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LIFTING YOU UP OR DRAGGING YOU DOWN? THE ROLE OF FINANCIAL INCLUSION IN POVERTY TRANSITIONS AMONG ITALIAN HOUSEHOLDS

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We estimate the effect of financial inclusion on transition probabilities into/out of poverty. By exploiting a longitudinal sample of Italian households between 2002 and 2016, we find that financial inclusion is effective in both reducing the likelihood of entering poverty and helping the poor to climb out of it. According to our estimates, access to deposit accounts reduces the risk of falling below the poverty line by 2.7 percentage points (pp) and increases the chance of exiting poverty by 4.4 pp. Significance and magnitude of such effects are confirmed when considering different poverty thresholds and definitions, alternative proxies for financial inclusion as well as alternative empirical strategies.

JEL Codes: C23, D14, I32

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1. INTRODUCTION

People living in poverty constitute a large share of the population in many developed countries. In 2016 the share of population living below the poverty line after considering taxes and transfers was on average equal to 11.7 percent in the OECD countries. Besides being a widespread phenomenon, even more worryingly poverty tends to be an absorbing and recurrent state at the individual level, causing permanent deprivation and social exclusion. In Europe, looking at the period

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2014–2017, only 16 percent of those who were poor in 2017 had never been poor during the period, whereas 16 percent were poor for two out of the four years, 20 percent for three years and 48 percent for the entire 4-year period (European Commission, 2020).

To the extent that being currently poor has causal adverse effects on the likelihood of being poor in future periods, poverty alleviation policies should aim to reduce the risks of individuals entering and being trapped in poverty. It is from this dynamic perspective that the role of financial inclusion as a tool to eradicate poverty has to be carefully assessed. However, despite the strong feeling that access to formal savings and credit "may provide an important pathway out of poverty" (Mullainathan and Shafir, 2009, p. 126),[1] most of existing literature focussed on the nexus between access to financial services and the incidence or the severity of poverty at the aggregate level (Rewilak, 2013), while a full understanding of the role of financial inclusion in the dynamics in and out of poverty at the individual level is still lacking.

In the present study, we provide a novel and original contribution to the literature by investigating empirically whether and to what extent financial inclusion influences individual poverty transitions in Italy. As far as we know, we are the first to estimate the role of financial inclusion in a dynamic model of poverty by testing whether access to financial services helps the poor to emerge from poverty and prevents vulnerable people from falling into poverty. In addition, while the link between poverty and financial inclusion has mostly been studied in the context of developing and emerging economies, we provide evidence of the role of access to finance on poverty dynamics in a high-income country.

Financial inclusion can be broadly defined as the opportunity to access financial services (payments, savings, credit) from formal financial intermediaries at a cost affordable to the customer and sustainable for the provider (Carbó *et al.*, 2005). According to the 2017 Global Findex database, 69 percent of adults worldwide have an account with a financial institution or use mobile money services, while almost 1.7 billion adults remain unbanked (Demirguc-Kunt *et al.*, 2018). In high-income economies, people without a bank account, although significantly less than in low-income countries, represent a non-marginal share of the adult population, especially of the poorest part of society.[2]

There are several reasons that help to explain why the poor lack access to financial services. Physical distance from bank branches and financial institutions, which tend to locate in richer areas, and high account opening and maintaining costs (relative to the amount of money available to save) are the main determinants of financial exclusion (Beck *et al.*, 2009; Allen *et al.*, 2016; Bachas *et al.*, 2018a; Dupas *et al.*, 2018). Moreover, insufficient financial education makes it difficult for poor people to trust banks and understand terms and conditions of formal credit and

[1]Statements of a similar tenor, which consider financial inclusion a key policy in the strategy to fight poverty and social exclusion in both developing and advanced countries, can be found in many official reports such as Financial Services Authority (2000), HM Treasury (2004), United Nations (2006), House of Lords (2017) or Demirguc-Kunt *et al.* (2018) at the World Bank.

[2]In the United States, 7 percent of adults are still unbanked, 2 percent in the richest 60 percent of households and 15 percent in the poorest 40 percent; in Italy the share of unbanked adults is 6 percent, with a gap of 5 pp between richer and poorer (9 versus 4 percent).

saving services (Cole *et al.*, 2011; Dupas *et al.*, 2016; Bachas *et al.*, 2018b). Finally, with regard to credit availability, information asymmetries and transaction costs can be binding constraints for the poor, who usually lack credit history and pledgeable collateral or do not want to risk losing the few things they have (Banerjee and Newman, 1993; Dupas *et al.*, 2016).

Likewise, the literature has recognized different channels through which inclusive finance benefits the poor and most vulnerable to the risk of poverty.[3] Access to bank accounts and debt instruments stimulates an increase in savings as people learn to use bank payment systems and trust banks and their safekeeping services (Bachas *et al.*, 2018b; Dupas *et al.*, 2018). In addition, payment facilities help individuals to be integrated in formal labour markets and increase earning opportunities, while saving and insurance services allow consumption smoothing and can absorb unexpected shocks (the so-called "conduit effect", McKinnon 1973). Access to formal credit services enables low-income people to invest in education and health for themselves and their children, and start up self-employment and micro-entrepreneurial activities (Besley *et al.*, 2018), while it discourages borrowing from informal moneylenders at usury rates (Berg *et al.*, 2013; Islam *et al.*, 2015; Mookherjee and Motta, 2016).

However, financial inclusion also has a dark side adversely affecting poverty dynamics. For example, having relationships with financial institutions generates costs, which can result in a higher risk of entering poverty and a lower probability of exiting especially for low-income people close to the poverty line. Similarly, the design and use of debt instruments may lack sufficient flexibility and be unresponsive to the needs of indebted households in bad times, trapping the poor in poverty (Mian and Sufi, 2014). At the same time, improving credit access can lead low-income individuals to overborrow by gambling on resurrection at the risk of reducing their ability to repay and increasing the probability of default (Melzer, 2011; Bhutta *et al.*, 2015; Agarwal *et al.*, 2017; Skiba and Tobacman, 2019).

