

A dynamic analysis of arrears and income poverty in Italy

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- ▶ Over-indebtedness has potential consequences both at the micro and macro levels.
- ▶ It may affect the sustainability of household indebtedness and may determine undesirable effects on household social, health, and labor outcomes.
- ▶ Household difficulties may be transmitted to financial institutions and, then, to the financial system's stability.

Drivers of over-indebtedness

- ▶ Financial imprudence (Disney et al. 2008):
 - ▶ transparency of lenders' terms and conditions;
 - ▶ borrowers financial literacy and the ability to manage their finances correctly (Lusardi and Tufano, 2009);
 - ▶ psychological biases and mental shortcuts affecting consumers' decisions and predictions about borrowing (e.g. Bucks and Pence, 2008);
- ▶ Unexpected events (Keese, 2009), such as job loss, unforeseen expenses, a rise in the cost of debt;
- ▶ Poverty, individuals have a lower chance of repaying their loans.

- ▶ Much of the debate focused on definitory issues. Most common indicators reflect four aspects of over-indebtedness:
 - ▶ A. making high repayments relative to income; B. being in arrears; C. making heavy use of credit; and D. finding debt a burden (D'Alessio and Iezzi, 2013);
- ▶ Over-indebtedness has grown after the Great Recession (EC 2010):
 - ▶ changes in the labor market; higher competition in the financial sector; and austerity measures;
- ▶ Association with emotional distress, mental health, depression, and higher divorce rates (e.g. Sweet et al. 2013, Bridges and Disney 2016).
- ▶ Higher risk of over-indebtedness for financially and socially excluded individuals (Anderloni and Vandone 2008).
- ▶ Research is scarce on the poverty - overindebtedness relationship (Kuypers and Verbist 2022)

Aims and contributions

- ▶ We study the relationship between overindebtedness and poverty, focusing on arrears.
- ▶ We provide a dynamic analysis of arrears in Italy:
 - ▶ Uncovering (true) state dependence may help characterize the phenomena' transitory/permanent nature.
- ▶ We evaluate how poverty affects the probability of being in arrears accounting for the possible endogeneity of poverty (we relax the strict exogeneity assumption):
 - ▶ Selection issues because of time-invariant unobserved factors jointly affecting both arrears and poverty processes;
 - ▶ Feedback effects from arrears to future poverty status.

We use data from the EU-SILC:

- ▶ Longitudinal data for Italy for the period 2016-2019.
- ▶ We focus on the relationships between poverty and arrears.
- ▶ We explore a sample of individuals aged 16 or more, for which $T \geq 3$. This selection leaves us with around 76,000 observations.

- ▶ Being in arrears is defined according to the presence of arrears in at least one out of the three items:
 - ▶ Arrears in mortgage or rental payments;
 - ▶ Arrears in utility bills;
 - ▶ Arrears in on hire purchase installments or other loan payments;
- ▶ Poor individuals are those living in a household with an equivalized income below the threshold of 60 percent of the national household median.
- ▶ Control variables: age, sex, and education of the household head, presence of children and members with disabilities, home ownership, number of members employed / non-employed, number of pensioners, local unemployment rate, and time and regional dummy variables.

Descriptive statistics

Variable	Mean	Std. Dev.
Arrears	0.053	0.225
Poor	0.171	0.377
Household head aged 16-24	0.012	0.109
Household head aged 25-34	0.087	0.281
Household head aged 35-44	0.187	0.390
Household head aged 45-54	0.256	0.436
Household head aged 55-64	0.192	0.394
Household head aged over 64	0.267	0.442
Household head female	0.345	0.475
Household head low educated	0.415	0.493
Household head middle educated	0.416	0.493
Household head highly educated	0.169	0.374
Household head married	0.612	0.487
Presence of children aged 0-3	0.060	0.238
Presence of children aged 4-15	0.253	0.435
Number of members with disabilities	0.095	0.328
Homeowner	0.747	0.435
Number of members employed with permanent contracts	0.704	0.774
Number of members employed with temporary contracts	0.149	0.406
Number of members self-employed	0.207	0.483
Number of members not employed	0.831	0.975
Number of pensioners	0.216	0.411
Change in regional unemployment rate	-5.260	2.615
Observations	76,463	

Econometric strategy

The framework

We use a dynamic bivariate model with recursive structure.

