

# Temi di discussione

(Working Papers)

Measuring households' financial fragilities: an analysis at the intersection of income, financial wealth and debt

by David Loschiavo, Federico Tullio and Antonietta di Salvatore





## Temi di discussione

(Working Papers)

Measuring households' financial fragilities: an analysis at the intersection of income, financial wealth and debt

by David Loschiavo, Federico Tullio and Antonietta di Salvatore

Number 1452 - April 2024

The papers published in the Temi di discussione series describe preliminary results and are made available to the public to encourage discussion and elicit comments.

The views expressed in the articles are those of the authors and do not involve the responsibility of the Bank.

*Editorial Board:* Antonio Di Cesare, Raffaela Giordano, Marco Bottone, Lorenzo Braccini, Mario Cannella, Alessandro Cantelmo, Giacomo Caracciolo, Antoniomaria Conti, Antonio Dalla Zuanna, Valerio Della Corte, Marco Flaccadoro, Rosalia Greco, Alessandro Moro, Stefano Piermattei, Fabio Piersanti, Dario Ruzzi. *Editorial Assistants:* Roberto Marano, Carlo Palumbo, Gwyneth Schaefer.

ISSN 2281-3950 (online)

Designed by the Printing and Publishing Division of the Bank of Italy

### MEASURING HOUSEHOLDS' FINANCIAL FRAGILITIES: AN ANALYSIS AT THE INTERSECTION OF INCOME, FINANCIAL WEALTH AND DEBT

by David Loschiavo\*, Federico Tullio\* and Antonietta di Salvatore\*

#### Abstract

We provide an analysis of the financial fragilities of Italian households in the 2000-2020 period, using data from the Bank of Italy's Survey on Household Income and Wealth. We comment on the recent trends of financial ill-being, using different poverty measures, and we provide a descriptive analysis of fragile households' characteristics. We then model persistence in the dynamics of the poverty statuses using different specifications of the dynamic random-effects probit model to account for the observed and latent individual heterogeneity and endogeneity of the initial conditions. A strong state dependence is found in all the poverty statuses considered, with financial and liquidity poverty being the most persistent.

JEL Classification: D14, C23, H31.

**Keywords**: poverty persistence, state dependence, financial well-being, dynamic randomeffects probit models.

**DOI**: 10.32057/0.TD.2024.1452

<sup>\*</sup> Bank of Italy, Directorate General for Economics, Statistics and Research.

#### 1. Introduction<sup>1</sup>

Financial well-being is an important factor contributing to general individual (emotional and material) well-being. It can be broadly defined as a state wherein a person can fully meet current and ongoing financial obligations, she can feel secure in her financial future, and she is able to make choices that allow her to enjoy life (Porter & Garman, 1993; Salignac et al., 2020). Sound financial and economic conditions have consequences on the financial and social stability at the macro-level when they are widespread in the population.

Financial well-being is a multidimensional concept. It entails both subjective and objective measures. Without neglecting the importance of people's perceptions or feelings about the level of control or autonomy over their finances, in this work we focus on objective measures. According to this approach, household financial well-being in the short term hinges on the amount of existing assets that a household may use to prevent a worsening in its living standards when facing an adverse shock.<sup>2</sup> The absence of financial soundness constitutes an early warning indicator, and it can forecast future financial distress (Brunetti et al., 2016) both at the household and systemic levels. This is relevant for designing policy interventions aimed either at alleviating a situation of (temporary) individual hardships or at preventing the risk of vicious circles during an economic downturn. In difficult times, households with insufficient financial buffers would significantly shrink their expenditure in the face of an income shock, thus slowing the recovery and possibly deepening the recession. Moreover, borrowers' capacity to continue servicing their financial commitments while maintaining reasonable levels of consumption is also fundamental to avoid the risk that an increase of defaults may threaten financial stability.

In this paper, we first provide a descriptive analysis of the financial fragility of Italian households along several dimensions over the period 2000-2020, discussing its evolution in the last decades and evaluating observable characteristics correlating to fragility. Then, we take a further step and assess the extent of the persistence of households' financial fragility conditions over time, an important element for the design of targeted policy interventions. We use data from the Bank of Italy's Survey on Income and Wealth (SHIW), which uniquely collects joint information on the core economic variables of interest (income, assets, and debts). The SHIW allows us to depict the

<sup>&</sup>lt;sup>1</sup> We would like to thank Andrea Brandolini, Silvia Fabiani, Tullio Jappelli, Andrea Neri, Alfonso Rosolia, and participants to the IARIW-Bank of Italy conference "Central Banks, Financial Markets and Inequality", for useful suggestions. The views expressed herein are those of the authors and should not be attributed to the Bank of Italy. All errors are our own.

 $<sup>^2</sup>$  In the long run, households' financial well-being depends on the amount of both existing and potential (such as access to credit or liquidation of real assets) resources that a household may collect to deal with negative economic events. At the current stage of this work, we do not consider potential resources, and leave such evaluations for future research.

evolution of Italian households' financial fragilities over a long time span, including the last three shocks that hit the Italian economy (the global financial crisis, the sovereign debts crisis, and the outbreak of the Covid-19 pandemic shock).

With this aim, we define different measures of fragility related to both income and assets. As for asset fragility, we distinguish between total financial asset poverty and liquid asset poverty. Indeed, in the case of an idiosyncratic shock, most financial assets can be liquidated without incurring in significant losses while a common shock often implies sharp fluctuations in share prices and bond yields so that the market value of households' financial holdings may depart substantially from their pre-shock balance-sheet values. In the latter case, only liquid assets holdings accurately represent the households' ability to face the shock (Loschiavo & Graziano, 2022). We emphasize the importance of the joint condition of income and total financial asset poverty to single out the most fragile part of the population towards which policy interventions may be prioritized in the presence of resources constraints. We also highlight that poor households (especially those persistently poor over time) exhibit a markedly higher marginal propensity to consume than other households, regardless of the adopted poverty definition, arguably suggesting that fiscal interventions aimed at alleviating their poverty condition can yield positive outcomes in terms of aggregate consumption.

We find that fragilities related to financial assets significantly increased during the first two recessions that hit the Italian economy. Interestingly, despite the first economic impact of the Covid-19 pandemic in 2020, the shares of financial asset- and liquidity-poor households steeply decreased with respect to 2016, even though they remain above the minimum recorded in the last two decades. Moreover, indebted households are more likely to be financial asset- or liquidity-poor, whereas their chances of being income- or jointly income and financial asset-poor are lower with respect to non-indebted households.

Finally, we evaluate the extent of persistence of income, financial asset, and liquidity poverty. In the econometric literature, unit heterogeneity and true (or genuine) state dependence are often referred to as different drivers of persistence (Heckman, 1991). The correlation between past and current states may be due to unobservable and observable characteristics that make specific households more prone to poverty. For instance, low levels of human capital and unemployment spells of household members, as well as unobserved traits such as low skills and lack of motivation, may be characteristics persisting over time and generating a spurious relation between past and current poverty status. On the other hand, poverty experience may have a causal impact on the likelihood of being poor in the following periods, with several mechanisms being at work in this respect (e.g., demotivating effects on household members, depreciation of human capital, etc.). It is crucial to disentangle these two channels determining the persistence in fragility conditions to design

effective policy interventions, aimed either at supporting fragile households with income support measures and affordable credit conditions or at training household members (for instance, by improving financial literacy to foster insurance against unexpected economic shocks).

The literature on poverty persistence focuses mainly on income/earnings and material deprivation dynamics. Previous findings highlight that state dependence at the individual income poverty level is relevant in Italy (and Europe) and increased after the great recession (Mussida & Sciulli, 2022), suggesting that measures aimed at lifting individuals out of poverty (e.g., cash transfers) have become even more important. In a similar framework, Fabrizi and Mussida (2020) analyze genuine state dependence in the poverty status of Italian households with dependent children, using different income poverty measures, and they provide qualitatively similar conclusions. Giarda & Moroni (2018) study Italy's regional disparities and their role in explaining poverty state dependence. Bettin et al. (2023) study the role of financial inclusion on transitions into/out of poverty of Italian households. Finally, Giarda (2013) provides evidence of true state dependence in financial hardship for Italian households in the period 1998-2006.<sup>3</sup>

To our knowledge, analyses on the persistence of financial/liquidity poverty and the joint condition of income and financial poverty are scarce. We fill this gap in the literature by applying distinct dynamic random-effects probit specifications to disentangle genuine state dependence from observed and unobserved heterogeneity, using different income, financial asset and liquidity poverty measures as response variables at the household level.

We find substantial state dependence in each considered poverty status. Financial poverty is not only more spread than income poverty in the considered period, but it also represents the most persistent state. The joint income and financial poverty dynamic pattern is instead closely related to that of the univariate income process. Some heterogeneity results are presented, discussing whether distinct groups of households are affected differently by past poverty statuses.

The remainder of this paper is organized as follows. The next section describes the data and trends in poverty indicators. In Section 3, we perform a descriptive analysis of the financial fragilities of Italian households. Section 4 presents the empirical analysis of fragility persistence. Concluding remarks are provided in the last section.

<sup>&</sup>lt;sup>3</sup> Related settings are those of Cappellari and Jenkins (2004), who adopt a different approach using UK survey data to model low-income persistence and find substantial state dependence, Biewen (2009), who accounts for feedback effects from past poverty to future employment and household composition outcome, and Devicienti and Poggi (2011), who study the dynamic cross-effects between poverty and social exclusion.

#### 2. Data and poverty trends

#### 2.1 Data and definitions

We make use of the *Survey on Household Income and Wealth* (SHIW) conducted by the Banca d'Italia since 1965, which collects information on demographics, income, real and financial assets, and loans for a representative sample of Italian households. Each wave of the survey includes approximately 8,000 households, distributed over about 350 Italian municipalities, and the panel component covers approximately half of the sample, in each wave. We restrict our analysis to the last 10 waves, covering the period 2000-2020.<sup>4</sup> This time period was chosen because, starting from 2000, the panel share of the sample, initially introduced in 1987 and employed in our analysis of poverty persistence, has stabilized around 50 per cent. Additionally, a survey overhaul occurred in 1998, in which the questionnaire design was revised to collect precise amounts of households' financial asset holdings.

We define a set of poverty indicators at the household level relating to different dimensions of financial well-being: income, financial assets and liquid assets. First, households whose equivalized annual income<sup>5</sup> is below a socially acceptable threshold - conventionally set at 60 per cent of the median of the distribution, which is the common at-risk-of-poverty (ARP) threshold - are deemed at risk of poverty.<sup>6</sup> The average ARP threshold throughout the period of analysis is equal to 9,254 euros; yearly thresholds are reported in Table A1 in the Appendix. This definition, however, does not take into account other financial resources that households may rely on to meet their needs. Therefore, to measure households' inability to handle short-term financial difficulties, households are defined as asset poor when their total financial assets (bank and postal deposits, government securities, and other securities including bonds, shares in listed and unlisted companies, and other financial assets),

<sup>&</sup>lt;sup>4</sup> Starting from 1987, the survey was conducted every two years, with some exceptions. In the 2000-2020 timespan of our analysis, the 2018 wave was not carried out due to non-statistical reasons. Starting from 2020, the SHIW sampling design has undergone significant methodological changes to improve the statistical coverage of high-income households. (Barcaroli et al., 2021). This improved the survey's ability to paint a more accurate picture of the aggregate values of interest and their distribution across the population (Banca d'Italia, 2022). At the same time, to obtain comparable estimates with previous waves, this methodological change required a revision of the sampling weights definition, which we label historical weights (as opposed to the cross-sectional 2020 weights) and use throughout our analysis. See Faiella and Gambacorta (2007) for a thorough description of the traditional sampling design and weighting process of the SHIW, and Gambacorta and Porreca (2022) for a comparison of the new sampling design with the old one, and for technical details on the definition of historical weights.

<sup>&</sup>lt;sup>5</sup> Equivalized income is defined as the total disposable household income (after taxes and social transfers) divided by an equivalized number of components (using the modified OECD-scale, which assigns a coefficient of 1 to the head of the household, 0.5 to other household members aged 14 or more, and 0.3 to those younger than 14).

<sup>&</sup>lt;sup>6</sup> Note that while the ARP rate is typically computed at the individual level (i.e. it represents the share of individuals whose equivalized income fall below the threshold), we define an income poverty indicator equal to one if a given household's equivalized income falls below the threshold.

adjusted to take account of the household structure<sup>7</sup>, is less than one fourth of the ARP threshold.<sup>8</sup> In other words, a household is considered asset poor if it does not have sufficient resources to avoid the risk of poverty for at least three months, even if it liquidated all its financial assets, should its income flow suddenly dry out. Restricting the set of assets to the ones more readily accessible (bank and postal deposits) provides the definition of liquidity-poor households.

#### 2.2 Poverty trends

Figure 1 plots the frequency of income/asset/liquidity poor households in the period of analysis, along with the joint income and asset poverty rate (i.e. the share of households that are jointly income and asset poor). The share of income-poor households was quite stable at around 17 per cent until the sovereign debts crisis, increasing in the following 4 years (to almost 19 per cent in 2014). Between 2016 and 2020, despite the outbreak of the Covid-19 pandemic, this share decreased to 18 per cent, mainly due to the income support measures introduced in 2020,<sup>9</sup> yet remaining slightly above the minimum recorded during the timespan.