There are two major empirical challenges to estimate the causal effects of financial inclusion on transition probabilities between poverty and non-poverty states. The first entails identifying the "true" dynamic effects of poverty status, taking into account the unobserved heterogeneity that can make individuals permanently more or less prone to experience poverty in any period, and the feedback effects from previous periods spent in poverty on the observed determinants of current poverty. The second challenge is to allow for the potential endogeneity of financial inclusion which may stem from reverse causality and feedback effects from poverty to financial inclusion and from omitted variables affecting both poverty and financial inclusion.

To address the first concern, we set up a transition probability model (Jenkins, 2000) with individual random effects and account for the non-randomness of the initial poverty status (Wooldridge, 2005). With regard to the endogeneity problems, we take the lagged values of the financial inclusion variable to rule out possible

[3]In addition to the individual gains for the poor from using formal financial services, the literature has documented significant positive aggregate effects of a country's financial development for the poorest groups of its population via a boosting effect on economic growth (Levine, 2008).

contemporaneous endogeneity and feedback effects with the poverty status (Cappellari and Jenkins, 2002; Cappellari and Jenkins, 2004). In addition, we follow an instrumental variable approach and estimate a bivariate model with a valid overidentifying restriction, which confirms the soundness of our baseline strategy. In particular, we employ the growth rate of the number of bank branches per 10,000 inhabitants at the regional level as a source of exogenous variation. Even though branch density can be considered as a market equilibrium outcome, the local supply of financial services is independent of the individual poverty status conditional on the time–varying local economic conditions we control for, such as GDP and employment growth rates, that are likely to affect the demand side of financial services. On the other hand, a positive and significant correlation between the local supply of financial services and financial inclusion has been widely documented in the recent literature for both developing (Allen *et al.*, 2014; Bruhn and Love, 2014; Brown *et al.*, 2016; Agarwal *et al.*, 2019) and developed countries (Gilje *et al.*, 2016; Brown *et al.*, 2019; Nguyen, 2019). The availability of bank branches has been indeed often employed as an aggregate proxy for financial access where information on bank account ownership at the microeconomic level were not available (Beck *et al.*, 2007b; Beck *et al.*, 2009).

The analysis is conducted on a longitudinal sample of the Bank of Italy's Survey on Household Income and Wealth (SHIW) between 2002 and 2016. Our results show that financial inclusion is effective in both reducing the likelihood of entering poverty and helping the poor to climb out of poverty. According to the baseline specification, access to financial services reduces the risk of falling below the poverty line by 2.7 percentage points (pp) and increases the chance of exiting poverty by 4.4 pp. These effects are largely confirmed irrespective of the monetary poverty measures considered (consumption- or income-based) and the different proxies for financial inclusion (access to a deposit account, availability of debit/credit/pre-paid cards, use of remote banking services). They are also shown to be robust to alternative empirical strategies and to misspecification problems related to omitted factors, such as the level of household indebtedness. Finally, the beneficial effects of financial inclusion on poverty dynamics are heterogeneous across gender and age: the poverty-reducing role of financial inclusion is stronger among males and individuals over the age of 45, whereas the females and the young are confirmed as the most fragile groups, especially in terms of income poverty.

The structure of the paper is as follows. Section 2 offers a review of the existing literature on poverty dynamics and the role of financial inclusion in poverty alleviation. The empirical method is presented in Section 3, while Section 4 describes our data sources and shows preliminary descriptive evidence on the distribution of poverty and financial inclusion indexes, and poverty transition matrices for financially included and financially excluded individuals. Econometric results are discussed in Section 5, together with several robustness checks, and Section 6 concludes.

2. Related Literature

Our paper is related to two strands of research on the determinants of poverty dynamics and the effects of financial inclusion on poverty.

2.1. *Poverty Dynamics*

The academic debate on poverty and the relevant public policies to alleviate it has focused increasingly on the determinants of the transitions in and out of the poverty status and its persistence. The higher likelihood of experiencing poverty in the future for individuals who are currently poor is a well-established finding in the empirical literature regardless of the econometric methods applied. The analysis of single and repeated poverty spells through hazard rate models (Bane and Ellwood, 1986; Stevens, 1994; Stevens, 1999; Jenkins, 2000; Devicienti, 2011), the modelling of period-to-period transitions in poverty status by means of first-order Markov models (Cappellari and Jenkins, 2002; Cappellari and Jenkins, 2004) and the application of different variants of dynamic binary response models (Poggi, 2007; Biewen, 2009; Devicienti and Poggi, 2011; Giarda and Moroni, 2018) all consistently confirm the nature of poverty as a highly persistent phenomenon.

Two different mechanisms can explain poverty persistence. On the one hand, poor individuals might have specific characteristics dragging and holding them in poverty. Some of these characteristics might be observable (low human capital endowment, long-term unemployment, large household size, etc.), but there are other unobservable personal attributes that affect the likelihood of being poor, such as lack of skills and/or motivation. As long as these factors have a persistent nature, they not only affect the current poverty status but contribute to future poverty as well. On the other hand, experiencing poverty in a given period, in itself, might increase the probability of experiencing it again in the future due to many effects of personal demoralization, depreciation of human capital, negative signaling and social stigma. This self-reinforcing effect of poverty, known in the literature as "true" state dependence, can generate poverty traps from which it is difficult for individuals to escape.

The empirical importance of a "true" state dependence in poverty has been widely confirmed across countries and time periods. (Cappellari and Jenkins, 2002; Cappellari and Jenkins, 2004), for example, show that it explains a substantial part of the dynamics of poverty in Britain during the 1990s, adding to the persistence induced by individual heterogeneity. Poggi (2007) and Biewen (2009) provide very similar evidence for, respectively, Spain and Germany. In Italy as well, income poverty and social exclusion have been found to be state-dependent (Devicienti *et al.*, 2014; Coppola and Di Laurea, 2016; Giarda and Moroni, 2018), mutually reinforcing each other (Devicienti and Poggi, 2011).

