer/laptop</td>
<td>Yes ……1  No ……2 ► D12</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>D12. Cellphones (smartphone and mobile phone)</td>
<td>Yes ……1  No ……2 ► D13</td>
<td>[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]</td>
</tr>
</tbody>
</table>

When did you acquire this ..[DURABLE GOOD]..? | What was the initial purchase value of ...[DURABLE GOOD]..?
### Collecting data on wealth

**Agricultural business: a more detailed section**

**A1.** How much do you think your agricultural business would be worth if you wished to stop working and sell it? Include any equipment used, stocks and goodwill but exclude the value of buildings, land, **livestock** and any debts if contracted.

<table>
<thead>
<tr>
<th>A4. Does this household or any of its members own …</th>
<th>How many … does the household own today?</th>
<th>How much do you think could obtain if you sell all the … you own?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4. Cattle</td>
<td>Yes ……1 No ……2 ► A5</td>
<td>___________</td>
</tr>
<tr>
<td>A5. Sheep</td>
<td>Yes ……1 No ……2 ► A6</td>
<td>___________</td>
</tr>
<tr>
<td>A6. Pigs</td>
<td>Yes ……1 No ……2 ► A7</td>
<td>___________</td>
</tr>
<tr>
<td>A7. Goats</td>
<td>Yes ……1 No ……2 ► A8</td>
<td>___________</td>
</tr>
<tr>
<td>A8. Donkeys/mules</td>
<td>Yes ……1 No ……2 ► A9</td>
<td>___________</td>
</tr>
<tr>
<td>A9. Horses</td>
<td>Yes ……1 No ……2 ► A10</td>
<td>___________</td>
</tr>
<tr>
<td>A10. Poultry</td>
<td>Yes ……1 No ……2 ► A11</td>
<td>___________</td>
</tr>
<tr>
<td>A11. Ostrich</td>
<td>Yes ……1 No ……2 ► A12</td>
<td>___________</td>
</tr>
<tr>
<td>A12. Other livestock</td>
<td>Yes ……1 No ……2 ► End</td>
<td>___________</td>
</tr>
</tbody>
</table>
Some results: net wealth by age, 1991-2016
(index number, average=100)

In the past 25 years strong changes occurred in the wealth distribution by age. Young households are poorer while older households are richer than in the past.
Some results: assets and liabilities by age, 2016

Houses and shares grow with age up to 65 years old, then decrease.

Treasury bills grow with age.

Debts decrease with age.
Taking the wealthy into account

Wealth is usually much more concentrated than income (in Italy the Gini index is 0.63 vs 0.35). In particular financial assets (0.75)

This is one of the main reasons why survey wealth data usually underestimate National Accounts aggregates.

A very tiny share of population may have a significant share of the total wealth (in Italy the richest 10 persons hold more net wealth than the 3 millions poorest individuals). This extreme cases would even be a problem (outliers) in the sample!

Sometimes can be useful oversample the wealthy (i.e. higher sampling fractions in strata including rich households)
Wealth distribution is usually analyzed at the household level (assuming an equal intra-household distribution)

The intra-household distribution of wealth is important (Deere e Doss, 2006)

Recent estimates for SHIW (D’Alessio, 2018)

- Properties: (every wave collected data on the owners - assumed equal shares)
- Financial assets: data on the intra-household distribution of financial assets collected in a special 2013 module
- Financial liabilities: imputed (where possible) according to the related asset
- Residual parts (i.e. valuables, other debts): equal shares among adults

- WB MEXA project (T. Kilic, H. Moylan, 2016) and Koolwal et al. (2022)
Individual wealth

Gender wealth gap

Properties held by men and women, 1986 - 2014

(Index number; Total = 100)