- ▶ We model both arrears and poverty processes accounting for genuine state dependence, correlated random effects, and endogenous initial conditions (Wooldridge approach 2005).
- ▶ Our approach account for potential feedback effects from arrears to future poverty.
- ▶ We allow time-invariant unobservable factors to be correlated.

- ▶ Arrears equation

$$a_{it} = 1\{\gamma a_{it-1} + \beta p_{it} + \delta p_{it-1} + \omega x_{it} + g_i + u_{it} > 0\}$$

$$g_i = \theta_0 + \theta_1 a_{i1} + \theta_2 p_{i1} + \theta_3 \bar{x}_i + \mu_i$$

- ▶ Poverty equation

$$p_{it} = 1\{\alpha p_{it-1} + \kappa a_{it-1} + \tau x_{it} + \varphi ur_{it} + h_i + \epsilon_{it} > 0\}$$

$$h_i = \pi_0 + \pi_1 a_{i1} + \pi_2 p_{i1} + \pi_3 \bar{x}_i + \varepsilon_i$$

$$\rho = \text{corr}(\mu_i, \varepsilon_i) \tag{1}$$

Selected results

	Arrears equation			Poverty equation		
	AME	s.e.		AME	s.e.	
Arrears time t-1	0.060	0.004	***	0.017	0.005	***
Arrears time 1	0.029	0.003	***	0.004	0.004	
Poor time t	-0.048	0.020	**			
Poor time t-1	0.039	0.012	***	0.194	0.003	***
Poor time 1	0.013	0.005	**	0.080	0.003	***
$\rho\mu\epsilon$	0.420	0.121	***			
Log-likelihood				-20312.76		
Observations				54,269		

Selected results by macro-regions

	North-West			North-East			Centre			South			
	AME	s.e.		AME	s.e.		AME	s.e.		AME	s.e.		
Arrears equation	Arrears time t-1	0.034	0.005	***	0.029	0.007	***	0.057	0.005	***	0.106	0.008	***
	Arrears time 1	0.026	0.005	***	0.033	0.006	***	0.025	0.005	***	0.043	0.007	***
	Poor time t	0.003	0.023		-0.063	0.015	***	0.048	0.018	***	-0.126	0.027	***
	Poor time t-1	0.006	0.014		0.054	0.010	***	-0.021	0.009	**	0.091	0.016	***
	Poor time 1	-0.002	0.006		0.021	0.007	***	0.009	0.006		0.021	0.009	**
Poverty equation		AME	s.e.		AME	s.e.		AME	s.e.		AME	s.e.	
	Arrears time t-1	0.027	0.010	***	0.019	0.010	**	0.012	0.010		0.016	0.011	
	Arrears time 1	0.003	0.009		0.004	0.008		0.007	0.009		0.002	0.009	
	Poor time t												
	Poor time t-1	0.199	0.006	***	0.140	0.006	***	0.176	0.006	***	0.249	0.007	***
	Poor time 1	0.047	0.007	***	0.065	0.006	***	0.082	0.007	***	0.120	0.008	***
	$\rho_{\mu\epsilon}$	0.193	0.183		0.707	0.076	***	-0.339	0.117	***	0.625	0.079	***
Log-likelihood		-4378.2			-3168.0			-4907.2			-7400.4		
Observations		13,848			12,225			13,921			14,275		

- ▶ We find evidence of arrears state dependence, but the trapping effect declines over time.
- ▶ Poverty increases the risk of being in arrears in the medium-long term, while the effect is negative in the short one.
- ▶ Feedback effects from arrears to future poverty.
- ▶ The effects are heterogeneous at the regional level, and greater in the South of Italy.