

Measuring households' exposure to economic shocks: An analysis at the intersection of income, financial wealth, and debt

David Loschiavo Antonietta di Salvatore Federico Tullio

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- Financial wellbeing is a state wherein a person can fully meet current and ongoing financial obligations
- Policy relevance: Consequences in the aggregate and financial stability implications (Deaton, 1991; Mian et al., 2017, 2021)
- Financial wellbeing is multidimensional
→ Subjective and objective measures

- Focus on objective measures, at the household level
- Different measures of financial fragility (i.e. poverty dimensions):
→ income, asset, liquidity poverty
- ① Provide a descriptive analysis of poverty status of Italian households
 - Trend in the last decades
 - Characteristics correlating to fragility
- ② Evaluate the extent of persistence of households' financial fragility over time:
 - income poverty
(traditionally the main focus on studies of poverty persistence)
 - asset and liquidity poverty

- Asset based measurement of poverty:
Brandolini et al. (2010); Loschiavo and Graziano (2022)
- Dynamic analysis of low income/earnings and material deprivation:
Cappellari and Jenkins (2004); Biewen (2009); Devicienti and Poggi (2011)
- In Italy:
Giarda and Moroni (2018); Fabrizi and Mussida (2020); Mussida and Sciulli (2022)

- 1 Data
- 2 Descriptive analysis
- 3 Analysis of fragility persistence

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Data:

- The Survey on Household Income and Wealth (SHIW) is conducted by the Bank of Italy since 1965
- ~ 8,000 households, 350 Italian municipalities
- Panel component (~ half of the sample)
- Last ten waves covering the period 2000 - 2020

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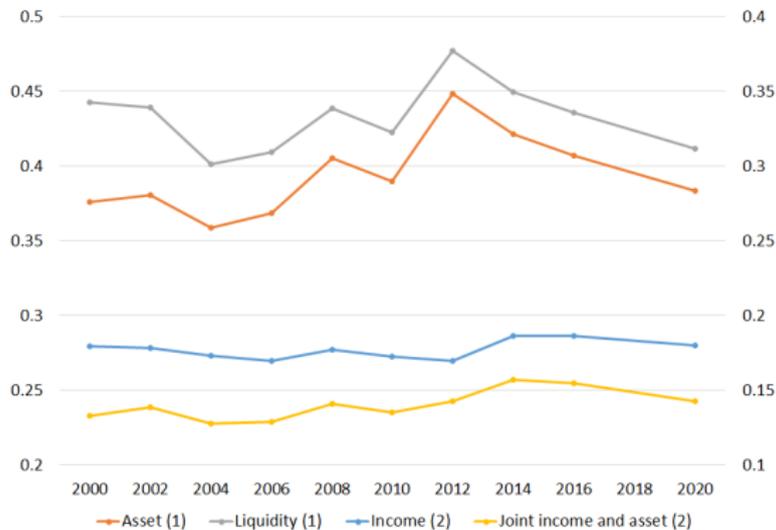
Poverty indicators (at the household level) for different fragility dimensions:

- **Income:** At risk of poverty (ARP)
- **Asset/Liquidity:** equivalized financial (liquid) assets less than $\frac{1}{4}$ ARP threshold
- **Joint income and asset**

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Poverty trends (1)

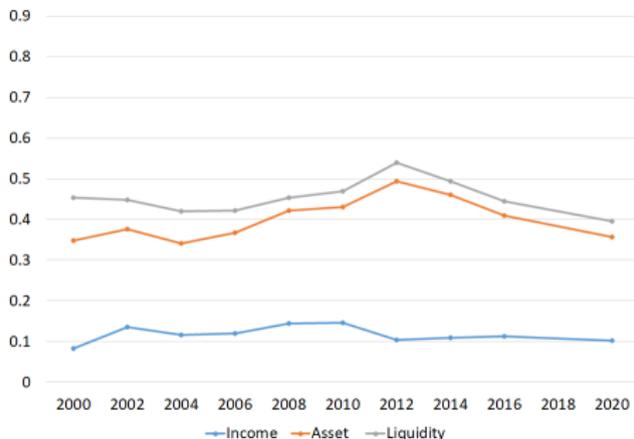
Figure: Poverty rates (relative frequencies)



Notes: (1) Left scale. (2) Right scale. Weighted estimates.