- M/F Gap 70% in 1986 – 28% in 2010 – 36% in 2014
### Gender wealth gap

#### Intrahousehold wealth - Men vs women wealth, 1991-2014

*(Percentages of couples)*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Totale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. W Women &gt; W Men</td>
<td>13.2</td>
<td>13.3</td>
<td>19.9</td>
<td>22.2</td>
</tr>
<tr>
<td>b. W Women = W Men</td>
<td>53.6</td>
<td>54.1</td>
<td>36.7</td>
<td>33.6</td>
</tr>
<tr>
<td>c. W Women &lt; W Men</td>
<td>33.3</td>
<td>32.6</td>
<td>43.4</td>
<td>44.2</td>
</tr>
<tr>
<td>(c – a)</td>
<td>20.1</td>
<td>19.3</td>
<td>23.5</td>
<td>22.0</td>
</tr>
</tbody>
</table>

If you don’t consider intra-household gaps, you may underestimate wealth inequality.
Wealth variations

The origin of wealth: where does wealth come from?

\[ \Delta W_t = S_t + CT_t + CG_t + OVV_t \]

- **Savings** \( S = Y - C \)
- **Capital transfers** (CT): NA consider transfers involving non-resident households (or other sectors). At the micro level, CT are an important source of wealth variation (gifts and bequests between households)
- **Capital Gains** (CG): variations of wealth deriving from changes in the prices of its items
- **Other Volume Variations** (OVV) include catastrophic losses due to earthquakes or floods, etc … At the micro level, OVV may assume also other forms (Lotteries and gambling ...)

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Difficult to obtain reliable estimate of Savings $S = Y - C$ (measurement errors on both sides)

Difficult to define *good* direct questions for saving (some “payments” include savings, i.e. instalment mortgages)

SHIW collects data on transfers (donations and inheritances). As the phenomenon is quite stable, the survey collects very simple information every wave and submits special modules every 10-15 years
Collecting data on wealth variations

Inheritances and gifts

Stable questions about the origin of the house of residence and other real estate (2/3 of net wealth)

How did the household acquire ownership of the dwelling?
- purchased from private individual 1
- purchased from private firm/organization (e.g. construction company) 2
- purchased from public-sector firm/agency (e.g. pension fund) 3
- inherited 4
- part purchased/part inherited 5
- received as a gift 6
- built by household or as part of a cooperative 7
- other 8

In what year did the household acquire ownership of the dwelling?
- Year |___|___|___|___|
Received houses (inheritances and gifts), 1977-2020

(share of net wealth)

- We can simply sum up the values of all the inherited houses that are already owned by the households.
- But what about the houses that have been sold after the inheritance? Is it possible to adjust our estimates?
- If we hypothesize that the probability of selling a house received one year ago is \( p \) we can inflate the values of the houses received \( V_1 \) applying the inverse of the probability of \( (1-p) \), i.e. \( V_1 / (1-p) \).
- An what about the houses that I observe in the sample inherited 2 years ago? If I suppose that the probability \( p \) remains constant across time, I can estimate \( V_2 / (1-p)^2 \).
- And so on …
The household A and B inherited the same amount (say 100,000 euros) but A inherited it ten years ago while B inherited it yesterday. Are these two transfers equivalent? Old debate! (Kotlikoff and Summers (1981). If not, how can I take this difference into account?

☐ The present value of 100,000 received ten years ago can be obtained by capitalizing the transfers received in the past through a yearly rate of return (r) (usually set around 1%-2%)
Received houses (inheritances and gifts), 1977-2020

(share of net wealth)

\[
AC_{t} = \sum_{k} V_{k} (1 + r)^{(t-k)} / (1 - p)^{(t-k)}
\]

\[
AI_{t} = \sum_{k} V_{k} / (1 - p)^{(t-k)}
\]

\[
UL_{t} = \sum_{k} V_{k}
\]

\[V_{k} = \text{Value of houses received in the year } k; \ p = \text{probability of sale; } r = \text{rate of return}\]

Worth noting: capital gains/losses are entirely attributed to inheritances/gifts
Collecting data on wealth variations

Special module on inheritances and gifts (2002)

In the 2002 and in 2016 surveys, household heads and their spouses/cohabitants were asked to indicate both the value of the Capital Transfers (CT) (bequests and gifts) made and received during the respondent’s lifetime and those that they expected to make or receive in the future.

