Poverty Dynamics and Financial Inclusion in Italy

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Motivation

- Financial inclusion, access to financial services (payments, savings, credit), from formal financial intermediaries at a cost affordable to the customer and sustainable for the provider (Carbó et al., 2005; CGAP, 2011) is at the center of the policy debate in many developing and developed countries as a way to fight social exclusion and poverty (FSA, 2000; UN, 2006; CGD, 2016)

- Cross-country studies indicate that financial development improves living standards of the poorest in developing countries and reduces the share of population under the poverty line (Beck et al., 2007a, 2007b) and that this effect is due to greater availability of payment and savings facilities rather than to greater acces to credit (Guillaumont Jeanneney and Kpodar, 2011).

Motivation

- Microeconomic studies provide mixed results on whether (micro)finance is poverty-reducing (Armendáriz and Morduch, 2010)

- Few studies on finance and poverty in developed countries (Leyshon and Thrift, 1995; Dymski, 2003)

- Does access to banking financial services affect poverty dynamics (entry and exit) of Italian households?

Financial inclusion and poverty dynamics (entry/exit)

Positive side

1. Access to payment services helps individuals to be integrated in market economies and to increase earning opportunities

2. Access to saving and insurance services helps individuals to smooth income and consumption shocks

3. Access to credit services helps individuals to accumulate human capital, invest in self-employment enterprises and search for a job

4. Access to formal services helps individuals not to borrow from moneylenders at usury rates

Financial inclusion and poverty dynamics (entry/exit)

Negative side

1. Relationships with the banks may be the additional financial costs for people at the poverty threshold and accelerate entry into poverty

2. Formal financial products may not be sufficiently flexible in order to overcome difficult economic times

Empirical issues

1. Reverse causality and omitted variable biases

2. Self exclusion

# Measuring financial inclusion

1. Aggregate indicators

   - bank structures (branches and/or ATM) over population
   - total loan and/or deposit accounts over population
   - average costs of opening and maintaning accounts
   - documentation requirements

2. Micro indicators (survey-based)
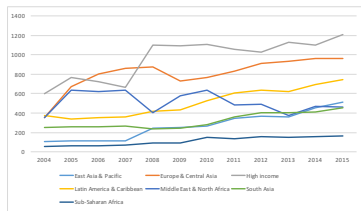
   - availability of a bank account

# Branch and deposit penetration across across regions (Beck, 2016)
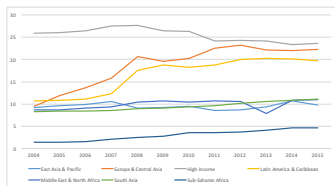
Source: Financial Access Survey, IMF and calculation by author. The graph shows the median in branches of commercial banks per 100,000 adults across the six World Bank regions and the group of high-income countries.

Source: Financial Access Survey, IMF and calculation by author. The graph shows the median in deposit accounts of commercial banks per 1,000 adults across the six World Bank regions and the group of high-income countries.

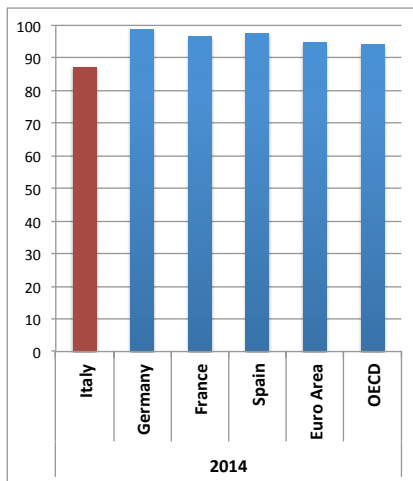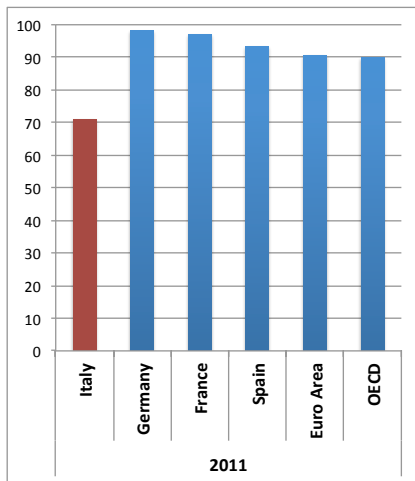# Incidence of deposit accounts across regions (Beck, 2016)
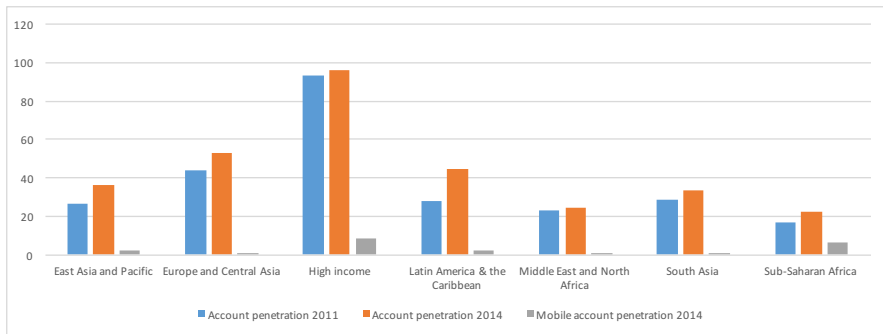
Source: Global Findex Survey, World Banks and calculation by author. The graph shows the median in account penetration across the six World Bank regions and the group of high-income countries.