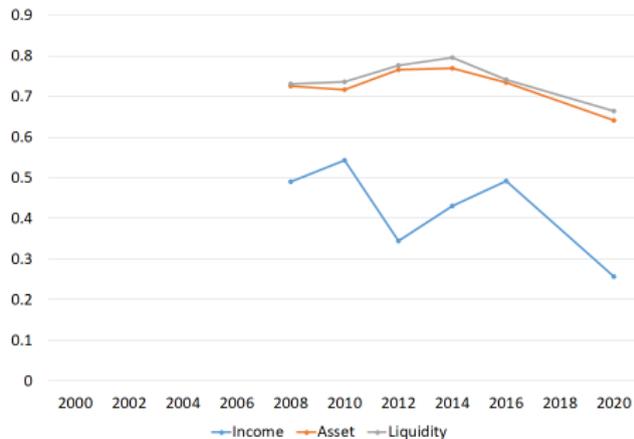
Poverty trends (2)

(a) Indebted households



Notes: Weighted estimates.

(b) Vulnerable households



Descriptive evidence: Pooled probit - APEs

Poverty indicator:	Income	Asset	Liquidity	Joint income and asset
Income group				
Second		-0.199*** (0.006)	-0.195*** (0.006)	
Third		-0.311*** (0.007)	-0.297*** (0.007)	
Fourth		-0.418*** (0.007)	-0.391*** (0.007)	
Fifth		-0.533*** (0.008)	-0.493*** (0.008)	
Indebted household	-0.020*** (0.003)	0.060*** (0.005)	0.062*** (0.005)	-0.017*** (0.003)
Occupation (head)				
Independent worker	0.054*** (0.004)	-0.027*** (0.006)	-0.030*** (0.006)	0.027*** (0.004)
Not employed	0.115*** (0.004)	-0.021*** (0.006)	-0.003 (0.006)	0.093*** (0.004)
No. of income earners	-0.128*** (0.002)	0.017*** (0.003)	0.011*** (0.003)	-0.096*** (0.002)
Other controls	Yes	Yes	Yes	Yes

Notes: *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

No. of observations: 77,686. Unweighted regressions at the household level. Additional control variables: real assets group; age group, gender and educational attainment of the head; no. of household members; municipality size and time indicators. Clustered standard errors in parentheses

- 1 Data
- 2 Descriptive analysis
- 3 Analysis of fragility persistence

- Dynamic correlated random-effects probit model employed in the analysis

$$y_{it} = 1\{\beta' \mathbf{x}_{it} + \rho y_{i,t-1} + c_i + u_{it} > 0\} \quad (1)$$

- Wooldridge (2005) specification (W):

$$c_i = \alpha_0 + \alpha_1 y_{i0} + \alpha_2' \mathbf{z}_i + a_i, \quad a_i \sim N(0, \sigma_u) \quad (2)$$

- Accounting for the unbalancedness of the panel (Albarrant et al., 2019, ACC):

$$c_{ij} = \alpha_{0j} + \alpha_{1j} y_{i0} + \alpha_{2j}' \mathbf{z}_i + a_{ij}, \quad a_{ij} \sim N(0, \sigma_{uj}) \quad (3)$$

with $j = 1, \dots, J$ subsamples.