Among the observable factors that have been found to be significant determinants of poverty dynamics and persistence in the literature, there are individual characteristics such as gender, age, citizenship, educational level, health conditions and employment status, as well as household characteristics, mostly in terms of size, presence of children and number of income earners. No attention has been paid so far to indicators of financial inclusion in the standard set of poverty determinants and in analyzing to what extent access to financial services might influence income and poverty transitions.

2.2. *Financial Inclusion and Poverty*

While we are aware of no prior studies that have explored how financial inclusion affects the likelihood of individuals entering and exiting poverty, a number of recent contributions have analyzed the nexus between access to financial services and poverty alleviation for the most vulnerable part of the population.

Even if existing evidence is not unanimous (Rewilak, 2013), the majority of cross-country studies indicate that financial development improves living standards of the poorest and reduces the share of the population under the poverty line (Honohan, 2004; Beck *et al.*, 2007a; Beck *et al.*, 2007b). According to Perez-Moreno (2011) and Jeanneney and Kpodar (2011), this effect is mainly due to the role of financial intermediaries in facilitating payments and providing savings opportunities to the most vulnerable groups of people rather than in improving their access to credit. However, Imai *et al.* (2012) show that countries with larger microfinance loans per capita have lower poverty, in terms of incidence, depth and severity. A significant contribution to poverty reduction through easier access to credit is also found by Donou-Adonsou and Sylwester (2016), who show that the formal banking sector contributes the most, while microfinance institutions only play a minor role in poverty reduction.

In all the above-mentioned studies, financial inclusion is proxied by financial deepening rather than the accessibility and inclusiveness of financial institutions for the local population. The latter aspect is taken into account in a few cross-country analyses that find that greater physical access to bank branches and ATMs reduces both income inequality (Mookerjee and Kalipioni, 2010) and the fraction of individuals in poverty (Rewilak, 2017). Related evidence can be drawn from studies on specific countries. For example, in the context of the Indian social banking program, Burgess and Pande (2005) and Burgess *et al.* (2005) document that the opening of bank branches in previously unserved rural regions caused a dramatic drop in the poverty headcount through saving mobilization and credit provision. In the case of Mexico, Bruhn and Love (2014) find that the establishment of a new nationwide bank caused a sizable effect on informal business ownership, employment and income levels in municipalities where the bank opened a branch, especially among poor individuals living in municipalities with a lower bank presence. Similarly, a positive impact of branch penetration of large bank institutions in poorly bank-served regions on the use of bank accounts and bank credit among the most vulnerable groups of people has been documented by Allen *et al.* (2014) for the case of Kenya, Brown *et al.* (2016) for South-East European countries and Agarwal *et al.* (2019) for Rwanda. However, on the negative side, Agarwal *et al.* (2017) report that following the largest public program for financial inclusion launched in India in 2014, the regions most exposed to the program (i.e., those where ex-ante bank penetration and financial inclusion were lowest) experienced a significant increase in lending and the default rate on new loans relative to other Indian regions.

A number of recent studies have used randomized field experiments at the individual level in different developing countries to assess whether access to saving and credit facilities improves the condition of those in poverty and at risk of poverty. A first strand of this literature documents that favoring access to saving accounts by waiving fees (Dupas and Robinson, 2013; Prina, 2015; Dupas *et al.*, 2016; Dupas

et al., 2018) or easing their actual use by tying debit instruments to the account (Bachas *et al.*, 2018b) increases the number of previously unbanked people that use the bank account actively and boosts their savings. The bulk of field experiments, however, has focused on the poverty-reducing effects of microcredit programs (Armendàriz and Morduch, 2010). Although early studies offered a positive picture on the role of microfinance lending, especially for women, recent evidence based on randomized control trials (RCTs) has revealed that the average impact of microcredit is modest or limited only to specific groups of borrowers, and in most cases is not transformative, in terms of income levels, savings accumulation and even female empowerment (Van Rooyen *et al.*, 2012; Banerjee *et al.*, 2015; Banerjee *et al.*, 2017; Meager, 2019).

The vast majority of inquiries on the poverty-reducing effects of financial inclusion has focussed on low- and middle-income countries. However, exclusion from formal financial facilities is a tight constraint for the poor in advanced countries as well (Coffinet and Jadeau, 2017). In this context, Célerier and Matray (2019) find that the increase in bank branch expansion in the US counties following the interstate branching deregulation between 1994 and 2005 has significantly reduced the number of unbanked households and increased asset accumulation and financial security of low-income households. Going back in history, Stein and Yannelis (2020) show that in the aftermath of the American Civil War the creation of the Freedman's Savings Bank in order to serve formerly enslaved African Americans affected their economic performance. Households who were able to get access to a bank account made higher human capital investments, were more likely to participate in the labour market either as employees or as self-employed, and had both higher incomes and real estate wealth. Along the same lines, Brown *et al.* (2019) document that individuals who have grown up in financially underserved Native American reservations are more likely to remain outside the formal credit markets, and when accessing credit are more likely to default. However, as the studies on payday lending markets in the US highlight, inclusive finance easing access of low-income households to formal credit facilities is not unquestionably beneficial: those who access payday loans experience greater difficulty servicing their debt and are more likely to go bankrupt, while their economic and financial hardships do not significantly improve (Melzer, 2011; Bhutta *et al.*, 2015; Skiba and Tobacman, 2019).

3. Methodology

In this section, we discuss the specification and identification issues of the model used to investigate the relationship between poverty transitions and financial inclusion. We then turn to the formulation of partial effects and transition probabilities, for which the detailed formal derivation is given in the online Appendix A.