Figure 1 - Poverty rates

Note: Weighted estimates.

<sup>7</sup> The adjustment is made by dividing total household financial assets by the equivalized number of components (using the modified OECD-scale).

<sup>&</sup>lt;sup>8</sup> As for the threshold adopted, our approach is similar to the one of Brandolini et al. (2010) but, since we take a short-term perspective, it differs on the perimeter of the asset considered (Brandolini et al., 2010 include both financial and real assets while we include financial assets only).

<sup>&</sup>lt;sup>9</sup> Such measures encompass both permanent and temporary interventions. Among the former there are the new minimum income scheme (Reddito di cittadinanza or RdC) and the new minimum pension scheme (Pensione di cittadinanza or PdC). Among the temporary measures there are those adopted in 2020 to cope with the effects of the pandemic, such as extraordinary wage supplementation (CIG straordinaria), emergency income (Reddito di emergenza) and COVID payments for certain categories of workers and other transfers specifically associated with the health emergency.

Differently, the incidence of financial (both total and liquid asset) poverty decreased until 2004 and kept increasing thereafter, reaching a peak (45 and 48 per cent, respectively) in the midst of the sovereign debts crisis in 2012; the surge was remarkable (around 9 and 8 percentage points, respectively). In the following years, and despite the recession due to the Covid pandemic in 2020, the incidence steeply decreased, in connection with the surge in savings that involved also households at the lower end of the income distribution (Banca d'Italia, 2022). Nonetheless, households with insufficient financial buffers to weather even a 3-month period of absence of income still constitute a large fraction of the population, higher than that recorded before the global financial crisis: in 2020, 38 per cent of Italian households were fragile with respect to an idiosyncratic shock (i.e. the assetpoor) while 41 per cent to a common shock (i.e. the liquidity-poor).

Households in the most fragile condition are those that not only are at risk of poverty but also do not have enough assets to keep their essential consumption needs above the poverty threshold for at least three months (i.e. they are both income and asset poor).<sup>10</sup> In 2020, they represented 14 per cent of the population, down from the peak reached in 2014 but still 1.5 percentage points higher than before the three crises that hit Italian economy in the last two decades. It is worth noting that households in such a financial fragility condition rely on a monthly equivalized income of less than 860 euros and, at the same time, hold less than 2,400 euros in financial assets (deposits included).

From a financial stability perspective, the intersection between the poverty conditions discussed above and indebtedness is also crucial. Indeed, risks to the financial stability can arise if a significant part of the indebted households are not able to meet their financial commitments during a downturn due to the absence of adequate buffers. Losses or declines in borrowers' income, or increases in (adjustable) lending rates, can trigger such risks particularly for over-indebted (henceforth financially vulnerable) households that we define as such when their debt-service ratio is above 30 per cent and their equivalized disposable income is below the median.<sup>11</sup> Hence, considering the joint condition of being indebted or financially vulnerable is helpful for designing macroprudential tools targeted at lowering the exposure to default, because they can limit the amount that a household can borrow in relation to its accumulated savings or expected income.

On average, throughout the timespan of analysis, the share of asset poor among indebted households is higher than that in the total population, reaching a peak of 49 per cent in 2012 (53 per cent if only liquid assets are considered; figure 2a). As a matter of fact, mortgages make up the lion's share of total household debt in each year. Hence, households' heterogeneous portfolio composition,

<sup>&</sup>lt;sup>10</sup> A similar definition is adopted in Gambacorta et al. (2021).

<sup>&</sup>lt;sup>11</sup> Data on debt service payments, which are employed to classify households as financially vulnerable, are available starting from 2008.

and in particular the relative preference of indebted households for real assets, may explain such evidence. Yet, in 2020 the fraction of asset poor was lower than in the total population (36 and 38 per cent, respectively); likely due to higher excess savings of indebted households that benefited from debt holidays introduced by the Italian government in response to the Covid-19 crisis. In 2020, about 21 per cent of the overall household debt was attributable to asset poor households. The share of indebted households poor in liquidity was instead closer to the same share referred to all households, even though it decreased more intensively than the latter since the peak reached in 2014. The risk of illiquidity was more spread among financially vulnerable households, reaching approximately 66 per cent. Nonetheless, this value significantly declined since 2014 (by more than 13 percentage points; Figure 2b).

All in all, despite the recent improvements in financial resilience, many indebted households might not weather even a short period of absence of income without falling behind on debt repayments.



### Figure 2 - Poverty rates: Indebted and financially vulnerable households (per cent)

*Notes*: Poverty rates among indebted and vulnerable households, namely, probability of being income/asset/liquidity poor conditional on being indebted or financially vulnerable. Data on financially vulnerable households are available from 2008.

#### 2.2.1 The case of wealthy hand-to-mouth

One may argue that our analysis, by classifying households as asset poor on the basis of their financial assets holdings only, and regardless of the size of their net worth, ignores the fact that when times get tough families can dip into their illiquid wealth (such as housing) to smooth their consumption, even at the cost of paying (frequently substantial) transaction costs. Therefore, we may overstate the financial fragilities in the population.

Indeed, in a seminal paper Kaplan et al. (2014) showed that many households (defined as wealthy hand-to-mouth) in Europe and North America have substantial assets in the form of housing and retirement accounts but little in the way of liquid wealth to offset short-term income falls.<sup>12</sup> Those households are found to have a large marginal propensity to consume out of small transitory income fluctuations and thus not explicitly taking their existence into account may provide misguided intuitions about the effects of fiscal policies.

To deal with this issue, we divide the asset poor group into two subgroups depending on whether households have a net illiquid wealth<sup>13</sup> above or below the median of the distribution. We define the first subgroup as the wealthy hand-to-mouth. It turns out that, excluding wealthy hand-to-mouth, in 2020 the share of asset poor households declines to 28 per cent (from 38 per cent) and the share of jointly income and asset poor households to 12 per cent (from 14 per cent). While the 10 percentage points reduction in the former share points to the significance of the occurrence of wealthy hand-to-mouth in Italy,<sup>14</sup> it must be stressed that the risk of illiquidity is still high for this subset of families that would need to tap into their costly-to-access accounts to offset short-term changes in income. Additionally, even when excluding the wealthy hand-to-mouth from the jointly income and asset poor households, the trend reported in Figure 1 is qualitatively confirmed.

#### 3. Descriptive analysis

#### **3.1 Regression analysis**

Table 1 reports the estimated average partial effects (APEs) of a probit regression of income/asset/liquidity poor indicators, along with the joint income and asset poor condition, as dependent variables, on several covariates, and it provides some descriptive evidence on which households are classified as poor along the four dimensions. A description of each variable employed in the analysis is provided in Table A2 in the Appendix.

As expected, the probability of being asset or liquidity poor is higher among indebted households (Loschiavo & Graziano, 2022). This confirms how the risk of not having enough financial buffers can easily translate into difficulty in repaying debts. However, consistently with previous

<sup>&</sup>lt;sup>12</sup> According to Kaplan et al. (2014) "the wealthy hand-to-mouth behaviour can occur when households face a trade-off between the long-run gain from investing in illiquid assets (assets that require the payment of a transaction cost for making unplanned deposits or withdrawals) and the short-run cost of having fewer liquid assets available to smooth consumption."

<sup>&</sup>lt;sup>13</sup> As a definition of net illiquid wealth, we adopt the value of the household's main residence and other real estate properties, net of mortgages and unsecured loans specifically taken out to purchase the home or the other real estate properties.

<sup>&</sup>lt;sup>14</sup> According to the latest HFCS data – wave 2020, the rate of home ownership in Italy is higher than the average of the euro area by around 16 percentage points, while the rate of home owners having a debt is lower than the average of the euro area by 18 percentage points.

evidence on a larger access to credit in Italy by high-income households (Loschiavo, 2021), indebted households are less likely to be income poor or jointly income and asset poor.

The regression analysis highlights other heterogeneity dimensions across demographic and economic groups. For instance, all the considered poverty indicators decline with the education of the household head. The chances of being in any of the four poverty conditions are higher for female and foreign-born headed households, and for those resident in the Islands or in the South; the odds of being poor increase with the household size, and they decrease with real assets holdings and with the age of the household head. Interestingly, being a self-employed worker increases the likelihood of being income or jointly income and asset poor but reduces the probability of being asset or liquidity poor.<sup>15</sup> Different factors may play a role in shaping such an evidence. For instance, the high level of tax evasion and elusion in Italy is particularly concentrated among self-employed workers. Consequently, self-employed workers may fear more to report their true income compared to their true financial assets stock, the returns of which are taxed directly at the source. Furthermore, given that self-employed income is more volatile than other income sources, households may find it challenging to accurately recall and report their earnings before filing taxes (which typically occurs after survey responses are provided). A more in depth analysis of differential income misreporting among groups in the SHIW and its underlying reasons can be found in Neri and Zizza (2010).

<sup>&</sup>lt;sup>15</sup> The same results hold if we adopt the same set of covariates for all the poverty indicators (i.e. excluding the household's income group from the set of explanatory variables; see Table A3 in the Appendix).

	Income	Asset	Liquidity	Joint income and asset
Household head characteristics:				
31-40	-0.080***	-0.057***	-0.050***	-0.071***
51-40	(0.008)	(0.009)	(0.009)	(0.007)
41-50	-0.069***	-0.064***	-0.049***	-0.066***
	(0.008)	(0.009)	(0.009)	(0.007)
51-60	-0.103***	-0.069***	-0.060***	-0.098***
	(0.008)	(0.009)	(0.009)	(0.008)
more than 60	-0.171***	-0.112***	-0.109***	-0.159***
	(0.008)	(0.010)	(0.010)	(0.008)
Female	0.038***	0.016***	0.011**	0.034***
	(0.003)	(0.004)	(0.004)	(0.003)
Education				
Primary	-0.037***	-0.022**	-0.023**	-0.033***
	(0.006)	(0.009)	(0.010)	(0.006)
Lower secondary	-0.084***	-0.061***	-0.056***	-0.076***
	(0.007)	(0.010)	(0.010)	(0.006)
Upper secondary	-0.134***	-0.116***	-0.099***	-0.120***
	(0.007)	(0.010)	(0.011)	(0.006)
University degree	-0.173***	-0.165***	-0.151***	-0.153***
O	(0.007)	(0.011)	(0.012)	(0.007)
Uccupation	0.057***	0.024***	0.028***	0.020***
independent worker	(0.004)	-0.024	-0.028	(0.004)
Not amployed	(0.004)	-0.016***	(0.000)	0.004)
Not employed	(0.004)	-0.010	(0.002	(0.004)
Foreigner	0.004)	0.118***	0.108***	0.004)
Toreigner	(0.005)	(0,009)	(0.009)	(0.005)
Household characteristics:	(0.000)	(0.007)	(0.009)	(0.000)
No. of hh members	0.081***	0.080***	0 089***	0.065***
No. of hit members	(0.001)	(0.002)	(0.002)	(0.005
No. of income earners	-0 127***	0.017***	0.002)	-0.09/***
No. of meonie earliers	(0.002)	(0.003)	(0.003)	(0.002)
Geographical area	(0.002)	(0.005)	(0.005)	(0.002)
North-Fast	0.005	0.020***	0.029***	0.006*
North-Last	(0.004)	(0.006)	(0.006)	(0.003)
Centre	0.023***	0.024***	0.007	0.015***
	(0.004)	(0.005)	(0.006)	(0.003)
South	0.126***	0.116***	0.075***	0.104***
	(0.004)	(0.006)	(0.006)	(0.004)
Islands	0.116***	0.141***	0.104***	0.107***
	(0.005)	(0.007)	(0.007)	(0.004)
Indebted household	-0.019***	0.061***	0.063***	-0.016***
	(0.003)	(0.005)	(0.005)	(0.003)
Real Asset group				
Second	-0.128***	-0.096***	-0.098***	-0.115***
	(0.005)	(0.006)	(0.006)	(0.005)
Third	-0.207***	-0.101***	-0.104***	-0.175***
	(0.005)	(0.006)	(0.006)	(0.005)
Fourth	-0.243***	-0.111***	-0.105***	-0.203***
	(0.005)	(0.006)	(0.007)	(0.005)
Fifth	-0.271***	-0.142***	-0.133***	-0.229***
	(0.005)	(0.007)	(0.008)	(0.005)
Income group				
Second		-0.195***	-0.192***	
		(0.006)	(0.006)	
Third		-0.302***	-0.290***	
		(0.007)	(0.007)	
Fourth		-0.407***	-0.382***	
E. 01		(0.008)	(0.007)	
FIIM		-0.321***	-U.483*** (0.009)	
		(0.000)	(0.000)	

Table 1 - Pooled	probit models:	Average partial	effects
------------------	----------------	-----------------	---------

*Notes*: No. of observations: 77,686. Full sample. Unweighted regressions at the household level. Baseline categories: Age: less than 31 years old; Education: less than primary; Occupation: employee. Geographical area: North-West. Additional control variables: municipality size and year fixed effects. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively. Standard errors are clustered at the household level.