- Focus on households with at least five interviews starting from 2000

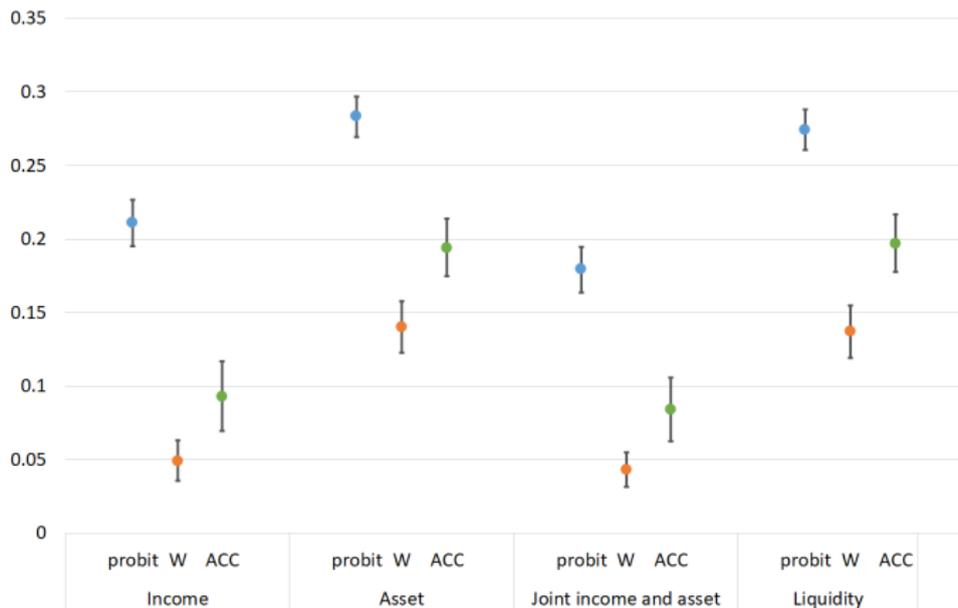
Table: Persistence rates among different subsamples

	Remaining asset poor	Remaining income poor
Number of waves in which households participated		
2	0.668	0.631
3	0.665	0.628
4	0.709	0.666
5 or more	0.668	0.652
Total	0.671	0.643

▶ wave-to-wave rates

Results (1)

Figure: Dynamic random-effects and probit models: estimated APEs of lagged poverty status and 95% CIs



Notes: No. of observation: 22,678. Unweighted regressions at the household level. Additional control variables include the set of covariates employed in the descriptive analysis, the time-averages of the number of household members and income earners, and the income group in the previous wave.

Table: Dynamic random-effects and probit models: APEs

Poverty indicator:	Income			Asset		
	probit (1)	Wooldridge (2)	ACC (3)	probit (4)	Wooldridge (5)	ACC (6)
Lagged dependent variable	0.211*** (0.008)	0.049*** (0.007)	0.093*** (0.012)	0.283*** (0.007)	0.140*** (0.009)	0.194*** (0.010)
Indebted household	-0.014*** (0.005)	-0.011** (0.005)	-0.015*** (0.007)	0.052*** (0.007)	0.043*** (0.007)	0.045*** (0.009)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes

Poverty indicator:	Joint income and asset			Liquidity		
	probit (7)	Wooldridge (8)	ACC (9)	probit (10)	Wooldridge (11)	ACC (12)
Lagged dependent variable	0.179*** (0.008)	0.043*** (0.006)	0.084*** (0.011)	0.274*** (0.007)	0.137*** (0.009)	0.197*** (0.010)
Indebted household	-0.008* (0.004)	-0.005 (0.005)	-0.005 (0.007)	0.047*** (0.008)	0.038*** (0.008)	0.045*** (0.009)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: No. of observation: 22,678. Unweighted regressions at the household level. Additional control variables include the set of covariates employed in the descriptive analysis, the time-averages of the number of household members and income earners, and the income group in the previous wave. ***, **, and * denote significance at the 1, 5, and 10 percent level, respectively.