3.1. *Model Specification and Identification Issues*

In order to quantify the transition probabilities between poverty states, we specify a first-order Markov model for the binary poverty indicator, also known as transition probability model in the related literature (Jenkins, 2000). Let us define

the poverty status for individual i at time t, with $i = 1, \ldots, n$ and $t = 1, \ldots, T$, as

$$(1)\quad \text{poor}_{it} = \mathbb{I}(\gamma\ \text{poor}_{i,t-1} + \phi\ \text{FI}_{i,t-1} + \psi\ \text{poor}_{i,t-1} \times \text{FI}_{i,t-1} + \boldsymbol{x}'_{it}\boldsymbol{\beta} + \alpha_i + \varepsilon_{it} > 0),$$

where poor_{it} is a binary variable equal to 1 if individual i is poor at time t, meaning that his/her equivalized income is lower than the poverty threshold defined in Section 4.1, and 0 otherwise, and $\mathbb{I}(\cdot)$ is an indicator function. In a first-order Markov model, the poverty status at time t depends on the poverty status in $t-1$. As our aim is to investigate the heterogeneity in poverty transitions according to access to bank financial services, we add a binary variable for financial inclusion, $\text{FI}_{\text{i,t}-1}$, equal to 1 if individual i at time $t-1$ is financially included and 0 otherwise (see Section 4.2), and its interaction with $\text{poor}_{i,t-1}$. Furthermore, $\boldsymbol{x}_{it}$ is a set of time-constant and time-varying individual, household and regional characteristics. Finally, α_i denotes the individual permanent unobserved heterogeneity and ε_{it} is a standard normal error term. Credible identification of poverty transition probabilities therefore relies on consistent estimates of coefficients ϕ, ψ, and γ.

As regards the effect of financial inclusion on poverty status, ϕ, endogeneity problems can arise because of simultaneity between the two states: being poor at time t have an effect on financial inclusion at time t when, for instance, the poverty level is such that it is impossible to feed a bank account and keep it open. In addition, reverse causality problems might be generated by feedback effects from the past poverty state in $t-1$ to the present probability of being financially included in t. To limit possible biases generated by feedback effects, we include a lagged value of financial inclusion variable $\text{FI}_{\text{i,t}-1}$, instead of its contemporaneous value at time t.

However, there might still be issues of endogeneity stemming from permanent unobserved heterogeneity α_i concerning individual characteristics–for example, general ability, motivation, risk attitude or time preference–that affect both the probability of being poor and the probability of accessing financial services. We investigate this possibility by setting up a bivariate model in which a separate equation for financial inclusion is specified by including a valid overidentifying restriction discussed in Section 5.1.2.[4]

Moving on to the effect of financial inclusion on poverty transitions, the consistent estimation of γ and ψ in Equation (1) rests on properly disentangling *true* state dependence from the individual unobserved heterogeneity α_i, that is, on properly distinguishing between how the experience of being currently poor affects the probability of being poor in the future and the latent propensity of a person to be poor at all times (Heckman, 1981a). This issue has been dealt with in studies employing first-order Markov models for poverty transitions (Cappellari and Jenkins, 2002; Cappellari and Jenkins, 2004; Poggi, 2007; Biewen, 2009; Devicienti and Poggi, 2011; Thomas and Gaspart, 2015; Giarda and Moroni, 2018). In this paper, we follow the common strategy in the literature based on a random-effects estimation approach, where α_i is assumed to be normally distributed and independent of $\boldsymbol{x}_{it}$ and $\text{FI}_{i,t-1}$. The choice of the random-effects approach is mainly driven by the need to account for unobserved heterogeneity in the estimation of transition probabilities and partial effects. Any strategy based on eliminating the individual effects

[4]Details on the bivariate model specification and estimation are given in the online Appendix A2.

by differencing or conditioning on sufficient statistics for the individual effects α_i is therefore unfit for our purpose. Alternatively, one could rely on dummy variables for the individual effects, with a suitable correction for the bias generated by the incidental parameters problem (Fernández-Val, 2009; Dhaene and Jochmans, 2015). These estimators, however, have been proved to perform well in finite samples when the time series dimension has at least the same order of magnitude of $n^{1/3}$, which unfortunately is not the case in our empirical setting.

The dynamic structure of the model entails that $\text{poor}_{i,t-1}$ is correlated with α_i and, therefore, requires the process to be initialized at poor_{i0} conditional on α_i (the so-called "initial conditions" problem). We follow Wooldridge (2005) and approximate the conditional distribution of poor_{i0} given the unobserved heterogeneity with the distribution of α_i conditional on the initial values of the dependent variable.[5] We also condition the distribution of α_i on FI_{i0}, in order to capture some of the potential correlation between unobserved traits and financial inclusion. Therefore:

$$\alpha_i|\text{poor}_{i0}, \text{FI}_{i0} \sim \zeta_1\ \text{poor}_{i0} + \zeta_2\ \text{FI}_{i0} + \alpha_i^*, \tag{2}$$

where $\alpha_i^* \sim N\left(0, \sigma_\alpha^2\right)$.

Let $\boldsymbol{\varphi}$ be the vector collecting the model parameters $\boldsymbol{\varphi} = (\gamma, \phi, \psi, \boldsymbol{\beta}', \boldsymbol{\zeta}', \sigma_\alpha^2)'$, with $\boldsymbol{\zeta} = (\zeta_1, \zeta_2)'$, and let μ_{it} be the index function for (1) and (2), that is

$$\begin{aligned}\mu_{it} = {} & \gamma\ \text{poor}_{i,t-1} + \phi\ \text{FI}_{i,t-1} + \psi\ \text{poor}_{i,t-1} \times \text{FI}_{i,t-1} \\ & + \boldsymbol{x}_{it}'\boldsymbol{\beta} + \zeta_1\ \text{poor}_{i0} + \zeta_2\ \text{deposit}_{i0}.\end{aligned} \tag{3}$$

Then, the likelihood function for individual i is

$$\mathscr{L}_i(\boldsymbol{\varphi}) = \int_{\Re} \Phi\left[s_{it}\left(\mu_{it} + \alpha_i^*\right)\right]\ \ \mathrm{d}\Phi\left(\frac{\alpha_i^*}{\sigma_\alpha}\right),$$

where $s_{it} = 2\text{poor}_{it} - 1$, $\Phi(\cdot)$ is the standard normal distribution function, and the integral can be evaluated numerically by the Gauss-Hermite quadrature technique (Butler and Moffitt, 1982).