Financial inclusion across Europe (Global Findex)

Incidence of deposit accounts (adults 15+)

Measuring poverty

1. Poverty indicators
   - income-based
   - consumption-based
   - welfare-based

2. Unit of observation
   - individuals
   - households

Disposable income lower than 60% of the median equivalent household income (income from any household member divided by the number of equivalent adults)

Consumption expenditures lower than 60% of the median equivalised household consumption

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

Financial inclusion across Italian regions (SHIW)

Incidence of families with a bank account (including Post Offices accounts)
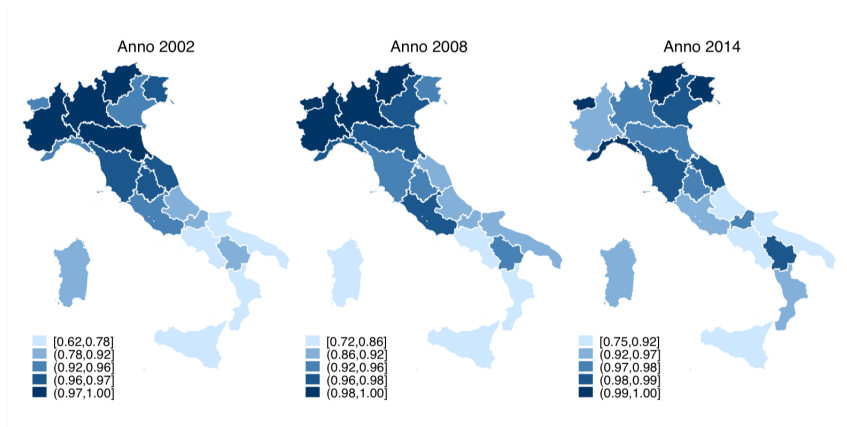
Poverty (income-based) across Italian regions (SHIW)

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

Anno 2002   Anno 2008   Anno 2014

| [0.06,0.14] |
| (0.14,0.16] |
| (0.16,0.19] |
| (0.19,0.24] |
| (0.24,0.25] |

| [0.08,0.13] |
| (0.13,0.16] |
| (0.16,0.18] |
| (0.18,0.23] |
| (0.23,0.27] |

| [0.07,0.14] |
| (0.14,0.17] |
| (0.17,0.19] |
| (0.19,0.25] |
| (0.25,0.28] |
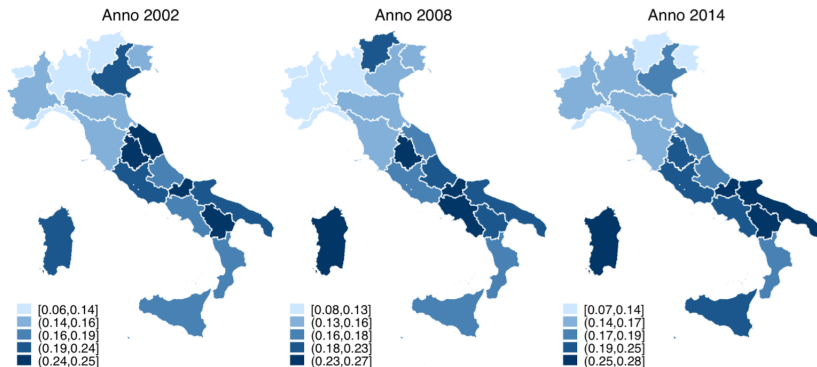
Poverty (consumption-based) across Italian regions (SHIW)

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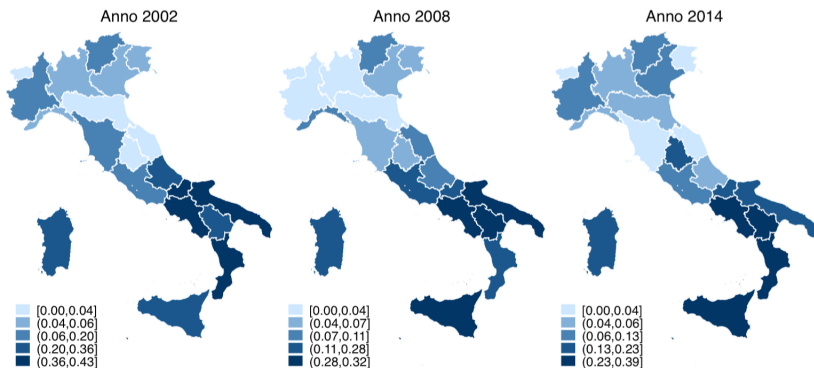
Transition matrices

		not poor$_t$	poor$_t$
Income-	not poor$_{t-1}$	90.02	9.98
based			*entry rate*
measure	poor$_{t-1}$	35.57	64.43
		exit rate	*pers rate*
	Total	79.00	21.00

		not poor$_t$	poor$_t$
Consumption-	not poor$_{t-1}$	93.05	6.95
based			*entry rate*
measure	poor$_{t-1}$	45.75	54.25
		exit rate	*pers rate*
	Total	86.12	13.88