CT are mostly bequests (inconsistencies between the estimates of CT received and given in the sample)

Past CT: memory bias, evaluation issues

Future CT: expectations, plans, hopes
Think of all the transfers of assets that you (or your spouse/cohabitant) have received as a bequest or gift and answer the following questions:

<table>
<thead>
<tr>
<th>Bequest</th>
<th>Gift</th>
<th>To the head of household or his/her spouse/cohabitant</th>
<th>From parents (or grandparents) or other persons?</th>
<th>Year of the transfer</th>
<th>Value of the transfer in the year it was made (€)</th>
<th>or Value of the transfer in …… (year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>HH 1 SP 2</td>
<td>PA-GR 1</td>
<td>1</td>
<td>‼️</td>
<td>‼️</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>HH 1 SP 2</td>
<td>PA-GR 2</td>
<td>2</td>
<td>‼️</td>
<td>‼️</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>HH 1 SP 2</td>
<td>OTHER 2</td>
<td>1</td>
<td>‼️</td>
<td>‼️</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>HH 1 SP 2</td>
<td>OTHER 2</td>
<td>2</td>
<td>‼️</td>
<td>‼️</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>HH 1 SP 2</td>
<td>OTHER 2</td>
<td>1</td>
<td>‼️</td>
<td>‼️</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>HH 1 SP 2</td>
<td>OTHER 2</td>
<td>2</td>
<td>‼️</td>
<td>‼️</td>
</tr>
</tbody>
</table>
Special 2002 module – Given transfers

3. Have you (or your spouse/cohabitant) ever given or bequeathed large sums of money, houses, securities or other assets to your children, grandchildren or other persons?

- Yes ............................................................... 1
- No.............................................................. 2 ➔ Quest. 5

4. Think of all the transfers of assets that you (or your spouse/cohabitant) have made and answer the following questions

<table>
<thead>
<tr>
<th>Bequest Gift</th>
<th>By the head of household or his/her spouse/cohabitant</th>
<th>To children (or grandchildren) or other persons?</th>
<th>Year of transfer</th>
<th>Value of the transfer in the year it was made</th>
<th>or Value of the transfer in …… (year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2</td>
<td>HH 1 SP 2</td>
<td>CH-GC 1 OTHER 2</td>
<td></td>
<td>€ ........................................... ➔</td>
<td>..................</td>
</tr>
<tr>
<td>1 2</td>
<td>HH 1 SP 2</td>
<td>CH-GC 1 OTHER 2</td>
<td></td>
<td>€ ........................................... ➔</td>
<td>..................</td>
</tr>
<tr>
<td>1 2</td>
<td>HH 1 SP 2</td>
<td>CH-GC 1 OTHER 2</td>
<td></td>
<td>€ ........................................... ➔</td>
<td>..................</td>
</tr>
<tr>
<td>1 2</td>
<td>HH 1 SP 2</td>
<td>CH-GC 1 OTHER 2</td>
<td></td>
<td>€ ........................................... ➔</td>
<td>..................</td>
</tr>
</tbody>
</table>
Wealth variations

Savings, capital gains/losses and changes in net wealth in Italy

(percentage of net wealth; constant price)

\[ \Delta W = S + CG_r + CG_f + VV \]
Capital Gains and wealth variations: an example

Unrealistic example. It’s difficult to choose always the best investment … transaction costs … but …

→ CGs may have great impact on household wealth
Inequality and price changes of houses and shares
Take home messages

- Wealth is important to complement information on income and consumption ... also for poverty analysis

- Collect good quality data on wealth: evaluation of the factors on which to concentrate, how the questions are asked, ... Whenever possible, refer to international standards (improves comparability!)

- Tools for evaluating the questions: measurement errors may seriously affect estimates

- Wealth distribution is highly skewed – (consider oversampling, ...)

- Data on transfers (i.e. inheritances, gifts) and capital gains are also important to understand how household wealth changes over time
Thanks for your attention
Main references

- Banca d'Italia, *Survey of Household Income and Wealth* (internet site)
- D’Alessio G., Gender wealth gap in Italy, Questioni di Economia e Finanza, n. 433, Banca d’Italia, 2018.
- HFCN, *Household Finance and Consumption Survey* (internet site)
- OECD, *Guidelines for micro statistics on household wealth*, 2013