Finally, it is worth mentioning that the literature on poverty transitions has considered models where the time-varying error term is allowed to be autocorrelated, so as to further disentangle the different sources of time persistence (Cappellari and Jenkins, 2004). Unfortunately, the individual time series in our sample is often short (for 50 percent of individuals, $T \leq 3$). This lack of information makes it hard to separate persistence due to permanent effects from that arising from the

[5] An alternative strategy to model initial conditions is that proposed by Heckman (1981b), which requires to specify an additional equation that approximates the conditional distributions of poor_{i0} given α_i. Although Heckman's approach has been proven to exhibit superior finite sample properties with respect to Wooldridge's solution when T is small (Akay, 2012), we rely on the latter since we encountered some complete separation problems when estimating the initial conditions for a series of robustness checks. Nevertheless, estimation results for the baseline specification based on Heckman's approach are discussed as a robustness check in Section 5.2.1 and shown in Appendix B5.

time-varying component, thus preventing strong identification of the autocorrelation parameter, in addition to the parameters describing state dependence and unobserved heterogeneity.

3.2. *Transition Probabilities and Partial Effects*

The specification of the first-order Markov model for the poverty status is such that it allows us to estimate transition probabilities. These are conditional probabilities of the poverty status at time t given the poverty status in $t-1$. For the purpose of our analysis, the transition probabilities of main interest are the *entry* and *exit* rates. The entry rate for individual i is the probability of being poor at time t conditional on not having been in the poverty status in the previous period $t-1$ and, based on model (1), can be computed as

$$\text{entry}_{it} = P(\text{poor}_{it} = 1 | \text{poor}_{i,t-1} = 0). \tag{4}$$

Similarly, the exit rate is the probability of not being poor at time t conditional on being in poverty in $t-1$:

$$\text{exit}_{it} = P(\text{poor}_{it} = 0 | \text{poor}_{i,t-1} = 1). \tag{5}$$

The main interest of our analysis is to investigate how financial inclusion affects the transition probabilities in and out of poverty. Based on (1), the partial effect of being included in $t-1$ on the probability of entering poverty is

$$\begin{aligned} \Delta\text{entry}_{it} = {} & P(\text{poor}_{it} = 1 | \text{poor}_{i,t-1} = 0, \text{FI}_{i,t-1} = 1) \\ & - P(\text{poor}_{it} = 1 | \text{poor}_{i,t-1} = 0, \text{FI}_{i,t-1} = 0), \end{aligned} \tag{6}$$

and the effect on the exit rate is

$$\begin{aligned} \Delta\text{exit}_{it} = {} & P(\text{poor}_{it} = 0 | \text{poor}_{i,t-1} = 1, \text{FI}_{i,t-1} = 1) \\ & - P(\text{poor}_{it} = 0 | \text{poor}_{i,t-1} = 1, \text{FI}_{i,t-1} = 0). \end{aligned} \tag{7}$$

The sample averages of these quantities will be reported along with the estimation results in Section 5. Detailed formulations of the transition probabilities and partial effects are given in Appendix A1. Their estimated counterparts can be obtained by evaluating these expressions at the Maximum Likelihood estimates of the model parameters, and standard errors for the average partial effects can be computed by using the delta method.

4. Data and Descriptive Evidence

Our analysis is based on data from the Bank of Italy's SHIW for the period 2002 to 2016.[6] This survey is conducted every other year on a representative sample

[6]This survey has been widely used to study poverty and inequality in Italy (Addabbo, 2000; Baldini *et al.*, 2002; Brandolini *et al.*, 2002; D'Alessio and Iezzi, 2016; Dagum and Costa, 2017; Raffinetti *et al.*, 2017; D'Alessio, 2020). The 2016 wave is the last wave currently available to the public.

of the Italian resident population and is designed as a rotating panel with about 8,000 households per wave. The panel component of the sample consists of all households participating from at least two waves plus a share of households randomly extracted from those interviewed only in the previous edition. The non-panel component consists of households randomly extracted from the demographic register of the municipalities, which represent the primary sampling units, stratified by region and population size. Panel and non-panel households are similar in number and equal to about 4,000 units.

The SHIW collects detailed information on household and individual demographics, labor supply, consumption, income and relationships with the banking sector. Questions on financial inclusion were incorporated in the survey questionnaire from the 2002 wave onwards. As the interviews are performed every other year, our analysis considers eight waves from 2002 to 2016. The sample unit is the individual, as is customary in the poverty modeling literature, and we include all those individuals that participated in the survey for at least two consecutive waves in our reference period. The average yearly sample size is equal to 10,369 individuals, ranging from a minimum of 7,467 units in 2016 to a maximum of 12,596 in 2012.

4.1. *Measuring Poverty*

Individual poverty can be measured on the basis of monetary and non-monetary indicators. The former refer to disposable income or consumption expenditures compared either to a relative standard based on the overall distribution of individual income or consumption in a country or to an absolute standard of income and consumption deemed necessary to satisfy basic human needs, namely food, health, shelter and education. Non-monetary poverty indexes are used in the literature to capture the wider concept of human capability and evaluate the deprivation in essential domains of human life concerning longevity, nutrition, knowledge and living standards.