Poverty and financial inclusion

		not poor$_t$	poor$_t$
Income-	no deposits$_t$	69.17	30.83
based			
measure	deposits$_t$	80.29	19.71
	Total	79.31	20.69

		not poor$_t$	poor$_t$
Consumption-	no deposits$_t$	52.91	47.09
based			
measure	deposits$_t$	88.78	11.22
	Total	85.62	14.38

Conditional entry and persistence rates

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

income–based   0.008

consumption–based   -0.255

$$\Delta\textbf{Entry rate}=$$
$$Pr(poor_t = 1|poor_{t-1} = 0, deposit_t = 1) -$$
$$Pr(poor_t = 1|poor_{t-1} = 0, deposit_t = 0)$$

income–based   -0.070

consumption–based   -0.176

Baseline specification

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

$$p_{it} = \mathbb{I}\{p_{i,t-1}\gamma + b_{it}\varphi + p_{i,t-1} \times b_{it}\lambda + \mathbf{x}'_{it}\boldsymbol{\beta} + \mathbf{z}'_i\boldsymbol{\theta} + \alpha_i + \varepsilon_{it} > 0\} \quad t = 1, \ldots, T,$$

- $\mathbb{I}\{a\}$: 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: $\mathbf{x}_{it}$ time-varying; $\mathbf{z}_i$ time-constant
- α_i: individual permanent unobserved heterogeneity.
- ε_{it}: iid zero-mean, unit variance error, assumed independent of the model's covariates.

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 do not allow us to
  compute transition matrices; individual dummies 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

$$\alpha_i = \lambda p_{i0} + \alpha_i^* \quad \alpha_i \sim N(0, \sigma_\alpha^2)$$

  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 age^2
  - 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)
- Time dummies
- NUTS 1 dummies (macroregions)
- Municipality size (4 classes)

Preliminary results: baseline specification

	Income-based		Consumption-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]
p_{t-1} * Deposits		0.200***		-0.058
		[0.067]		[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.

Estimated transitions: income-based measure

		not poor$_t$	poor$_t$
Total	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

Estimated transitions: consumption-based measure

		not poor$_t$	poor$_t$
Total	not poor$_{t-1}$	0.904	0.096
	poor$_{t-1}$	0.819	0.181
Deposits	not poor$_{t-1}$	0.914	0.086
	poor$_{t-1}$	0.828	0.172
No deposits	not poor$_{t-1}$	0.848	0.152
	poor$_{t-1}$	0.713	0.287

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.

Preliminary results: extensions

	Income-based	**Consumption-based**
p_{t-1}	0.449***	0.580***
	[0.069]	[0.059]
Deposits$_t$	-0.142***	-0.371***
	[0.048]	[0.043]
p_{t-1} * Deposits$_t$	0.174**	-0.091
	[0.074]	[0.062]
Deposits$_{t-1}$	-0.070	-0.216***
	[0.071]	[0.042]
p_{t-1} * Deposits$_{t-1}$	0.045	0.71
	[0.071]	[0.060]

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

Estimated variations in entry rates

	Income-based	**Consumption-based**
Δ **Entry**	$b_t = 1, b_{t-1} = 1$ vs $b_t = 0, b_{t-1} = 0$	
	-0.030***	-0.088***
	[0.008]	[0.008]
Δ **Entry**	$b_t = 1, b_{t-1} = 0$ vs $b_t = 0, b_{t-1} = 0$	
	-0.020***	-0.061***
	[0.007]	[0.007]
Δ **Entry**	$b_t = 0, b_{t-1} = 1$ vs $b_t = 1, b_{t-1} = 1$	
	0.019***	0.051***
	[0.007]	[0.007]

Estimated variations in persistence rates

	Income-based	**Consumption-based**
Δ Pers.	$b_t = 1, b_{t-1} = 1$ vs $b_t = 0, b_{t-1} = 0$	
	-0.031**	-0.119***
	[0.014]	[0.014]
Δ Pers.	$b_t = 1, b_{t-1} = 0$ vs $b_t = 0, b_{t-1} = 0$	
	0.006	-0.108***
	[0.012]	[0.011]
Δ Pers.	$b_t = 0, b_{t-1} = 1$ vs $b_t = 1, b_{t-1} = 1$	
	0.026***	0.082***
	[0.009]	[0.009]

A candidate exclusion restriction

- **Number of branches per 10,000 inhab.**

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

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

Tentative conclusions and extensions

- Financial exclusion has a negative impact on poverty dynamics by increasing the likelihood of entry into poverty and reducing the likelihood of exit out of poverty

- Taking into account endogeneity and feedback effects between poverty and financial exclusion

- Investigating the channels through which financial exclusion affects poverty dynamics

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