#### **3.2** Poverty and marginal propensity to consume

Aggregate consumption depends on the distribution of marginal propensity to consume (MPC) within the population, and a common finding of the empirical literature is strong evidence for MPC heterogeneity.<sup>16</sup> Thus, it is worth verifying whether poor households are characterized by a higher MPC compared to other households. Additionally, we investigate the MPC of those households that are poor in two subsequent SHIW waves (persistently poor households), which represent the most fragile group of families. Such an exercise provides useful insights on the potential effects of redistributive fiscal policies - especially when they entail transitory income changes and they are targeted at the latter group of households - on aggregate consumption.

As in Jappelli and Pistaferri (2014) we make use of the MPC elicited from a SHIW survey question on how much people would consume or save when they unexpectedly receive a reimbursement (or transfer) equal to their average monthly income.<sup>17</sup> Note that the question was included in the 2016 and 2020 SHIW subsequent waves only. Therefore, we use the latter two SHIW waves in order to study the MPC out of unexpected windfall gain on households who are poor.

Figure 3a shows that poor households are characterized by higher MPCs than non-poor households, for each poverty indicator considered, as their average value is higher than the overall sample mean. As expected, the MPC of persistently poor households is even higher. Households who are persistently poor in terms of both income and assets have a remarkably higher MPC with respect to those who are persistently either income poor or asset poor only (by respectively 3 and 8.5 percentage points). Their MPC is higher than the average of the overall panel sample as well (by approximately 18 percentage points).<sup>18</sup> The gap becomes significantly wider when splitting the panel sample into four groups depending on their joint income-asset poverty transition pattern and comparing to those households that are not poor in both periods (more than 20 percentage points; figure 3b). In addition to this, it is worth noting that we do not find any significant difference in our data in terms of MPC between persistently asset poor households and wealthy hand-to-mouth households, the former being 56.4 per cent (as in Figure 3a) and the latter being 55.4 percentage points.

All in all, MPC heterogeneity highlights the importance of poverty persistence and it provides additional motivation for analyzing the sources of poverty persistence.

<sup>&</sup>lt;sup>16</sup> See, among others, Jappelli and Pistaferri (2014), Kaplan et al. (2014), and Jappelli and Pistaferri (2020).

<sup>&</sup>lt;sup>17</sup> The question wording is the following: "Imagine you unexpectedly receive a reimbursement equivalent to your household monthly income. How much of it would you save and how much would you spend? Please provide the percentages for both saving and spending."

<sup>&</sup>lt;sup>18</sup> It is worth noting that the average MPC for the unweighted panel sample (46.7 per cent) is remarkably similar to the weighted cross-sectional averages for 2016 and 2020, corresponding to 48.1 and 47.7 per cent, respectively.



Figure 3 - Marginal propensity to consume among different groups of households (per cent)

*Notes*: Pooled unweighted averages of self-reported MPC in 2016 and 2020 SHIW waves of: (a) Households that are asset, income and jointly income and asset poor and persistently poor, and of the whole panel sample; (b) Households that are never poor and jointly income and asset poor in two subsequent waves, and households that escaped/fell into (joint income and asset) poverty. The sample is built by pooling the 2014-2016 SHIW panel component with the 2016-2020 SHIW panel component.

#### 4. Analysis of fragility persistence

In this section, we first overview the dynamic random-effects probit model employed in the analysis of fragility persistence. The model accounts for latent heterogeneity and endogenous initial conditions to avoid overestimating the true effects of past states. We then discuss the empirical results.

#### 4.1 Econometric approach

Let  $y_{it}$  be a binary response variable equal to one if household *i* is (income, asset, liquidity or jointly income and asset) poor at time *t*, and zero otherwise. A dynamic unobserved-effects probit model for  $y_{it}$ , i = 1, ..., n, t = 1, ..., T, may be written as:

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

where  $\mathbf{1}\{\cdot\}$  denotes the indicator function equal to one if the argument is true. The error terms  $u_{it}$  are assumed to be i.i.d. standard normal random variables, and  $x_{it}$  is a vector of time-variant exogenous covariates, namely, they are independent of all past, current and future values of  $u_{it}$ .  $c_i$  is the time-invariant unobserved effect, and the parameter of interest is  $\rho$ .

The random-effects probit model either assumes  $c_i \sim N(0, \sigma^2)$  or takes into account the dependency of  $c_i$  on the covariates as in Mundlak (1978) and Chamberlain (1984). Its standard

conditional maximum likelihood (ML) estimator is not consistent unless the initial conditions  $y_{i0}$  are exogenous. To relax this assumption and to suitably account for the endogenous initial conditions problem, we adopt the methodology proposed by Wooldridge (2005) by specifying a conditional density for the unobserved effect of the form:

$$c_i = \alpha_0 + \alpha_1 y_{i0} + \alpha_2' \mathbf{z}_i + a_i, \tag{2}$$

with  $a_i \sim N(0, \sigma_a^2)$  and  $\mathbf{z}_i$  is the vector including time-constant covariates (say,  $\mathbf{q}_i$ ) and possibly the time-averaged time-variant covariates of Equation (1).<sup>19</sup>

We restrict the sample to those households interviewed at least five times starting from 2000 to guarantee an appropriate duration of the panel, as suggested in Akay (2012) for the Wooldridge method. Because the first year of the five (or more) consecutive interviews may be staggered for different households (i.e., for each *i* we have  $t = t_i + 1, ..., T_i$ )<sup>20</sup>, and given that the SHIW does not provide panel weights, observations in the regressions are not weighted. One might argue that panel attrition may bias the results, in particular if the dropout is positively correlated with fragilities. If this were the case, the unweighted probability of remaining in a particular fragility condition would be lower than the corresponding weighted probability, because larger sample weights are assigned to those observations that are less likely to be observed over time. However, striking differences do not emerge when we compare weighted and unweighted wave-to-wave raw transition rates among poverty and non-poverty statuses. Interestingly and somehow counterintuitively, the unweighted probability of remaining income poor, among households interviewed at least five times starting from 2000, is slightly higher than the corresponding weighted probability computed using the whole panel sample, approximately 1.6 percentage points (p.p.) throughout the timespan (Table 2). On the other hand, as one would expect, the unweighted probability of remaining financially poor is slightly lower than the corresponding weighted probability, albeit this difference being very low, approximately one p.p. on average throughout the timespan.

Despite being reassured by this evidence, we take a cautious approach to take into account this issue, as in Fabrizi and Mussida (2020), by including in the regressions, as control variables, all the households' and location characteristics used in the cross-sectional weights construction process,<sup>21</sup> as well as the household income group in the previous wave.

<sup>&</sup>lt;sup>19</sup> Other possible parametrizations, less restrictive yet less parsimonious, may be found in Rabe-Hesketh and Skrondal (2013) and Skrondal and Rabe-Hesketh (2013). An alternative solution to tackle the endogeneity problem may be found in Heckman (1981).

<sup>&</sup>lt;sup>20</sup> For instance, household A may be interviewed in 2000, 2002, 2004, 2006 and 2008, whereas household B may be interviewed in 2008, 2010, 2012, 2014 and 2016.

<sup>&</sup>lt;sup>21</sup> These variables are: gender, level of education and age group of the household head; geographical area of residence and municipality size. As a robustness check, in unreported regressions we have also included the yearly cross-sectional weights among the covariates and results do not change.

_	Remaining asset poor		Remaining i	ncome poor
	(1)	(2)	(1)	(2)
Year				
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	0.590	0.625
average	0.673	0.663	0.639	0.655
average difference		-0.011		0.016

Table 2 - Raw wave-to-wave probabilities of remaining asset poor and income poor

*Notes:* (1) Weighted panel sample (weights for historical comparison). (2) Unweighted panel sample of households interviewed at least five times starting from 2000. Poverty line: 3-month ARP threshold.

We also replicate the descriptive analysis discussed in Section 3 restricting the sample to those households interviewed at least five times starting from 2000. Table A4 in the Appendix shows that significant differences in terms of APEs do not emerge between the two samples, except for those variables whose effects were already small in the full sample (e.g., female dummy in the asset and liquidity regressions), suggesting that hardly our regression results may be influenced by sample selection.

Note also that the sample mainly consists on 2-year transitions, with the exception of those occurred between 2016 and 2020. To test the robustness of our results, the analysis is also conducted on 2-year transitions only, excluding 2020 from the sample.

A final source of concern when estimating a non-linear dynamic panel data model is the unbalancedness of the sample, which may cause inconsistent estimates of the parameters of interest. To deal with this structure of the data, we apply to the Wooldridge (2005) setting the correction method proposed by Albarran et al. (2019), ACC henceforth, allowing the unbalancedness process to be correlated with households' unobserved heterogeneity. In other words, the Wooldridge (2005) setting is augmented by specifying the density of the unobserved effect in Equation (2) to be subpanel specific, namely,  $c_{is}$ , with subpanels s = 1, ..., S.<sup>22</sup>

<sup>&</sup>lt;sup>22</sup> A subpanel *s* is composed by a group of households interviewed in the very same waves throughout the period 2000-2020. For instance, subpanel A consisting of households interviewed in each wave from 2006 to 2012 is different from subpanel B consisting of households interviewed in each wave from 2008 to 2014. In other words, the sample is unbalanced because it consists of different subpanels (S > 1). While we estimate the Wooldridge (2005) specification of the dynamic random-effects model by maximum likelihood, the ACC specification is estimated by a minimum distance approach: for further details, see Albarran et al. (2020).

#### 4.2 Results

We estimate a dynamic random-effects probit model, described by Equation (1), for each poverty status, using both the Wooldridge and ACC specification,<sup>23</sup> and employing as control variables all the covariates listed in Table 1, including the indicator variable equal to one for indebted households, as well as the time-averages of the number of household members and income earners, the income group in the previous wave, and municipality size and year fixed effects.

Estimated effects of lagged poverty status on current poverty status are reported in Table 3, along with the APEs of being indebted, where for each response variable (i.e., poverty dimension), we compare the APEs obtained from a probit regression with the lagged dependent variable as a covariate with the APEs obtained from the dynamic model described by Equation (1). The full set of estimated coefficients is given in Tables A5 and A6 in the Appendix, which also include the standard deviations of the unobserved heterogeneity effects described by Equation (2), and the fractions of total variance due to this terms.

Being poor increases the probability of being poor in the near future, regardless of the considered poverty measure. Nonetheless, the magnitude of the effect varies considerably across the different dimensions of fragility. The probit estimators deliver APEs ranging between 11.1 p.p. of the lagged joint income and asset poverty status, and 28.2 p.p. of the asset poverty status in the previous period. Liquidity poverty dynamics is close to that of asset poverty (27.3 p.p.), given the high degree of overlap between the two groups, whereas income poverty persistence is slightly larger than joint income and asset poverty.

When accounting for unobserved heterogeneity and endogenous initial conditions (Columns 2, 3, 5, 6, 8, 9, 11 and 12 of Table 3), the APEs of all considered indicators decrease significantly. The drop is nonetheless heterogeneous across dimensions. Ignoring the unbalancedness of the data (i.e. using the Wooldridge estimator) the APEs of past asset and liquidity poverty statuses decrease approximately by 50 per cent, meaning that half of the effect is due to latent characteristics at the

<sup>&</sup>lt;sup>23</sup> In the ACC framework, the model is first estimated by maximum likelihood in each subpanel separately. Then, the common parameters across subpanels (including the state dependence parameter of interest) are retrieved by minimum distance estimation. Because of the limited size of some subpanels in our sample, they are excluded from the estimation process. As a result, the number of observations employed within the ACC framework is lower than the overall sample size.

household level.<sup>24</sup> On the other hand, the APE of lagged income poverty shrinks by two thirds, to almost 5 p.p., again, similarly to that of the joint income and asset poverty condition.<sup>25</sup>

Concerning the ACC estimator, the estimated APE for each indicator is significantly larger than the corresponding APE estimated with the Wooldridge estimator (approximately from 4 to 5 p.p. higher). Nonetheless, both approaches deliver qualitatively similar results according to which there is strong state dependence between past and present fragilities. Results remain unaltered when we exclude the observations from the 2020 wave, that is, by removing the 4-year transition from 2016 to 2020 and focusing on 2-year transitions only (from 2000 to 2016).

Overall, these results highlight the importance of both household heterogeneity and genuine state dependence in explaining poverty persistence, regardless of the adopted estimator, pointing to the need of policies enhancing characteristics that are protective against poverty (e.g. higher education) as well as lifting households out of poverty (e.g. support measures and targeted affordable credit conditions).

 $<sup>^{24}</sup>$  To test whether these results are sensitive to the adopted poverty thresholds, we replicate the analysis on asset and liquidity poverty dependence using different poverty thresholds, namely, the equivalent of 1, 6 and 12-month ARP threshold. Results are reported in Table A7 in the Appendix and are stable across the different thresholds.

<sup>&</sup>lt;sup>25</sup> Results remain unchanged if we include the yearly cross-sectional weights among the covariates; see Table A8 in the Appendix.

