Poverty dynamics and financial inclusion in Italy

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Contribution

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Financial inclusion across Europe (Global Findex)



Incidence of accounts (adults 15+)



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Data

- Bank of Italy's Survey on Household Income and Wealth (SHIW)
- Survey conducted every other year on a representative sample of the Italian resident population
- Rotating panel with about 8,000 households per wave
- Detailed information on household demographics, labor supply, consumption, income, and relationships with the banking sector
- Period of analysis: 2002-2014

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Financial inclusion across Italian regions (SHIW)

Incidence of families with a bank account (including Post Offices accounts)



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Poverty (income-based) across Italian regions (SHIW)

Incidence of families with an income lower than 60% of the median equivalised disposable income



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Poverty (consumption-based) across Italian regions (SHIW)

Incidence of families with consumption expenditure lower than 60% of the median equivalised consumption expenditure



Transition matrices

	not p	boor _t	рос	or _t
not $poor_{t-1}$	90	.02	9.9	98
			entry	rate
$poor_{t-1}$	35.	.57	64.	43
	exit	rate	pers	rate
Total	79	.00	21.	00
		not p	boor _t	poor _t
- not po	or_{t-1}	93	.05	6.95
				entry rate
poor _{t-}	1	45	.75	54.25
		exit	rate	pers rate
Total		86	.12	13.88
	not poor $_{t-1}$ poor $_{t-1}$ Total on not poor $_{t-1}$ poor $_{t-1}$	not poor _{t-1} not poor _{t-1} 90 . poor _{t-1} 35 . Total 27 . not poor _{t-1} 79 . not poor _{t-1} poor _{t-1} Total	not poor _t not poor _t poor _{t-1} $\overline{90.02}$ poor _{t-1} 35.57 <i>exit rate</i> Total 79.00 not poor _{t-1} $\overline{93.00}$ poor _{t-1} 45.0 poor _{t-1} 45.0 Total $\overline{86.0}$	not poor _t poor not poor _t poor poor _{t-1} 90.02 9.9 <i>entry</i> poor _{t-1} 35.57 64. <i>exit rate pers</i> 79.00 21. not poor _{t-1} not poor _t 93.05 poor _{t-1} 45.75 <i>exit rate</i> Total 86.12

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		not p	oor _t	poor _t	
Income-	no deposits _t	69.	17	30.83	_
based					
measure	deposits _t	80.	29	19.71	
	Total	79.	31	20.69	_
			not p	oor _t	poor _t
Consumption	- no depo	osits _t	52.	91	47.09
based					
measure	deposit	s _t	88.	78	11.22
	Total		85.	62	14.38

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Conditional entry and persistence rates

 Δ Persistence rate= $Pr(poor_t = 1 | poor_{t-1} = 1, deposit_t = 1) Pr(poor_t = 1 | poor_{t-1} = 1, deposit_t = 0)$

> income-based 0.008 consumption-based -0.255

Δ Entry rate=

 $Pr(poor_t = 1 | poor_{t-1} = 0, deposit_t = 1) Pr(poor_t = 1 | poor_{t-1} = 0, deposit_t = 0)$

> income-based -0.070 consumption-based -0.176

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Baseline specification

The probability that individual i is poor at time t is expressed as

$$p_{it} = \mathbb{I}\{p_{i,t-1}\gamma + b_{it}\varphi + \mathbf{x}'_{it}\beta + \mathbf{z}'_{i}\theta + \alpha_{i} + \varepsilon_{it} > 0\} \quad t = 1, \dots, T,$$

- $\mathbb{I}{a}$: if a is true, $p_{it} = 1$, zero otherwise
- γ : state dependence parameter (first-order Markov model assumed)
- b_{it} : financial inclusion \rightarrow deposits
- Explanatory variables: **x**_{it} time-varying; **z**_i time-constant
- α_i : individual permanent unobserved heterogeneity.
- ε_{it}: iid zero-mean, unit variance error, assumed independent of the model's covariates.