In this paper, we focus on the relative monetary poverty indicators commonly employed by international organizations.[7] In particular, we adopt the OECD definition according to which an individual is poor if the equivalized disposable income of the household she/he belongs to is lower than 50 percent of the median equivalized net household income at the national level in the reference period.[8] This definition is also the one currently employed at the world level in order to evaluate each

[7]The Italian National Institute of Statistics also computes an absolute measure of poverty based on the monetary evaluation of a basket of goods and services which are essential to avoid social exclusion. The absolute poverty thresholds vary over time and according to the family type (obtained as a combination of number and age of members), the region of residence (north, centre and south) and the type of municipality (metropolitan, suburban metropolitan and non-metropolitan). Unfortunately, the complete tabulation of these values is not available for the entire period of analysis.

[8]Equivalized household income is given by the total nominal income after taxes from any household member divided by the number of equivalized adults. The number of equivalized adults is obtained through the "OECD–modified equivalence scale" (Hagenaars *et al.*, 1994). This scale assigns a value of 1 to the household head, 0.5 to each additional adult member (aged 14 or over) and 0.3 to each child under 14. The median value is calculated on the basis of the full cross-section sample of each survey.

country's progress in the implementation of the UN 2030 Agenda for Sustainable Development. Indeed, the 10th goal of Reduced Inequalities is measured through the proportion of people living below 50 percent of median income.[9] Alternatively, we define an individual poor in terms of consumption if her/his household consumption expenditure per equivalent adult is lower than 50 percent of the median equivalized household consumption.[10]

There is a long-lasting debate in the literature which has highlighted advantages and disadvantages of poverty measures based on consumption versus those based on income. Consumption provides a more accurate picture of permanent material conditions of life than current income, which can be more erratic and subject to transitory shocks (Cutler and Katz, 1991; Sabelhaus and Groen, 2000). Indeed, consumption better captures the actual capabilitiy of a person to meet current basic needs by drawing on household savings and financial wealth, accessing formal credit and inter-household transfers from relatives and friends (Meyer and Sullivan, 2012). Furthermore, income does not take into account flows of utility derived from home ownership and the possession of other durable goods (Slesnick, 1994; Garner and Short, 2005). However, consumption depends on household habits and behaviors, overestimating poverty of frugal households and underestimating that of indebted households. Given these conflicting arguments, throughout the paper we carry out the analysis by using both the income- and consumption-based poverty indicators.

Table 1 shows the spread of poverty across Italy at the NUTS 1 level.The incidence of poor in area j is given by the number of poor individuals in j over the resident population in j. As stated before, an individual is poor if her/his household consumption expenditure/disposable income per equivalent adult is lower than 50 percent of the median equivalized household consumption/net income. According to both the consumption- and income-based poverty definitions, the share of poor individuals is noticeably higher in southern regions than in the rest of the country, with an average of about 19 percent of respondents below the poverty line over the 2002–2016 period. Due to the subsequent recessions that hit the Italian economy in 2008–2009 and 2011–2013, the average percentage of individuals with income below the poverty level in our sample has increased from 15.2 percent in 2002 to 16.4 percent in 2012, and then decreased to about 13 percent in 2016. The reduction of poverty was especially strong in the Center and in the North-West of the country, whereas in the South and in the islands poverty increased well above 20 percent in 2016. Consumption poverty follows different trends. The average incidence of poor individuals is lower and less variable. This is in line with existing evidence and reflects the fact that the income distribution tends to be more unequal than consumption expenditure (Cutler and Katz, 1991; Jorgenson, 1998; de Vos and Zaidi, 2001; Slesnick, 2001; Meyer and Sullivan, 2003; Hurd and Rohwedder, 2006), even if material hardship tends to be more severe for those who are below the consumption poverty line than for those with a poor income position (Meyer and Sullivan, 2012). The poverty gap in terms of consumption between Southern

[9]See indicator 10.2.1 in the Global SDG Indicator Database available at https://unstats.un.org/sdgs/unsdg.

[10]The same definition and procedure reported in footnote 8 hold for consumption.

TABLE 1
INCIDENCE OF CONSUMPTION-BASED POVERTY, INCOME-BASED POVERTY AND BANK-ACCOUNT OWNERSHIP AT NUTS1 LEVEL

	Consumption-based poverty		Income-based poverty		Financial inclusion	
Area	2002	2016	2002	2016	2002	2016
North-East	0.015	0.055	0.115	0.072	0.975	0.980
	[0.003]	[0.006]	[0.008]	[0.007]	[0.004]	[0.004]
North-West	0.021	0.051	0.134	0.062	0.969	0.988
	[0.003]	[0.006]	[0.008]	[0.006]	[0.004]	[0.003]
Center	0.028	0.033	0.180	0.059	0.959	0.965
	[0.004]	[0.004]	[0.009]	[0.006]	[0.005]	[0.005]
South	0.202	0.185	0.166	0.244	0.731	0.871
	[0.010]	[0.009]	[0.009]	[0.010]	[0.011]	[0.008]
Islands	0.187	0.159	0.174	0.214	0.758	0.939
	[0.012]	[0.012]	[0.012]	[0.013]	[0.014]	[0.008]
Italy	0.081	0.096	0.152	0.129	0.891	0.946
	[0.003]	[0.003]	[0.004]	[0.004]	[0.004]	[0.003]

Notes: Standard errors in parentheses.

Italy and the rest of the country is stronger than in terms of income, but it is decreasing over time.

Moving on to examine poverty transitions, the unconditional persistence rates are rather high both in terms of consumption and income (Table 2): 45.6 percent of poor individuals in $t-1$ are still classified as poor in t based on their consumption level; this share gets even larger (55.1 percent) with the income-based poverty indicator. On the other hand, entry rates are slightly lower with the consumption-based indicator: 4.1 percent of individuals who are not consumption-poor in $t-1$ become consumption-poor in t, against 8.2 percent for income poor individuals.