		Income			Asset		Joint	Joint income and asset		Liquidity		
	Probit (a)	Wooldridge (b)	ACC (c)	Probit (a)	Wooldridge (b)	ACC (c)	Probit (a)	Wooldridge (b)	ACC (c)	Probit (a)	Wooldridge (b)	ACC (c)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged dependent variable	0.147*** (0.009)	0.050*** (0.007)	0.089*** (0.011)	0.282*** (0.009)	0.140*** (0.009)	0.194*** (0.011)	0.111*** (0.008)	0.043*** (0.006)	0.078*** (0.011)	0.273*** (0.008)	0.137*** (0.009)	0.191*** (0.010)
Indebted household	-0.014*** (0.005)	-0.012** (0.005)	-0.013* (0.007)	0.052*** (0.007)	0.043*** (0.007)	0.048*** (0.009)	-0.007 (0.005)	-0.005 (0.005)	-0.004 (0.008)	0.047*** (0.008)	0.038*** (0.008)	0.046*** (0.009)
Other controls Obs.	Yes 22,678	Yes 22,678	Yes 18,049	Yes 22,678	Yes 22,678	Yes 20,264	Yes 22,678	Yes 22,678	Yes 16,033	Yes 22,678	Yes 22,678	Yes 19,960

Table 3 - Dynamic random-effects and probit models: Average partial effects

*Notes*: (a) Probit: pooled probit model; (b) Wooldridge: Wooldridge (2005) specification of the dynamic random-effects probit model; (c) ACC: Albarran et al. (2019) specification of the dynamic random-effects probit model. Unweighted regressions at the household level. *Indebted household* is an indicator variable equal to one for indebted households. Additional control variables include the set of covariates listed in Table 1, the time-averages of the number of household members and income earners, the income group in the previous wave, and municipality size and year fixed effects.

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

#### 4.3 Heterogeneity in poverty persistence

To test whether past states affect heterogeneously different groups of households, we run the previous regressions including among the covariates an interaction term between past poverty conditions and (i) an indicator for indebted households, (ii) a household head gender indicator, and (iii) an indicator for households with homeownership.

All the APEs reported in Panel A of Table 4 are computed within the specifications including the interaction term between lagged poverty and indebtedness status. The causal effect of past income poverty condition on current poverty status among indebted households is equal to 0.044. This value is smaller than the APE of past poverty status among non-indebted households, which equals 5.1 p.p., yet this difference is not statistically significant. Similar conclusions hold for all the other poverty indicators. In other words, we do not find evidence on the heterogeneity of the effects of past on current states among indebted and non-indebted households.

On the other hand, estimated partial effects of the household head gender interacted with past poverty status (Panel B of Table 4) highlight the existence of heterogeneity in terms of state persistence between female- and male-headed households, although the difference is not statistically significant for all the poverty conditions. The APE of past income poverty status among femaleheaded households is equal to 6.2 per cent, which is statistically larger than the APE among maleheaded households (4.4 per cent) at the 10 per cent level of significance. Also the APE of past liquidity poverty is larger for female-headed households (15.7 as opposed to 12.9 per cent), whereas no differences are found for asset poverty and joint income and asset poverty.

Finally, households with homeownership are less likely to persist in a condition of poverty than those without homeownership, regardless of the poverty definition (Panel C of Table 4). The difference between the two groups is significant in the case of income poverty (-4.1 p.p.) and joint income and asset poverty (-2.9 p.p.). This is likely due to the fact that non homeowners constitute the minority of households (less than 20 per cent of the pooled sample), and they are on average less affluent than homeowners, thus facing greater challenges in moving out of the lower tail of the income distribution. <sup>26</sup>

<sup>&</sup>lt;sup>26</sup> On the other hand, Brunetti et al. (2016) find that homeownership increases the likelihood of being financial fragile. While this result may seem at odds with our findings, it is useful to emphasize that our framework differs from theirs in many respects. First, we are examining poverty persistence rather than the likelihood of being poor. Furthermore, differently from us their definition of financial fragility includes also expected and unexpected expenses at the household level. Finally, the analysis of Brunetti et al. (2016) is restricted to those households who bought their main residence at least 10 years before being interviewed in the SHIW, whereas we include all households regardless the time of purchase of either their main residence or other real estate properties.

		CHICEUS		
	Income	Asset	Joint income and asset	Liquidity
Panel A: Indebted households				
Non-indebted households	0.051***	0.143***	0.044***	0.141***
	(0.007)	(0.010)	(0.007)	(0.009)
Indebted households	0.044***	0.125***	0.036***	0.123***
	(0.011)	(0.015)	(0.011)	(0.015)
Difference	-0.007	-0.018	-0.008	-0.018
	(0.011)	(0.015)	(0.010)	(0.015)
Other controls	Yes	Yes	Yes	Yes
Panel B: Gender of the househo	old head			
	0.044***	0.139***	0.039***	0.129***
Male-headed household	(0.007)	(0.010)	(0.007)	(0.010)
Equals handed household	0.062***	0.142***	0.050***	0.157***
Female-neaded nousenoid	(0.010)	(0.013)	(0.009)	(0.013)
Difference	0.018*	0.002	0.010	0.027**
	(0.010)	(0.013)	(0.009)	(0.013)
Other controls	Yes	Yes	Yes	Yes
Panel C: Homeownership				
Non-homeowner	0.081***	0.144***	0.066***	0.160***
households	(0.012)	(0.015)	(0.011)	(0.015)
Homeowner households	0.039***	0.143***	0.037***	0.135***
nonicownei nousenoius	(0.007)	(0.010)	(0.007)	(0.010)
Difference	-0.041***	-0.001	-0.029***	-0.025
	(0.011)	(0.015)	(0.010)	(0.015)
Other controls	Yes	Yes	Yes	Yes

Table 4 - Dynamic random-effects models with heterogeneous state-dependence: Average partial effects

*Notes*: No. of observation: 22,678. Wooldridge (2005) specification of the dynamic random-effects probit model, including an interaction term between the poverty state in the previous wave and (i) non-indebted (Panel A), (ii) male-headed (Panel B), and (iii) non-homeowner households (Panel C). Households with homeownership include those who own their main residence and/or additional properties. Unweighted regressions at the household level. Additional control variables include the set of covariates listed in Table 1, the time-averages of the number of household members and income earners, the income group in the previous wave, and municipality size and time fixed effects. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively.

#### 4.4 Net financial wealth poverty

One may be worried that our results hinge on having kept separated assets and debt. To address such a concern, we replicate the main analysis by employing an indicator of net financial wealth poverty as the dependent variable. Households are classified as poor when their equivalized financial assets, net of financial liabilities, amount to less than one fourth of the ARP threshold. The model specifications are the same as in Section 4.2, with the exception that the indicator variable equal to one for indebted households is not included among the set of covariates, due to the utilization of the level of liabilities in defining the dependent variable, i.e., net financial wealth poverty. The estimated

partial effects of the dynamic random-effects probit model specifications, reported in Table 5, show no statistically significant difference from those of the asset poverty specification detailed in Table 3. These results confirm our findings of strong genuine state dependence in asset-based measures of poverty, irrespective of whether they account or not for financial liabilities.

	Net worth			
	Probit (a)	Wooldridge (b)	ACC (c)	
Lagged dependent variable	0.324*** (0.009)	0.149*** (0.010)	0.219*** (0.012)	
Other controls	Yes	Yes	Yes	
Obs.	22,678	22,678	20,264	

Table 5: Dynamic random-effects and probit models: Average partial effects

*Notes*: (a) Probit: pooled probit model; (b) Wooldridge: Wooldridge (2005) specification of the dynamic random-effects probit model; (c) ACC: Albarran et al. (2019) specification of the dynamic random-effects probit model. Unweighted regressions at the household level. Additional control variables include the set of covariates listed in Table 1, the time-averages of the number of household members and income earners, the income group in the previous wave, and municipality size and year fixed effects.

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

Finally, as a further robustness analysis, a measure of net worth-based poverty indicator is employed as the dependent variable, encompassing all financial and real assets. However, it is important to note that this indicator is less adequate in characterizing households' fragilities in the short term, as real assets are generally less easily converted to cash than financial assets, often requiring time for liquidation. Results of unreported regressions (available upon request) do not change significantly from those reported in Table 5.

#### Conclusions

In this paper, we provide a descriptive analysis of financial well-being of Italian households, and we study the persistence of their financial fragility conditions over the period 2000-2020, using data from the last ten waves of the SHIW.

Confirming previous findings, we find that the chances of being asset- or liquidity-poor are higher among indebted households, this representing a threat to the financial system's stability due to potential difficulties of poor households in repaying debts. On the other hand, indebted households are less likely to be income-poor or jointly income and asset-poor.

We also find significant state dependence in the considered financial fragility dimensions. In particular, financial asset poverty represents the most persistent state, followed by liquidity poverty, whereas the degree of persistence of joint income and financial poverty is lower and close to that of the univariate income process. An analysis of persistence of net financial wealth poverty reaffirms the findings of genuine state dependence in asset-based measures of poverty, regardless of whether they account for financial liabilities or not. Finally, a heterogeneity analysis shows that there are no significant differences in the effects of past poverty on current states between indebted and non-indebted households, while female-headed households exhibit a statistically larger impact of past income poverty compared to male-headed households, and households with homeownership are less likely to persist in poverty.

#### References

- Akay, A. (2012). Finite sample comparison of alternative methods for estimating dynamic panel data models. *Journal of Applied Econometrics*, 27, 1189-1204.
- Albarran, P., Carrasco, R. and Carro, J. M. (2019). Estimation of Dynamic Nonlinear Random Effects Models with Unbalanced Panels. *Oxford Bulletin of Economics and Statistics*, 81, 1424-1441.
- Albarran, P., Carrasco, R. & Carro, J. M. (2020). XTPROBITUNBAL: Stata module to estimate dynamic probit random effects models with unbalanced panels. *Statistical Software Components S458748*, B.C.D.o.E. (Ed.), Boston College Department of Economics.
- Banca d'Italia (2022). Survey of Household Income and Wealth, Statistics, July.
- Barcaroli, G., Ilardi, G., Neri, A. & Tuoto, T. (2021). Optimal sampling design for household finance surveys using administrative income data. *Rivista di Statistica Ufficiale*, 2. Istituto Nazionale di Statistica. Rome, Italy.
- Bettin, G., Pigini, C. & Zazzaro, A. (2023). Lifting you up or dragging you down? The role of financial inclusion in poverty transitions among Italian households. *Review of Income and Wealth*, 69, 606-639.
- Biewen, M. (2009). Measuring state dependence in individual poverty histories when there is feedback to employment status and household composition. *Journal of Applied Econometrics*, 24, 1095–1116.
- Brandolini, A., Magri, S. & Smeeding, T. M. (2010). Asset-based measurement of poverty. *Journal* of Policy Analysis and Management, 29, 267-284.
- Brunetti, M., Giarda, E. & Torricelli, C. (2016). Is Financial Fragility a Matter of Illiquidity? An Appraisal for Italian Households. *Review of Income and Wealth*, 62, 628-649.
- Cappellari, L. & Jenkins, S. P. (2004). Modelling low income transitions. *Journal of Applied Econometrics*, 19, 593–610.
- Chamberlain, G. (1984). Panel Data. In Griliches, Z. & M. D. Intriligator (Eds.), *Handbook of Econometrics*, 2, pp. 1247-1318, Elsevier.
- Devicienti, F. & Poggi, A. (2011). Poverty and social exclusion: two sides of the same coin or dynamically interrelated processes? *Applied Economics*, 43, 3549–3571.
- Fabrizi, E. & Mussida, C. (2020). Assessing poverty persistence in households with children. *The Journal of Economic Inequality*, 18, 551-569.
- Faiella, I. & Gambacorta, R. (2007). The Weighting Process in the SHIW, Temi di discussione (Economic working papers) n. 636, Bank of Italy.
- Gambacorta, R., Rosolia, A. & Zanichelli, F. (2021). The Finances of European Households Throughout the Pandemic. In Bandyopadhyay, S. (Ed.), *Research on Economic Inequality:*

*Poverty, Inequality and Shocks (Research on Economic Inequality), Emerald Publishing Limited, Bingley, 29, pp. 249-267.* 