- Likelihood of being asset- or liquidity-poor is higher among indebted households
- Indebted households are less likely to be income poor or jointly income and asset poor
- Both household heterogeneity and genuine state dependence are important in explaining poverty persistence
- Financial poverty represents the most persistent state

Thank you

federico.tullio@bancaditalia.it

References I

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Descriptive evidence: Pooled probit - APEs extended

Poverty indicator:	Income	Asset	Liquidity	Joint income and asset
Real Asset group				
Second	-0.139*** (0.005)	-0.105*** (0.006)	-0.105*** (0.007)	-0.126*** (0.008)
Third	-0.221*** (0.005)	-0.111*** (0.006)	-0.114*** (0.006)	-0.188*** (0.005)
Fourth	-0.257*** (0.005)	-0.122*** (0.006)	-0.116*** (0.007)	-0.217*** (0.005)
Fifth	-0.285*** (0.005)	-0.153*** (0.007)	-0.143*** (0.008)	-0.243*** (0.005)
Age group				
31-40	-0.080*** (0.008)	-0.056*** (0.009)	-0.049*** (0.009)	-0.071*** (0.008)
41-50	-0.074*** (0.008)	-0.067*** (0.009)	-0.052*** (0.009)	-0.071*** (0.008)
51-60	-0.112*** (0.008)	-0.074*** (0.009)	-0.064*** (0.009)	-0.108*** (0.008)
more than 60	-0.183*** (0.008)	-0.118*** (0.01)	-0.115*** (0.01)	-0.172*** (0.008)
(...)				

Notes: *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

No. of observations: 77,686. Unweighted regressions at the household level. Additional control variables: municipality size and time indicators. Clustered standard errors in parentheses

Descriptive evidence: Pooled probit - APEs extended (2)

Poverty indicator:	Income	Asset	Liquidity	Joint income and asset
(...)				
Female	0.038*** (0.003)	0.016*** (0.004)	0.011** (0.004)	0.034*** (0.003)
Education				
Primary	-0.040*** (0.006)	-0.022** (0.009)	-0.023** (0.01)	-0.037*** (0.006)
Lower secondary	-0.088*** (0.007)	-0.058*** (0.01)	-0.053*** (0.01)	-0.080*** (0.007)
Upper secondary	-0.139*** (0.007)	-0.114*** (0.01)	-0.097*** (0.011)	-0.125*** (0.007)
University degree	-0.176*** (0.007)	-0.161*** (0.011)	-0.148*** (0.012)	-0.156*** (0.007)
No. of hh members	0.080*** (0.001)	0.081*** (0.002)	0.090*** (0.002)	0.065*** (0.001)

Notes: **, and *** denote significance at the 10, 5, and 1 percent level, respectively.
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Unbalancedness

	Wave									
	2000	2002	2004	2006	2008	2010	2012	2014	2016	2020
Household A	X	X	X	X	X					
Household B	X	X	X	X	X					
Household C		X	X	X	X	X				
Household D		X	X	X	X	X				
Household E				X	X	X	X			
(...)										

▶ Back

Sample selection (2)

Table: Raw wave-to-wave transition rates between asset and income-poor and non-poor states

Year	Remaining asset poor		Remaining income poor	
	(1)	(2)	(1)	(2)
2002	0.633	0.596	0.588	0.617
2004	0.614	0.621	0.615	0.632
2006	0.675	0.677	0.610	0.643
2008	0.692	0.666	0.639	0.640
2010	0.706	0.682	0.680	0.684
2012	0.687	0.690	0.605	0.609
2014	0.754	0.723	0.744	0.749
2016	0.682	0.685	0.684	0.698
2020	0.617	0.623	0.59	0.625
average	0.673	0.663	0.639	0.655
average difference		-0.011		0.016

Notes: (1) Weighted panel sample. (2) Unweighted panel sample of households interviewed at least five times starting from 2000. Asset poverty line: 3-month ARP threshold.