In order to test the robustness of our results, we also consider alternative poverty thresholds more and less conservative than 50 percent of the median consumption/income (Brandolini, 2021). On the one hand, we define as "extremely poor" those individuals in households with an equivalized consumption/income lower than either 30 or 40 percent of the median equivalized household consumption/income. On the other, we consider the EU definition of at-risk-of poverty (AROP), according to which an individual is at risk of poverty if the equivalized consumption/income of the household she/he belongs to is lower than 60 percent of the median value in the sample. The geographical distribution for poverty rates based on these alternative thresholds as well as transition matrices are reported in the online Appendix, Tables B1-B4. The incidence of poor households calculated by applying the 60 percent threshold on the SHIW data is broadly similar to the Italian National Institute of Statistics (ISTAT) official statistics on relative poverty based on income and consumption (Figure 1).[11] By contrast, our baseline measures based on the 50 percent of the median income and consumption are below the

[11]The ISTAT measure of relative consumption-based poverty is built on the basis of a poverty line that identifies as poor a two-person household with a level of consumption expenditure not higher than

TABLE 2
TRANSITION MATRICES: FULL SAMPLE AND CONDITIONAL ON FINANCIAL INCLUSION

	Panel A. Consumption-based poverty					
	Full sample		Deposit account		No deposit account	
	not $poor_t$	$poor_t$	not $poor_t$	$poor_t$	not $poor_t$	$poor_t$
not $poor_{t-1}$	96.0 [0.001]	4.0 [0.001] (*entry rate*)	96.8 [0.001]	3.2 [0.001] (*entry rate*)	83.8 [0.005]	16.1 [0.005] (*entry rate*)
$poor_{t-1}$	54.4 [0.002] (*exit rate*)	45.6 [0.002] (*persistence rate*)	62.8 [0.002] (*exit rate*)	37.2 [0.002] (*persistence rate*)	36.4 [0.007] (*exit rate*)	63.6 [0.007] (*persistence rate*)
	Panel B. Income-based poverty					
	Full sample		Deposit account		No deposit account	
	not $poor_t$	$poor_t$	not $poor_t$	$poor_t$	not $poor_t$	$poor_t$
not $poor_{t-1}$	91.8 [0.001]	8.2 [0.001] (*entry rate*)	92.4 [0.001]	7.6 [0.001] (*entry rate*)	83.3 [0.005]	16.7 [0.005] (*entry rate*)
$poor_{t-1}$	44.9 [0.002] (*exit rate*)	55.1 [0.001] (*persistence rate*)	46.0 [0.002] (*exit rate*)	54.0 [0.002] (*persistence rate*)	37.3 [0.007] (*exit rate*)	62.7 [0.007] (*persistence rate*)

Notes: standard errors in parentheses.

figures of poverty provided by ISTAT, and this makes our econometric estimates (if anything) more conservative.

As further robustness, however, we also employ the official definition of relative income- and consumption-based poverty used by ISTAT and calculate this additional relative poverty measure on the basis of household income and per-capita consumption expenditure data in the SHIW sample.

4.2. *Financial Inclusion*

The notion of financial inclusion designates the actual capability of individuals to access payment, savings and credit services from formal financial intermediaries, not prevented by prohibitively high pecuniary and non-pecuniary costs. Measuring whether people have this potential opportunity is obviously very difficult. At the aggregate level, the literature has typically used some structural features of the

the per-capita consumption expenditure in the country. Such poverty line is adjusted to different household sizes by means of the Carbonaro equivalence scale, assigning weight 1 to the households of one component, 1,67 to those of two, 2,22 to those of three, 2,72 to those of four, 3,17 to those of five, 3,6 to those of of six and 4 to those of seven or more components. ISTAT computes the relative poverty line on the basis the Household Budget Survey (HBS), a survey conducted by the Institute on an annual basis. With regard to the relative income-based poverty, the indicator used by ISTAT coincides with the AROP measure and is computed on the basis of the European Union Statistics on Income and Living Conditions (SILC) data. See Cutillo *et al.* (2020) for a recent application.

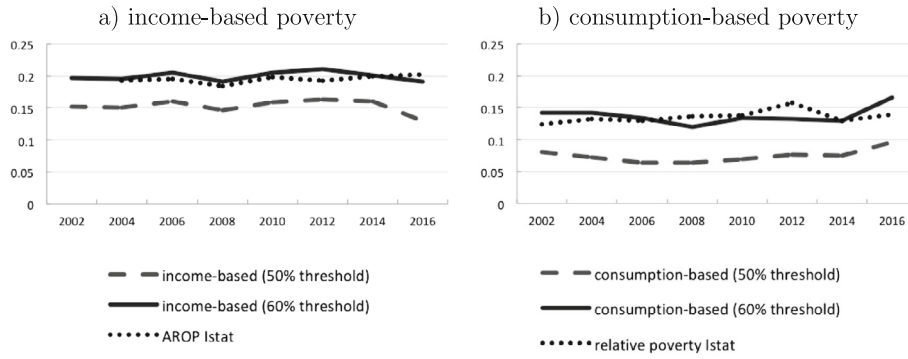


Figure 1. Comparison with Istat Relative Poverty Statistics.
Source: Authors' Elaboration on SHIW Data and Istat Official Statistics

banking industry, such as the number of bank branches and/or ATMs per thousand inhabitants or square kilometers, the incidence of accounts/loans over total population, the average cost of opening and maintaining an account at a financial institution or the documentation required when applying for a loan to proxy for financial outreach and inclusion across countries (Beck *et al.*, 2007b; Beck *et al.*, 2009). At the household or individual level, apart from controlled field experiments in which a random sample of treated individuals is given the real opportunity to open a bank account or access financial services by relieving the related pecuniary and non-pecuniary costs (Dupas *et al.*, 2018; Bachas *et al.*, 2018b), financial inclusion has been measured by indicators for the ownership of a bank account or the frequency and intensity of account use (Allen *et al.*, 2016).