- Gambacorta R. & Porreca, E. (2022). Bridging techniques in the redesign of the Italian Survey on Household Income and Wealth. Questioni di Economia e Finanza (Occasional Papers) n. 719, Bank of Italy.
- Giarda, E. (2013). Persistency of financial distress amongst Italian households: Evidence from dynamic models for binary panel data. *Journal of Banking & Finance*, 37, 3425–3434.
- Giarda, E. & Moroni, G. (2018). The Degree of Poverty Persistence and the Role of Regional Disparities in Italy in Comparison with France, Spain and the UK. *Social Indicators Research*, 136, 163–202.
- Heckman, J. J. (1981). The incidental parameters problem and the problem of initial conditions in estimating a discrete time-discrete data stochastic process. In Manski, C. F. & D. McFadden (Eds.), *Structural Analysis of Discrete Data with Econometric Applications*. MIT Press, Cambridge, MA.
- Heckman, J. J. (1991). Identifying the Hand of Past: Distinguishing State Dependence from Heterogeneity. *American Economic Review*, 81, 75-79.
- Jappelli, T. & Pistaferri, L. (2014). Fiscal Policy and MPC Heterogeneity. American Economic Journal: Macroeconomics, 6, 107-136.
- Jappelli, T. & Pistaferri, L. (2020). Reported MPC and Unobserved Heterogeneity. *American Economic Journal: Economic Policy*, 12, 275-297.
- Kaplan, G., Violante, G. L. & Weidner, J. (2014). The Wealthy Hand-to-Mouth, *Brookings Papers* on *Economic Activity*, Economic Studies Program, The Brookings Institution, 45, 77-153.
- Loschiavo, D. (2021). Household debt and income inequality: evidence from Italian survey data. *Review of Income and Wealth*, 67, 61-103.
- Loschiavo, D. & Graziano, M. (2022). Liquidity-poor Households in the Midst of the COVID-19 Pandemic. *Review of Income and Wealth*, 68, 541-562.
- Mundlak, Y. (1978). On the pooling of time series and cross section data. Econometrica, 84:69-85.
- Mussida, C. & Sciulli, D. (2022). The dynamics of poverty in Europe: what has changed after the great recession? *The Journal of Economic Inequality*, 20, 915-937.
- Neri A. & Zizza, R. (2010). Income reporting behaviour in sample surveys. Temi di discussione (Economic working papers) n. 777, Bank of Italy.
- Porter, N.M. & Garman, E.T. (1993). Testing a conceptual model of financial well-being. *Financial Counseling and Planning*, 4, 135-165.
- Rabe-Hesketh, S. & Skrondal, A. (2013). Avoiding biased version of Wooldridge's simple solution to the initial conditions problem. *Economics Letters*, 120, 346-349.
- Salignac, F., Hamilton, M., Noone, J., Marjolin, A. & Muir, K. (2020). Conceptualizing Financial Wellbeing: An Ecological Life-Course Approach. *Journal of Happiness Studies*, 21, 1581-1602.
- Skrondal, A. & Rabe-Hesketh, S. (2013). Handling initial conditions and endogenous covariates in dynamic/transition models for binary data with unobserved heterogeneity. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 63, 211-237.
- Wooldridge, J. M. (2005). Simple solutions to the initial conditions problem in dynamic panel data model with unobserved heterogeneity. *Journal of Applied Econometrics*, 20, 39-54.

### Appendix

	(euros)				
At-risk-of-poverty (income)					
Year	threshold	Financial poverty threshold (1)			
2000	7,498	1,874			
2002	8,087	2,022			
2004	8,661	2,165			
2006	9,471	2,368			
2008	9,775	2,444			
2010	9,942	2,486			
2012	9,290	2,323			
2014	9,600	2,400			
2016	9,949	2,487			
2020	10,268	2,567			
2000-2020 average	9,254	2,314			

## Table A1 - Yearly poverty thresholds (*euros*)

Note: (1) Threshold used for both asset and liquidity poverty.

Variables	Variable description
Panel A: Poverty status	
Income poverty	1 for households whose total annual disposable income (after taxes and social transfers), divided by an equivalized number of components (using the modified OECD-scale), is below the ARP threshold (equal to 60 per cent of the median equivalized annual income); 0 otherwise.
Asset poverty	1 for households whose equivalized financial assets (bank and postal deposits, government securities, and other securities including bonds, shares in listed and unlisted companies, and other financial assets) are less than the ARP threshold divided by four; 0 otherwise.
Liquidity poverty	1 for households whose equivalized liquid financial assets (bank and postal deposits) are less than the ARP threshold divided by four; 0 otherwise.
Joint income and asset poverty	1 for households that are both income poor and asset poor, 0 otherwise.
Panel B: Household characteristics	
Income group	Quintiles based on the distribution of households' total annual disposable income.
Real Asset group	Quintiles based on the distribution of households' real assets (including real estate, business equity and valuables).
No. of hh members	Number of household members.
No. of income earners	Number of income earners.
Geographical area	Household macro-area of residence: 1 North-West; 2 North-East; 3 Centre; 4 South; 5 Islands.
Indebted household	1 for indebted households (outstanding balance on credit cards and debt for business purposes excluded), 0 otherwise.
Homeowner household	1 for homeowner (main household residence and/or other properties) households, 0 otherwise.
Lagged poverty status	Poverty status in the previous wave.
Panel C: Household head characteristic	cs
Age	Household head age group: 1 Less than or equal to 30; 2 Between 31 and 40; 3 Between 41 and 50; 4
	Between 51 and 60; 5 More than 60 years old.
Female	1 for households with a female head, 0 otherwise.
Education	Household head education level: 1 Less than primary; 2 Primary; 3 Lower secondary; 4 Upper secondary; 5 Tertiary.
Occupation	Household head main occupation: 1 Employee; 2 Self-employed; 3 Not employed.
Foreigner	1 for households with foreign-born head, 0 otherwise.

Table A2 - Variables used in the analysis: Descriptions

	Asset	Liquidity
Household head characteristics:		
Age		
31-40	-0.089***	-0.079***
	(0.009)	(0.010)
41-50	-0.107***	-0.088***
	(0.009)	(0.009)
51-60	-0.136***	-0.121***
	(0.009)	(0.009)
more than 60	-0.194***	-0.185***
	(0.010)	(0.011)
Female	0.047***	0.042***
	(0.004)	(0.004)
Education		
Primary	-0.049***	-0.052***
	(0.010)	(0.010)
Lower secondary	-0.137***	-0.133***
	(0.011)	(0.011)
Upper secondary	-0.240***	-0.219***
	(0.011)	(0.011)
University degree	-0.320***	-0.301***
	(0.012)	(0.012)
Occupation		
Independent worker	-0.013**	-0.016**
	(0.006)	(0.006)
Not employed	0.038***	0.052***
	(0.006)	(0.006)
Foreigner	0.173***	0.158***
	(0.009)	(0.010)
Household characteristics:		
No. of hh members	0.072***	0.081***
	(0.002)	(0.002)
No. of income earners	-0.067***	-0.065***
	(0.003)	(0.003)
Geographical area		
North-East	0.022***	0.032***
	(0.006)	(0.006)
Centre	0.041***	0.022***
	(0.006)	(0.006)
South	0.190***	0.143***
	(0.006)	(0.006)
Islands	0.205***	0.162***
	(0.007)	(0.008)
Indebted household	0.056***	0.059***
	(0.005)	(0.005)
Real Asset group	× /	
Second	-0.155***	-0.152***
	(0.006)	(0.006)
Third	-0.204***	-0.201***
	(0.006)	(0.006)
Fourth	-0.253***	-0.237***
	(0.006)	(0.007)
Fifth	-0.326***	-0.302***
	(0.007)	(0,007)

Table A3 - Pooled	probit models:	Average part	ial effects
-------------------	----------------	--------------	-------------

*Notes*: No. of observations: 77,686. Full sample. Unweighted regressions at the household level. Baseline categories: Age: less than 31 years old; Education: less than primary; Occupation: employee. Geographical area: North-West. Additional control variables: municipality size and year fixed effects. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively. Standard errors are clustered at the household level.

	Income	Asset	Liquidity	Joint income and
Household head characteristics:				3550
Age				
31-40	-0.083***	-0.059***	-0.049**	-0.075***
	(0.017)	(0.018)	(0.019)	(0.017)
41-50	-0.077***	-0.069***	-0.039**	-0.075***
	(0.017)	(0.018)	(0.019)	(0.018)
51-60	-0.102***	-0.066***	-0.053***	-0.101***
	(0.017)	(0.018)	(0.019)	(0.018)
more than 60	-0.158***	-0.096***	-0.087***	-0.152***
	(0.019)	(0.020)	(0.021)	(0.019)
Female	0.035***	0.005	-0.001	0.031***
	(0.006)	(0.008)	(0.009)	(0.006)
Education				
Primary	-0.026**	0.003	-0.003	-0.025**
	(0.012)	(0.018)	(0.020)	(0.011)
Lower secondary	-0.072***	-0.033*	-0.030	-0.072***
·	(0.013)	(0.020)	(0.021)	(0.012)
Upper secondary	-0.120***	-0.083***	-0.069***	-0.110***
	(0.013)	(0.021)	(0.022)	(0.013)
University degree	-0.171***	-0.119***	-0.111***	-0.154***
	(0.014)	(0.023)	(0.025)	(0.013)
Occupation			. ,	. ,
Independent worker	0.064***	-0.022*	-0.025*	0.040***
	(0.009)	(0.012)	(0.013)	(0.008)
Not employed	0.092***	-0.034***	-0.015	0.071***
Not employed	(0.007)	(0.011)	(0.011)	(0.007)
Foreigner	0.096***	0.103***	0.097***	0.102***
l'orenginer	(0.017)	(0.023)	(0.024)	(0.016)
Household abaracteristics.	(0.017)	(0.023)	(0.024)	(0.010)
N <sub>1</sub> - f h month and	0.077***	0.001***	0.000***	0.0(1***
No. of hit members	(0.002)	(0.004)	0.090****	0.001
	(0.003)	(0.004)	(0.004)	(0.002)
No. of income earners	-0.118***	0.014**	0.006	-0.087***
	(0.004)	(0.006)	(0.006)	(0.004)
Geographical area				
North-East	0.006	0.016	0.035***	0.004
	(0.009)	(0.012)	(0.013)	(0.007)
Centre	0.021**	0.026**	0.010	0.012
	(0.009)	(0.012)	(0.013)	(0.008)
South	0.121***	0.130***	0.084***	0.101***
	(0.009)	(0.012)	(0.013)	(0.008)
Islands	0.099***	0.139***	0.094***	0.090***
	(0.009)	(0.014)	(0.014)	(0.008)
Indebted household	-0.022***	0.067***	0.066***	-0.014***
	(0.006)	(0.008)	(0.009)	(0.005)
Real Asset group				
Second	-0.130***	-0.101***	-0.102***	-0.113***
	(0.011)	(0.012)	(0.013)	(0.010)
Third	-0.213***	-0.119***	-0.130***	-0.176***
Third	(0.011)	(0.013)	(0.013)	(0.010)
Fourth	-0 253***	-0.125***	-0.120***	-0.202***
routin	(0.011)	(0.013)	(0.014)	(0.010)
Eith	(0.011)	(0.015)	(0.014)	(0.010)
Filin	-0.278***	-0.154***	-0.148***	-0.225****
<b>.</b>	(0.011)	(0.015)	(0.015)	(0.010)
Income group				
Second		-0.204***	-0.201***	
		(0.012)	(0.012)	
Third		-0.302***	-0.291***	
		(0.014)	(0.013)	
Fourth		-0.425***	-0.399***	
		(0.015)	(0.015)	
Fifth		-0.529***	-0.488***	
		(0.016)	(0.016)	

Table A4 - Pooled	probit models: A	Average partial effects

*Notes*: No of observations: 25,067. Households interviewed at least five times starting from 2000. Unweighted regressions at the household level. Baseline categories: Age: less than 31 years old; Education: less than primary; Occupation: employee. Geographical area: North-West. Additional control variables: municipality size and year fixed effects. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively. Standard errors are clustered at the household level.