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Dealing with unobserved heterogeneity

... in a nonlinear dynamic model:

- Random vs fixed effects: fixed-effects methods for short panels
 (*T* << n) based on sufficient statistics for α_is will not allow us to
 compute transition matrices. Individual dummies will cause
 inconsistency due to the incidental parameters problem.
- Random-effects
 - α_i may be correlated with b_{it}. For now we assume that such correlation is captured by z_i.
 - Initial conditions problem: we follow Wooldridge (2005) and specify

$$\alpha_i = \lambda p_{i0} + \mathbf{z}'_i \boldsymbol{\theta} + \alpha^*_i \quad \alpha_i \sim \mathcal{N}(0, \sigma^2_\alpha)$$

With $\varepsilon_{it} \sim N(0, 1)$ we estimate a dynamic random-effects probit model.

Other identification issues

Consistent estimation of γ and φ may still be threatened by:

- Reverse causality/omitted variable bias: being poor may affect the choice to open/hold accounts, $p_{it} \rightarrow b_{it}$
- *Feedback effects*: possible non-negligible effect of the past poverty history on the present value of financial inclusion, $p_{it-1} \rightarrow b_{it}$

Solution: *bivariate dynamic random-effects probit model* for the probability of being poor and the probability of having bank accounts, where the second equation includes

- suitable exclusion restrictions
- p_{it-1} to capture the feedback effect
- ... in progress!!!

Control variables

- Individual-level variables:
 - Gender
 - Age and age²
 - Educational attainment
 - Civil status
 - Employment status
- Household-level variables:
 - Household size
 - Children (0-5 yrs, 6-11 yrs, 12-17 yrs)
 - Home ownership

- Regional-level variables:
 - GDP
 - Population
 - Employment rate (20-64 yrs)

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- Time dummies
- NUTS 1 dummies (macroregions)
- Municipality size (4 classes)

Preliminary results: baseline specification

	Income	e-based	Consumpt	ion-based
p_{t-1}	0.660***	0.465***	0.578***	0.625***
	[0.122]	[0.122]	[0.046]	[0.085]
Deposits	-0.092**	-0.170***	-0.484***	-0.458***
	[0.041]	[0.477]	[0.047]	[0.058]
<i>p</i> _{t-1} * <i>Deposits</i>		0.200*** [0.067]		-0.058 [0.089]
n	20,913	20,913	20,913	20,913
nT	52,676	52,676	52,676	52,676
.				

Standard errors (in square brackets) are cluster robust using the household id.

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Estimated transitions: income-based measure

		not poor _t	poor _t
-		0.070	0.107
lotal	not poor $_{t-1}$	0.873	0.127
	$poor_{t-1}$	0.766	0.234
Deposits	not $poor_{t-1}$	0.875	0.125
	$poor_{t-1}$	0.766	0.234
No deposits	not poor $_{t-1}$	0.851	0.149
	$poor_{t-1}$	0.772	0.228

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Estimated transitions: consumption-based measure

		not poor _t	poor _t
lotal	not poor $_{t-1}$	0.904	0.096
	$poor_{t-1}$	0.819	0.181
Denesite		0.014	0.006
Deposits	not poor _{t-1}	0.914	0.080
	$poor_{t-1}$	0.828	0.172
No deposits	not $poor_{t-1}$	0.848	0.152
	$poor_{t-1}$	0.713	0.287

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Estimated variations in entry and persistence rates

	Income-based	Consumption-based
Δ Entry rate	-0.0236***	-0.0660***
	[0.0064]	[0.0064]
Δ Persistence rate	0.0059	-0.1147***
	[0.0103]	[0.0105]

Standard errors (in square brackets) are cluster robust using the household id and obtained by Delta Method.

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A candidate exclusion restriction

• Number of branches per 10,000 inhab.

	Deposits	Deposits
	Income-based	Consumption-based
p_{t-1}	-0.069 [0.051]	-0.076 [0.048]
$Deposits_{t-1}$	0.826*** [0.045]	0.901*** [0.049]
Branches	0.012*** [0.003]	0.011*** [0.003]
n nT	20,913 52,676	20,913

Standard errors (in square brackets) are cluster robust using the household id.

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