		Income		Jo	oint income and asse	et
_	Probit (a)	Wooldridge (b)	ACC (c)	Probit (a)	Wooldridge (b)	ACC (c)
I agged poverty status	0.955***	0.461***	0.582***	0.853***	0.441***	0.530***
Lagged poverty status	(0.048)	(0.055)	(0.060)	(0.047)	(0.055)	(0.061)
Household head character	ristics					
Age						
31-40	-0.358***	-0.401***	-0.293**	-0.326***	-0.366***	-0.264**
	(0.101)	(0.118)	(0.132)	(0.108)	(0.117)	(0.134)
41-50	-0.292***	-0.316***	-0.242*	-0.310***	-0.335***	-0.233*
	(0.097)	(0.110)	(0.124)	(0.103)	(0.110)	(0.126)
51-60	-0.391***	-0.408***	-0.364***	-0.412***	-0.441***	-0.338**
	(0.096)	(0.110)	(0.123)	(0.102)	(0.109)	(0.125)
more than 60	-0.757***	-0.798***	-0.675***	-0.812***	-0.864***	-0.671**
	(0.107)	(0.123)	(0.137)	(0.113)	(0.123)	(0.139)
Female	0.177***	0.237***	0.196***	0.176***	0.224***	0.184***
	(0.041)	(0.048)	(0.053)	(0.043)	(0.049)	(0.055)
Education						
Primary	-0.092	-0.109	-0.124	-0.077	-0.09	-0.177**
-	(0.059)	(0.081)	(0.084)	(0.063)	(0.079)	(0.086)
Lower secondary	-0.278***	-0.268***	-0.282***	-0.300***	-0.327***	-0.345**
···· 2	(0.067)	(0.090)	(0.094)	(0.072)	(0.089)	(0.096)
Upper secondary	-0.505***	-0.585***	-0.482***	-0.485***	-0.566***	-0.503**
- FF	(0.078)	(0.101)	(0.107)	(0.083)	(0.101)	(0.110)
University degree	-1.050***	-1.166***	-0.870***	-1.102***	-1.218***	-0.919**
	(0.132)	(0.153)	(0.181)	(0.140)	(0.168)	(0.198)
Occupation	(0000-)	(00000)	(00000)	(012.10)	(01000)	(0.022.0)
Independent worker	0.532***	0.586***	0.526***	0 412***	0.473***	0 405***
independent worker	(0.064)	(0.074)	(0.083)	(0.063)	(0.076)	(0.085)
Not employed	0.651***	0 773***	0.615***	0.555***	0.633***	0 473***
i tot employed	(0.056)	(0.063)	(0.071)	(0.057)	(0.063)	(0.071)
Foreigner	0.462***	0.585***	0 441***	0 527***	0.668***	0 391**
Poleighei	(0.086)	(0.111)	(0.127)	(0.090)	(0.107)	(0.123)
Jourshold abaractoristics	(0.080)	(0.111)	(0.127)	(0.090)	(0.107)	(0.123)
	0 55 4 * * *	0.720***	0.50(***	0.502***	0 ( 12 * * *	0 502**
No. of nn members	0.334***	(0.040)	0.380444	(0.021)	(0.043	(0.040)
Nf.	(0.022)	(0.040)	(0.048)	(0.021)	(0.040)	(0.049)
	-0.780***	-1.077***	-0.910***	-0.625***	-0.834***	-0.706**
earners	(0.025)	(0.045)	(0, 054)	(0.025)	(0.045)	(0.054)
C 1' 1	(0.035)	(0.045)	(0.054)	(0.055)	(0.045)	(0.054)
Geographical area	0.047	0.040	0.020	0.020	0.000	0.001
North-East	0.047	0.042	0.028	0.029	0.009	0.001
<b>G</b>	(0.069)	(0.085)	(0.092)	(0.073)	(0.089)	(0.099)
Centre	0.127*	0.107	0.152*	0.065	0.011	0.083
	(0.067)	(0.085)	(0.089)	(0.074)	(0.090)	(0.095)
South	0.519***	0.640***	0.518***	0.519***	0.585***	0.411***
T 1 1	(0.057)	(0.075)	(0.077)	(0.059)	(0.076)	(0.079)
Islands	0.427***	0.500***	0.439***	0.471***	0.511***	0.376***
<b></b>	(0.061)	(0.080)	(0.084)	(0.063)	(0.080)	(0.086)
Indebted household	-0.130***	-0.123**	-0.107*	-0.078	-0.058	-0.034
	(0.047)	(0.053)	(0.059)	(0.049)	(0.055)	(0.063)
Income group in the pre	vious wave					
Second	-0.272***	-0.231***	-0.265***	-0.336***	-0.271***	-0.320**
	(0.045)	(0.053)	(0.060)	(0.045)	(0.052)	(0.060)
Third	-0.395***	-0.363***	-0.381***	-0.527***	-0.461***	-0.486**
	(0.058)	(0.068)	(0.077)	(0.057)	(0.066)	(0.076)
Fourth	-0.624***	-0.616***	-0.623***	-0.855***	-0.826***	-0.795**
	(0.075)	(0.084)	(0.096)	(0.076)	(0.086)	(0.102)
Fifth	-0.818***	-0.802***	-0.679***	-1.050***	-1.021***	-0.810**
	(0.101)	(0.111)	(0.132)	(0.109)	(0.122)	(0.152)
Real Asset group	·····/		······			(
Second	-0.442***	-0.502***	-0.439***	-0.437***	-0.467***	-0.394**
	(0.045)	(0.052)	(0.057)	(0.047)	(0.051)	(0.058)
Third	-0.840***	-0.974***	-0.800***	-0.815***	-0.900***	-0.763**
1111.0	(0.050)	(0.059)	(0.065)	(0.052)	(0.060)	(0.067)
	(0.050)	10.0071	(0.000)	(0.054)	(0.000)	(0.007)

# Table A5 - Dynamic random-effects probit and pooled probit models: Estimated coefficients (Dependent variables: Income poverty, and joint income and asset poverty)

Fourth	-1.139***	-1.318***	-1.072***	-1.017***	-1.104***	-0.898***
	(0.059)	(0.070)	(0.077)	(0.060)	(0.071)	(0.080)
Fifth	-1.363***	-1.596***	-1.345***	-1.306***	-1.448***	-1.164***
	(0.079)	(0.090)	(0.102)	(0.088)	(0.098)	(0.118)
No. of hh members (time average)		-0.068	Sub-panel specific	•	-0.057	Sub-panel specific
		(0.045)			(0.045)	
No. of income earners (time average)		0.178***	"		0.174***	**
		(0.065)			(0.066)	
Poverty status at time zero		0.686***	"		0.604***	"
		(0.061)			(0.058)	
Constant	-0.706***	-1.135***	**	-0.998***	-1.480***	**
	(0.156)	(0.190)		(0.160)	(0.194)	
$\sigma_a$		0.667	"		0.569	"
		(0.037)			(0.039)	
ρ		0.308	"		0.244	"
		(0.024)			(0.026)	
Obs.	22678	22678	18049	22678	22678	16033

*Notes*: (a) Probit: pooled probit model; (b) Wooldridge: Wooldridge (2005) specification of the dynamic random-effects probit model; (c) ACC: Albarran et al. (2019) specification of the dynamic random-effects probit model.  $\rho$  is the proportion of the total variance contributed by the panel-level variance component, namely,  $\rho = \frac{\sigma_a^2}{1+\sigma_a^2}$ . Sub-panel-specific estimates of the ACC formulations are not reported. Baseline categories: Age: less than 31 years old; Education: less than primary; Occupation: employee. Geographical area: North-West. Additional control variables: Municipality size and year fixed effects. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively.

Table A6 - Dynamic random-effects probit and pooled probit models: Estimated coefficients (Dependent variables: Asset poverty and liquidity poverty)

Asset			Liquidity			
probit (a)	Wooldridge (b)	ACC (c)	probit (a)	Wooldridge (b)	ACC (c)	
0.913***	0.541***	0.674***	0.812***	0.473***	0.610***	
(0.025)	(0.030)	(0.032)	(0.023)	(0.027)	(0.030)	
stics						
-0.192***	-0.250***	-0.234***	-0.131**	-0.176**	-0.173**	
(0.065)	(0.076)	(0.085)	(0.063)	(0.072)	(0.080)	
-0.214***	-0.241***	-0.228***	-0.105*	-0.114*	-0.105	
(0.063)	(0.073)	(0.081)	(0.060)	(0.069)	(0.076)	
-0.192***	-0.224***	-0.205***	-0.145**	-0.175***	-0.144*	
(0.061)	(0.072)	(0.079)	(0.059)	(0.068)	(0.075)	
-0.267***	-0.322***	-0.280***	-0.220***	-0.264***	-0.202**	
(0.068)	(0.081)	(0.088)	(0.066)	(0.076)	(0.083)	
0.007	-0.007	0.011	-0.007	-0.018	0.00	
(0.026)	(0.030)	(0.032)	(0.025)	(0.028)	(0.030)	
0.072	0.071	0.005	0.043	0.044	-0.007	
(0.053)	(0.065)	(0.068)	(0.054)	(0.063)	(0.066)	
0.007	0.012	-0.064	0.005	0.009	-0.051	
(0.056)	(0.069)	(0.072)	(0.057)	(0.067)	(0.070)	
-0.098	-0.11	-0.165**	-0.063	-0.08	-0.116	
(0.061)	(0.074)	(0.077)	(0.060)	(0.071)	(0.074)	
-0.211***	-0.258***	-0.266***	-0.171**	-0.205**	-0.211**	
(0.070)	(0.085)	(0.089)	(0.068)	(0.080)	(0.084)	
-0.009	0.007	0.034	-0.02	-0.01	0.034	
(0.040)	(0.046)	(0.049)	(0.037)	(0.043)	(0.045)	
-0.081**	-0.072*	-0.06	-0.019	-0.016	-0.013	
(0.036)	(0.041)	(0.044)	(0.033)	(0.038)	(0.041)	
0.242***	0.277***	0.225**	0.213***	0.240***	0.196**	
(0.069)	(0.081)	(0.092)	(0.066)	(0.078)	(0.088)	
	probit (a)           0.913***           (0.025)           stics           -0.192***           (0.065)           -0.214***           (0.063)           -0.192***           (0.063)           -0.192***           (0.063)           -0.267***           (0.068)           0.007           (0.026)           0.072           (0.053)           0.007           (0.056)           -0.098           (0.061)           -0.211***           (0.070)           -0.009           (0.040)           -0.081**           (0.036)           0.242***           (0.069)	Assetprobit (a)Wooldridge (b) $0.913^{***}$ $0.541^{***}$ $(0.025)$ $(0.030)$ stics $-0.250^{***}$ $(0.065)$ $(0.076)$ $-0.214^{***}$ $-0.241^{***}$ $(0.063)$ $(0.073)$ $-0.192^{***}$ $-0.241^{***}$ $(0.061)$ $(0.072)$ $-0.267^{***}$ $-0.322^{***}$ $(0.068)$ $(0.081)$ $0.007$ $-0.007$ $(0.026)$ $(0.030)$ $0.072$ $0.071$ $(0.053)$ $(0.065)$ $0.007$ $0.012$ $(0.056)$ $(0.069)$ $-0.098$ $-0.11$ $(0.061)$ $(0.074)$ $-0.211^{***}$ $-0.258^{***}$ $(0.070)$ $(0.085)$ $-0.009$ $0.007$ $(0.085)$ $-0.007$ $(0.040)$ $(0.046)$ $-0.081^{**}$ $-0.072^{*}$ $(0.036)$ $(0.041)$ $0.242^{***}$ $0.277^{***}$ $(0.069)$ $(0.081)$	Assetprobit (a)Wooldridge (b)ACC (c) $0.913***$ $0.541***$ $0.674***$ $(0.025)$ $(0.030)$ $(0.032)$ stics $-0.192***$ $-0.250***$ $-0.234***$ $(0.065)$ $(0.076)$ $(0.085)$ $-0.214***$ $-0.241***$ $-0.228***$ $(0.063)$ $(0.073)$ $(0.081)$ $-0.192**$ $-0.224***$ $-0.205***$ $(0.061)$ $(0.072)$ $(0.079)$ $-0.267***$ $-0.322***$ $-0.280***$ $(0.068)$ $(0.081)$ $(0.088)$ $0.007$ $-0.007$ $0.011$ $(0.026)$ $(0.030)$ $(0.032)$ $0.072$ $0.071$ $0.005$ $(0.053)$ $(0.065)$ $(0.068)$ $0.007$ $0.012$ $-0.064$ $(0.056)$ $(0.069)$ $(0.072)$ $-0.098$ $-0.11$ $-0.165**$ $(0.061)$ $(0.074)$ $(0.077)$ $-0.211***$ $-0.258***$ $-0.266***$ $(0.070)$ $(0.085)$ $(0.089)$ $-0.009$ $0.007$ $0.034$ $(0.040)$ $(0.046)$ $(0.049)$ $-0.081**$ $-0.072*$ $-0.06$ $(0.036)$ $(0.041)$ $(0.044)$ $0.242***$ $0.277**$ $0.225**$ $(0.069)$ $(0.081)$ $(0.092)$	Assetprobit (a)Wooldridge (b)ACC (c)probit (a) $0.913^{***}$ $0.541^{***}$ $0.674^{***}$ $0.812^{***}$ $(0.025)$ $(0.030)$ $(0.032)$ $(0.023)$ stics $-0.192^{***}$ $-0.250^{***}$ $-0.234^{***}$ $-0.131^{**}$ $(0.065)$ $(0.076)$ $(0.085)$ $(0.063)$ $-0.214^{***}$ $-0.241^{***}$ $-0.228^{***}$ $-0.105^{*}$ $(0.063)$ $(0.073)$ $(0.081)$ $(0.060)$ $-0.192^{***}$ $-0.224^{***}$ $-0.205^{***}$ $-0.145^{**}$ $(0.061)$ $(0.072)$ $(0.079)$ $(0.059)$ $-0.267^{***}$ $-0.322^{***}$ $-0.280^{***}$ $-0.220^{***}$ $(0.068)$ $(0.081)$ $(0.088)$ $(0.066)$ $0.007$ $-0.007$ $0.011$ $-0.007$ $(0.026)$ $(0.030)$ $(0.032)$ $(0.025)$ $0.072$ $0.071$ $0.005$ $0.043$ $(0.053)$ $(0.065)$ $(0.068)$ $(0.054)$ $0.007$ $0.012$ $-0.064$ $0.005$ $(0.056)$ $(0.069)$ $(0.077)$ $(0.060)$ $-0.211^{***}$ $-0.258^{***}$ $-0.266^{***}$ $-0.171^{**}$ $(0.070)$ $(0.085)$ $(0.089)$ $(0.068)$ $-0.009$ $0.007$ $0.034$ $-0.02$ $(0.040)$ $(0.046)$ $(0.049)$ $(0.037)$ $-0.081^{**}$ $-0.072^{*}$ $-0.06$ $-0.019$ $(0.036)$ $(0.041)$ $(0.044)$ $(0.033)$ $0.242^{***}$ $0.277^{***}$ </td <td>AssetLiquidityprobit (a)Wooldridge (b)ACC (c)probit (a)Wooldridge (b)<math>0.913^{***}</math><math>0.541^{***}</math><math>0.674^{***}</math><math>0.812^{***}</math><math>0.473^{***}</math><math>(0.025)</math><math>(0.030)</math><math>(0.032)</math><math>(0.023)</math><math>(0.027)</math>stics<math>-0.192^{***}</math><math>-0.250^{***}</math><math>-0.234^{***}</math><math>-0.131^{**}</math><math>-0.176^{**}</math><math>(0.065)</math><math>(0.076)</math><math>(0.085)</math><math>(0.063)</math><math>(0.072)</math><math>-0.214^{***}</math><math>-0.241^{***}</math><math>-0.228^{***}</math><math>-0.105^{*}</math><math>-0.114^{*}</math><math>(0.063)</math><math>(0.073)</math><math>(0.081)</math><math>(0.060)</math><math>(0.069)</math><math>-0.192^{***}</math><math>-0.224^{***}</math><math>-0.205^{***}</math><math>-0.145^{**}</math><math>-0.175^{***}</math><math>(0.061)</math><math>(0.072)</math><math>(0.079)</math><math>(0.059)</math><math>(0.068)</math><math>-0.267^{***}</math><math>-0.322^{***}</math><math>-0.280^{***}</math><math>-0.220^{***}</math><math>-0.264^{***}</math><math>(0.068)</math><math>(0.081)</math><math>(0.088)</math><math>(0.066)</math><math>(0.076)</math><math>0.007</math><math>-0.007</math><math>0.011</math><math>-0.007</math><math>-0.018</math><math>(0.026)</math><math>(0.030)</math><math>(0.032)</math><math>(0.025)</math><math>(0.028)</math><math>0.072</math><math>0.071</math><math>0.005</math><math>0.043</math><math>0.044</math><math>(0.053)</math><math>(0.065)</math><math>(0.068)</math><math>(0.057)</math><math>(0.067)</math><math>-0.098</math><math>-0.11</math><math>-0.165^{**}</math><math>-0.063</math><math>-0.08</math><math>(0.061)</math><math>(0.074)</math><math>(0.077)</math><math>(0.060)</math><math>(0.071)</math><math>-0.018</math><math>(0.060)</math><math>(0.071)</math><math>-0.26^{***}</math><math>-0.171^{**}</math><math>(0.053)</math><math>(0.069)</math><math>(0.072)</math><math>(0.057)</math><math>(0.067)</math></td>	AssetLiquidityprobit (a)Wooldridge (b)ACC (c)probit (a)Wooldridge (b) $0.913^{***}$ $0.541^{***}$ $0.674^{***}$ $0.812^{***}$ $0.473^{***}$ $(0.025)$ $(0.030)$ $(0.032)$ $(0.023)$ $(0.027)$ stics $-0.192^{***}$ $-0.250^{***}$ $-0.234^{***}$ $-0.131^{**}$ $-0.176^{**}$ $(0.065)$ $(0.076)$ $(0.085)$ $(0.063)$ $(0.072)$ $-0.214^{***}$ $-0.241^{***}$ $-0.228^{***}$ $-0.105^{*}$ $-0.114^{*}$ $(0.063)$ $(0.073)$ $(0.081)$ $(0.060)$ $(0.069)$ $-0.192^{***}$ $-0.224^{***}$ $-0.205^{***}$ $-0.145^{**}$ $-0.175^{***}$ $(0.061)$ $(0.072)$ $(0.079)$ $(0.059)$ $(0.068)$ $-0.267^{***}$ $-0.322^{***}$ $-0.280^{***}$ $-0.220^{***}$ $-0.264^{***}$ $(0.068)$ $(0.081)$ $(0.088)$ $(0.066)$ $(0.076)$ $0.007$ $-0.007$ $0.011$ $-0.007$ $-0.018$ $(0.026)$ $(0.030)$ $(0.032)$ $(0.025)$ $(0.028)$ $0.072$ $0.071$ $0.005$ $0.043$ $0.044$ $(0.053)$ $(0.065)$ $(0.068)$ $(0.057)$ $(0.067)$ $-0.098$ $-0.11$ $-0.165^{**}$ $-0.063$ $-0.08$ $(0.061)$ $(0.074)$ $(0.077)$ $(0.060)$ $(0.071)$ $-0.018$ $(0.060)$ $(0.071)$ $-0.26^{***}$ $-0.171^{**}$ $(0.053)$ $(0.069)$ $(0.072)$ $(0.057)$ $(0.067)$	

Household characteristics

No. of hh members	0.238***	0.248***	0.193***	0.237***	0.256***	0.205***
	(0.013)	(0.026)	(0.031)	(0.012)	(0.025)	(0.029)
No. of income	0.041**	0.024	0.023	0.009	-0.027	-0.013
camers	(0.020)	(0.029)	(0.033)	(0.019)	(0.027)	(0.031)
Geographical area						
North-East	0.011	-0.007	0.031	0.049	0.039	0.065
	(0.037)	(0.046)	(0.047)	(0.034)	(0.042)	(0.042)
Centre	0.041	0.035	0.054	-0.006	-0.016	0.011
Contro	(0.036)	(0.046)	(0.047)	(0.034)	(0.043)	(0.043)
South	0.283***	0 319***	0 291***	0 148***	0.167***	0 152***
South	(0.035)	(0.046)	(0.047)	(0.033)	(0.043)	(0.044)
Islands	0.296***	0 337***	0.271***	0.168***	0 105***	0.152***
Islands	(0.038)	(0.050)	(0.052)	(0.037)	(0.048)	(0.049)
Indahtad hayaahald	0.202***	0.192***	0.196***	0.160***	0.120***	0.160***
Indebted nousehold	0.202****	0.182***	0.180****	0.100***	0.139***	0.100++++
-	(0.028)	(0.031)	(0.033)	(0.027)	(0.029)	(0.031)
Income group						
Second	-0.481***	-0.517***	-0.453***	-0.462***	-0.501***	-0.437***
	(0.038)	(0.042)	(0.046)	(0.037)	(0.042)	(0.045)
Third	-0.703***	-0.755***	-0.633***	-0.653***	-0.703***	-0.597***
	(0.045)	(0.049)	(0.053)	(0.044)	(0.047)	(0.052)
Fourth	-1.030***	-1.110***	-0.933***	-0.909***	-0.978***	-0.849***
	(0.052)	(0.057)	(0.062)	(0.050)	(0.054)	(0.059)
Fifth	-1.375***	-1.471***	-1.294***	-1.139***	-1.215***	-1.093***
	(0.065)	(0.070)	(0.075)	(0.061)	(0.065)	(0.070)
Income group in the pre	evious wave					
Second	-0.022	-0.04	0.021	-0.04	-0.059	-0.013
	(0.038)	(0.042)	(0.045)	(0.037)	(0.041)	(0.044)
Third	-0.011	-0.05	0.007	-0.032	-0.066	-0.024
	(0.043)	(0.046)	(0.050)	(0.041)	(0.045)	(0.049)
Fourth	-0.063	-0.136***	-0.03	-0.079*	-0.154***	-0.073
routin	(0.047)	(0.052)	(0.057)	(0.045)	(0.050)	(0.054)
Fifth	-0.128**	-0 227***	-0.076	-0 134***	-0 235***	-0 123**
Tilui	(0.054)	(0.061)	(0.066)	(0.051)	(0.057)	(0.062)
Paal Assat group	(0.054)	(0.001)	(0.000)	(0.051)	(0.057)	(0.002)
Second	0.275***	0 207***	0.285***	0 270***	0.205***	0 272***
Second	-0.273***	-0.297	-0.283	-0.270***	-0.293	-0.273
	(0.057)	(0.041)	(0.044)	(0.050)	(0.040)	(0.043)
Inird	-0.331***	-0.379***	-0.337***	-0.339***	-0.393***	-0.372***
	(0.037)	(0.043)	(0.045)	(0.036)	(0.041)	(0.044)
Fourth	-0.313***	-0.345***	-0.323***	-0.28/***	-0.329***	-0.313***
	(0.039)	(0.045)	(0.048)	(0.038)	(0.043)	(0.046)
Fifth	-0.3/8***	-0.420***	-0.392***	-0.331***	-0.3/3***	-0.366***
	(0.045)	(0.050)	(0.054)	(0.042)	(0.048)	(0.051)
No. of hh members		0.038	Sub-panel		0.028	Sub-panel
(time average)			specific			specific
		(0.030)			(0.029)	
No. of income earners		0.021	"		0.045	"
(time average)		(0.0.14)			(0.0.0.0)	
		(0.041)			(0.038)	
Poverty status at time		0 403***	"		0 317***	"
zero	•	0.405			0.517	
		(0.035)			(0.031)	
Constant	-0.477***	-0.530***	"	-0.212**	-0.209*	"
	(0.106)	(0.126)		(0.102)	(0.119)	
$\sigma_{a}$	•	0.523	"	•	0.509	"
u	-	(0.023)			(0.021)	
0		0.215	"		0.206	"
P	•	(0.015)		•	(0.014)	
01	00/70	(0.015)	20261	00/70	(0.014)	100.00
UDS.	22678	22678	20264	22678	22678	19960

 Obs.
 22078
 22078
 22078
 22078
 22078
 19900

 Notes: (a) Probit: pooled probit model; (b) Wooldridge: Wooldridge (2005) specification of the dynamic random-effects probit model; (c) ACC:
 Albarran et al. (2019) specification of the dynamic random-effects probit model.  $\rho$  is the proportion of the total variance contributed by the panel-level variance component, namely,  $\rho = \frac{\sigma_a^2}{1+\sigma_a^2}$ . Sub-panel-specific estimates of the ACC formulations are not reported. Baseline categories: Age: less than 31 years old; Education: less than primary; Occupation: employee. Geographical area: North-West. Additional control variables: Municipality size and year fixed effects. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively.
 22078
 22078
 22078
 19900

	A	Asset		Liquidity		
	Probit (a)	Wooldridge (b)	Probit (a)	Wooldridge (b)		
no. of months		-		-		
12	0.298	0.136	0.247	0.131		
6	0.297	0.156	0.282	0.166		
3	0.282	0.140	0.273	0.137		
1	0.253	0.123	0.259	0.129		

#### Table A7 - Sensitivity to different poverty thresholds - Dynamic random-effects and probit models: Average partial effects

*Notes*: No. of observation: 22,678. (a) Probit: pooled probit model; (b) Wooldridge: Wooldridge (2005) specification of the dynamic random-effects probit model. Unweighted regressions at the household level. Additional control variables include the set of covariates listed in Table 1, the time-averages of the number of household members and income earners, the income group in the previous wave, and municipality size and year fixed effects. All the estimates are significant at the 1 percent level.

### Table A8 - Dynamic random-effects probit models with the inclusion of sampling weights as covariates: Average partial effects

	Income	Asset	Joint income and asset	Liquidity
Lagged dependent variable	0.050***	0.140***	0.043***	0.137***
	(0.007)	(0.009)	(0.006)	(0.009)
Indebted household	-0.012**	0.043***	-0.005	0.038***
	(0.005)	(0.007)	(0.005)	(0.008)
Other controls	Yes	Yes	Yes	Yes

*Notes*: No. of observation: 22,678. Wooldridge (2005) specification of the dynamic random-effects probit model. Unweighted regressions at the household level. Additional control variables include the set of covariates listed in Table 1, the time-averages of the number of household members and income earners, the income group in the previous wave, and municipality size and year fixed effects. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively.

- N. 1428 *Natural gas and the macroeconomy: not all energy shocks are alike*, by Piergiorgio Alessandri and Andrea Giovanni Gazzani (November 2023).
- N. 1429 Inflation is not equal for all: the heterogenous effects of energy shocks, by Francesco Corsello and Marianna Riggi (November 2023).
- N. 1430 *Labor market dynamics and geographical reallocations*, by Gaetano Basso, Salvatore Lo Bello and Francesca Subioli (November 2023).
- N. 1431 Monetary and fiscal policy responses to fossil fuel price shocks, by Anna Bartocci, Alessandro Cantelmo, Pietro Cova, Alessandro Notarpietro and Massimiliano Pisani (December 2023).
- N. 1432 Do female leaders choose women? Evidence from visible and hidden appointments, by Andrea Cintolesi and Edoardo Frattola (December 2023).
- N.1433 Monetary policy tightening in response to uncertain stagflationary shocks: a model-based analysis, by Anna Bartocci, Alessandro Cantelmo, Alessandro Notarpietro and Massimiliano Pisani (December 2023).
- N. 1434 *Inflation, capital structure and firm value*, by Andrea Fabiani and Fabio Massimo Piersanti (December 2023).
- N. 1435 Announcement and implementation effects of central bank asset purchases, by Marco Bernardini and Antonio M. Conti (December 2023).
- N. 1436 *Connecting the dots: the network nature of shocks propagation in credit markets*, by Stefano Pietrosanti and Edoardo Rainone (December 2023).
- N. 1437 Inflation expectations and misallocation of resources: evidence from Italy, by Tiziano Ropele, Yuriy Gorodnichenko and Olivier Coibion (December 2023).
- N. 1438 Women in economics: the role of gendered references at entry in the profession, by Audinga Baltrunaite, Alessandra Casarico and Lucia Rizzica. (February 2024).
- N. 1439 *Procuring survival*, by Matilde Cappelletti, Leonardo M. Giuffrida and Gabriele Rovigatti. (February 2024).
- N. 1440 Estimating the returns to occupational licensing: evidence from regression discontinuities at the bar exam, by Omar Bamieh, Andrea Cintolesi and Mario Pagliero. (February 2024).
- N. 1441 Household perceived sources of business cycle fluctuations: a tale of supply and demand, by Clodomiro Ferreira and Stefano Pica. (February 2024).
- N. 1442 Aggregate uncertainty, HANK, and the ZLB, by Alessandro Lin and Marcel Peruffo (March 2024).
- N.1443 *Monetary policy under natural disaster shocks*, by Alessandro Cantelmo, Nikos Fatouros, Giovanni Melina and Chris Papageorgiou (March 2024).
- N.1444 Endogenous job destruction risk and aggregate demand shortages, by Nicolò Gnocato (March 2024).
- N. 1445 Carbon taxes around the world: cooperation, strategic interactions, and spillovers, by Alessandro Moro and Valerio Nispi Landi (March 2024).
- N. 1446 *Nowcasting Italian GDP growth: a Factor MIDAS approach*, by Donato Ceci, Orest Prifti and Andrea Silvestrini (March 2024).
- N. 1447 The green sin: how exchange rate volatility and financial openness affect green premia, by Alessandro Moro and Andrea Zaghini (March 2024).
- N. 1448 *Oil price shocks in real time*, by Andrea Gazzani, Fabrizio Venditti and Giovanni Veronese (March 2024).
- N. 1449 Market perceptions, monetary policy, and credibility, by Vincenzo Cuciniello (March 2024).
- N. 1450 Energy price shocks, unemployment, and monetary policy, by Nicolò Gnocato (March 2024).

<sup>(\*)</sup> Requests for copies should be sent to:

Banca d'Italia – Servizio Studi di struttura economica e finanziaria – Divisione Biblioteca e Archivio storico – Via Nazionale, 91 – 00184 Rome – (fax 0039 06 47922059). They are available on the Internet www.bancaditalia.it.

2022

- ANDINI M., M. BOLDRINI, E. CIANI, G. DE BLASIO, A. D'IGNAZIO and A. PALADINI, Machine learning in the service of policy targeting: the case of public credit guarantees, Journal of Economic Behavior & Organization, v. 198, pp. 434-475, WP 1206 (February 2019).
- ANGELICO C., J. MARCUCCI, M. MICCOLI and F. QUARTA, Can we measure inflation expectations using twitter?, Journal of Econometrics, v. 228, 2, pp. 259-277, WP 1318 (February 2021).
- BARTOCCI A., A. NOTARPIETRO and M. PISANI, *Covid-19 shock and fiscal-monetary policy mix in a monetary union*, Economic challenges for Europe after the pandemic, Springer Proceedings in Business and Economics, Berlin-Heidelberg, Springer, **WP 1313 (December 2020).**
- BOTTERO M., C. MINOIU, J. PEYDRÒ, A. POLO, A. PRESBITERO and E. SETTE, *Expansionary yet different: credit supply and real effects of negative interest rate policy*, Journal of Financial Economics, v. 146, 2, pp. 754-778, WP 1269 (March 2020).
- BRONZINI R., A. D'IGNAZIO and D. REVELLI, *Financial structure and bank relationships of Italian multinational firms*, Journal of Multinational Financial Management, v. 66, Article 100762, WP 1326 (March 2021).
- CANTELMO A., *Rare disasters, the natural interest rate and monetary policy,* Oxford Bulletin of Economics and Statistics, v. 84, 3, pp. 473-496, **WP 1309 (December 2020).**
- CARRIERO A., F. CORSELLO and M. MARCELLINO, *The global component of inflation volatility*, Journal of Applied Econometrics, v. 37, 4, pp. 700-721, **WP 1170 (May 2018).**
- CIAPANNA E. and G. ROVIGATTI, *The grocery trolley race in times of Covid-19. Evidence from Italy*, Italian Economic Journal / Rivista italiana degli economisti, v. 8, 2, pp. 471-498, **WP 1341 (June 2021)**.
- CONTI A. M., A. NOBILI and F. M. SIGNORETTI, *Bank capital requirement shocks: a narrative perspective,* European Economic Review, v.151, Article 104254, **WP 1199 (November 2018).**
- FAIELLA I. and A. MISTRETTA, *The net zero challenge for firms' competitiveness*, Environmental and Resource Economics, v. 83, pp. 85-113, **WP 1259 (February 2020).**
- FERRIANI F. and G. VERONESE, *Hedging and investment trade-offs in the U.S. oil industry*, Energy Economics, v. 106, Article 105736, WP 1211 (March 2019).
- GUISO L., A. POZZI, A. TSOY, L. GAMBACORTA and P. E. MISTRULLI, *The cost of steering in financial markets:* evidence from the mortgage market, Journal of Financial Economics, v.143, 3, pp. 1209-1226, WP 1252 (December 2019).
- LAMORGESE A. and D. PELLEGRINO, *Loss aversion in housing appraisal: evidence from Italian homeowners,* Journal of Housing Economics, v. 56, Article 101826, WP 1248 (November 2019).
- LI F., T. MÄKINEN, A. MERCATANTI and A. SILVESTRINI, *Causal analysis of central bank holdings of corporate bonds under interference*, Economic Modelling, v.113, Article 105873, WP 1300 (November 2020).
- LOBERTO M, A. LUCIANI and M. PANGALLO, *What do online listings tell us about the housing market?*, International Journal of Central Banking, v. 18, 4, pp. 325-377, **WP 1171 (April 2018).**
- MIRENDA L., M. SAURO and L. RIZZICA, *The economic effects of mafia: firm level evidence*, American Economic Review, vol. 112, 8, pp. 2748-2773, WP 1235 (October 2019).
- MOCETTI S., G. ROMA and E. RUBOLINO, *Knocking on parents' doors: regulation and intergenerational mobility*, Journal of Human Resources, v. 57, 2, pp. 525-554, WP 1182 (July 2018).
- PERICOLI M. and M. TABOGA, Nearly exact Bayesian estimation of non-linear no-arbitrage term-structure models, Journal of Financial Econometrics, v. 20, 5, pp. 807-838, WP 1189 (September 2018).
- ROSSI P. and D. SCALISE, *Financial development and growth in European regions,* Journal of Regional Science, v. 62, 2, pp. 389-411, WP 1246 (November 2019).
- SCHIVARDI F., E. SETTE and G. TABELLINI, *Credit misallocation during the European financial crisis,* Economic Journal, v. 132, 641, pp. 391-423, **WP 1139 (September 2017).**
- TABOGA M., Cross-country differences in the size of venture capital financing rounds: a machine learning approach, Empirical Economics, v. 62, 3, pp. 991-1012, WP 1243 (November 2019).

#### 2023

- APRIGLIANO V., S. EMILIOZZI, G. GUAITOLI, A. LUCIANI, J. MARCUCCI and L. MONTEFORTE, *The power of text-based indicators in forecasting Italian economic activity*, International Journal of Forecasting, v. 39, 2, pp. 791-808, WP 1321 (March 2021).
- BARTOCCI A., A. NOTARPIETRO and M. PISANI, *Non-standard monetary policy measures in non-normal times,* International Finance, v. 26, 1, pp. 19-35, **WP 1251 (November 2019).**

- CAPPELLETTI G. and P. E. MISTRULLI, *The role of credit lines and multiple lending in financial contagion and systemic events*, Journal of Financial Stability, v. 67, Article 101141, WP 1123 (June 2017).
- CECI D. and A. SILVESTRINI, *Nowcasting the state of the Italian economy: the role of financial markets,* Journal of Forecasting, v. 42, 7, pp. 1569-1593, **WP 1362 (February 2022).**
- CIAPANNA E, S. MOCETTI and A. NOTARPIETRO, *The macroeconomic effects of structural reforms: an empirical and model-based approach*, Economic Policy, v. 38, 114, pp. 243-285, **WP 1303 (November 2020)**.
- DAURICH D, S. DI ADDARIO and R. SAGGIO, The macroeconomic effects of structural reforms: an empirical and model-based approach, Review of Economic Studies, v. 90, 6, pp. 2880–2942, WP 1390 (November 2022).
- DI ADDARIO S., P. KLINE, R. SAGGIO and M. SØLVSTEN, *The effects of partial employment protection reforms:* evidence from Italy, Journal of Econometrics, v. 233, 2, pp. 340-374, WP 1374 (June 2022).
- FERRARI A. and V. NISPI LANDI, *Toward a green economy: the role of central bank's asset purchases,* International Journal of Central Banking, v. 19, 5, pp. 287-340, WP 1358 (February 2022).
- FERRIANI F., *Issuing bonds during the Covid-19 pandemic: was there an ESG premium?*, International Review of Financial Analysis, v. 88, Article 102653, **WP 1392 (November 2022).**
- GIORDANO C., Revisiting the real exchange rate misalignment-economic growth nexus via the across-sector misallocation channel, Review of International Economics, v. 31, 4, pp. 1329-1384, WP 1385 (October 2022).
- GUGLIELMINETTI E., M. LOBERTO and A. MISTRETTA, *The impact of COVID-19 on the European short-term rental market*, Empirica, v. 50, 3, pp. 585-623, **WP 1379 (July 2022).**
- LILLA F., Volatility bursts: a discrete-time option model with multiple volatility components, Journal of Financial Econometrics, v. 21, 3, pp. 678-713, WP 1336 (June 2021).
- LOBERTO M., *Foreclosures and house prices*, Italian Economic Journal / Rivista italiana degli economisti, v. 9, 1, pp. 397-424, **WP 1325 (March 2021).**
- LOMBARDI M. J., M. RIGGI and E. VIVIANO, Worker's bargaining power and the Phillips curve: a micro-macro analysis, and wages, Journal of the European Economic Association, v. 21, 5, pp. 1905–1943, WP 1302 (November 2020).
- NERI S., Long-term inflation expectations and monetary policy in the Euro Area before the pandemic, European Economic Review, v. 154, Article 104426, WP 1357 (December 2021).
- ORAME A., *Bank lending and the European debt crisis: evidence from a new survey*, International Journal of Central Banking, v. 19, 1, pp. 243-300, **WP 1279 (June 2020).**
- RIZZICA L., G. ROMA and G. ROVIGATTI, *The effects of shop opening hours deregulation: evidence from Italy,* The Journal of Law and Economics, v. 66, 1, pp. 21-52, **WP 1281 (June 2020).**
- TANZI G. M., Scars of youth non-employment and labour market conditions, Italian Economic Journal / Rivista italiana degli economisti, v. 9, 2, pp. 475-499, WP 1312 (December 2020).

#### 2024

MORO A. and V. NISPI LANDI, *The external financial spillovers of CBDCs*, Journal of Economic Dynamics and Control, v. 159, Article 104801, **WP 1416 (July 2023).** 

#### FORTHCOMING

- BALTRUNAITE A., M. CANNELLA, S. MOCETTI and G. ROMA, Board composition and performance of state-owned enterprises: quasi experimental evidence, The Journal of Law, Economics, and Organization, WP 1328 (April 2021).
- BUONO I, F. CORNELI and E. DI STEFANO, *Capital inflows to emerging countries and their sensitivity to the global financial cycle*, International Finance, WP 1262 (February 2020).
- CORNELI F., Sovereign debt maturity structure and its costs, International Tax and Public Finance, WP 1196 (November 2018).
- CUCINIELLO V. and N. DI IASIO, Determinants of the credit cycle: a flow analysis of the extensive margin, Journal of Money, Credit and Banking, WP 1266 (March 2020).
- FERRARI A. and V. NISPI LANDI, Whatever it takes to save the planet? Central banks and unconventional green policy, Macroeconomic Dynamics, WP 1320 (February 2021).
- FLACCADORO M., *Exchange rate pass-through in small, open, commodity-exporting economies: lessons from Canada,* Journal of International Economics, **WP 1365 (April 2022).**

- GAUTIER E., C. CONFLITTI, R. FABER, B. FABO, L. FADEJEVA, V. JOUVANCEAU, J.-O. MENZ, T. MESSNER, P. PETROULAS, P. ROLDAN-BLANCO, F. RUMLER, S. SANTORO, E. WIELAND and H. ZIMMER, *New facts on consumer price rigidity in the euro area,* American Economic Journal: Macroeconomics, **WP 1375** (July 2022).
- MICHELANGELI V. and E. VIVIANO, Can internet banking affect households' participation in financial markets and financial awarness?, Journal of Money, Credit and Banking, WP 1329 (April 2021).
- MISTRETTA A., Synchronization vs transmission: the effect of the German slowdown on the Italian business cycle, International Journal of Central Banking, WP 1346 (October 2021).
- RAINONE E., *Reservation rates in interbank money markets,* Journal of Money, Credit and Banking, WP 1160 (February 2021).
- RAINONE E., *Real-time identification and high frequency analysis of deposits outflows*, Journal of Financial Econometrics, **WP 1319 (December 2017).**