In this paper, we measure financial inclusion by account ownership at the household level. In particular, we exploit the survey question asking "Did you or a member of the household have any of the following on 31 December last year: (i) a bank current account; (ii) a bank saving account; (iii) a post office current account; (iv) a post office saving account." Therefore, the indicator variable *FI* is equal to 1 for individuals who have access to one or more bank or postal accounts in the household.[12]

This indicator has obvious shortcomings. First, account ownership does not distinguish financially excluded individuals from those who voluntarily choose not to have relationships with financial institutions for any cultural reason or because they do not need financial services. Second, ownership of a bank/postal account does not reveal anything about the actual use of financial services and their quality. Third, bank/postal accounts provide payment and savings services, while credit services are limited to possible overdrafts if provided for in the contract. On the other hand, however, having a bank account is not only a requirement to access credit, but often it creates the conditions for recognizing and formulating one's financial needs. In addition, to the extent that the poor represent the riskier tail of individuals, measures of access to credit would suffer from serious concerns in terms of

[12]According to the information provided by "Poste Italiane", there were 6.4 million postal accounts in 2015, corresponding approximately to a 14 percent market share.

feedback effects and reverse causality in the poverty-financial inclusion nexus (Allen *et al.*, 2016).

The incidence of individuals with a bank account across Italy in 2002 and 2016 is reported in Table 1. Financial inclusion is far from universal among Italian households. Heterogeneity across the Italian territory and over time is closely correlated with the local level of economic development. However, a general increasing trend in financial inclusion can be detected looking at the first quintile of its regional–level distribution, in which the share of households without a bank or postal account was between 22 and 38 percent in 2002 and shrank to 7–23 percent in 2016. Evidence gathered from the SHIW data is consistent with the information collected by the World Bank's Global Findex Database, according to which Italy lags behind other European countries such as France, Germany and the United Kingdom, even if the latest wave collected in 2017 shows that the gap has narrowed and is now equal to that of the other Southern European countries.

When we replicate poverty transition matrices by conditioning on financial inclusion, interesting differences emerge between the two groups.[13] For individuals who have access to deposit accounts, the persistence rate in income poverty is 9 pp lower than that of financially excluded individuals (Table 2, panel B), while the entry rate is less than half (7.6 vs 16.7). The gap widens when looking at the consumption-based indicator (Table 2, panel A): the likelihood of remaining poor is 26 pp higher for individuals who are unbanked while the entry rate is five times greater compared to banked individuals.

This descriptive evidence suggests a positive role of financial inclusion in reducing poverty persistence, and this seems to work both in helping poor people to exit out of poverty and in decreasing the likelihood to fall into poverty for the non-poor.

To test the robustness of our results, we also employ two alternative—although more restrictive—proxies for financial inclusion available in the SHIW questionnaire.

First, we use the availability of at least one debit or credit card among household members.[14] Second, we consider as financially included the individuals that make use of remote access to banking services (mobile banking technology, such as apps and text banking, home banking etc.) at the household level.[15] In both cases, the idea is to consider financially included only the individuals who use deposit accounts and financial services actively. In our sample, on average, almost three out of four households (73.2 percent) have at least one type of card, a share which has increased over time, from 70 percent in 2002 to 78.4 percent in 2016. Even among the poor, cards (mainly debit cards) were available for slightly less than two thirds of

[13]Here we consider as financially included individuals with bank account ownership both at time t and at time $t-1$, while individuals who are unbanked in both periods are considered financially excluded. Results are very similar when considering households at risk of poverty.

[14]We consider the following questions in the survey: "Did you or a member of the household have at least one credit card in the last calendar year?"; "Did you or a member of the household have at least one debit card in the last calendar year?"

[15]The specific survey questionnaire is "Did you or a member of the household do business with banks or financial intermediaries by telephone or computer in the last calendar year (home banking, online account..)?"

individuals over the whole period. The incidence of the use of remote access banking services has risen as well, from 5.58 percent (4.62 percent among the poor) in 2002 to 29.10 percent (21.60 percent) in 2016. This trend resembles that shown by country–level aggregate data, with slightly more than nine million users of internet banking services in 2002 that rose to 42 million in 2016.

4.3. *Control Variables*

Our set of control variables includes individual-level, household-level and regional-level characteristics (description, source and summary statistics are reported in Table 3). At the individual level, we consider gender, age and its square, and marital status that is coded into four different dummies: married (reference group), single, divorce/separated and widowed. The level of educational attainment is divided into five categories: no education (reference group), primary, lower secondary, upper secondary and higher education. Finally, occupational status is divided into nine different classes: blue collar (reference group), white collar, manager/CEO, self–employed, atypical/temporary workers, unemployed, first job seeker/student, retired, other inactive.

In terms of household characteristics, we include the household size, the number of children according to different age brackets (0-5, 6-11, 12-17 years) and a dummy for home ownership. We also include a set of dummies controlling for the size of the municipality where individuals are residing: less than 20,000 inhabitants (reference group), 20,000-40,000 inhabitants, 40,000-500,000 inhabitants and more than 500,000 inhabitants.

Finally, GDP growth rate and employment growth rate are the two regional-level controls included in our estimated specification, all provided by the Italian National Statistics Institute (ISTAT) along with NUTS2 dummies, corresponding to Italian regions. Time dummies are also included in the specification.

5. Estimation Results

5.1. *Main evidence*

Univariate first-order Markov model

Table 4 reports the results obtained by estimating the dynamic random-effects probit model for our baseline specification, with and without the interaction term between the proxy for financial inclusion and the lag of the poverty status. Columns 1–2 refer to the consumption-based poverty indicator, whereas columns 3–4 refer to the income-based one. For the sake of space, we report only the estimated parameters for the key variables of interest, the average partial effects of financial inclusion on poverty entry and the statistics for permanent unobserved heterogeneity. Results for the full specification of (1) and (2) are available in Table C1 of the online Appendix.

First, let us note that the results in Table 4 show that the state dependence parameter associated with the lagged poverty measures is statistically significant in both specifications for each poverty indicator, thus confirming the appropriateness

TABLE 3
VARIABLES: DEFINITION, SOURCES AND SUMMARY STATISTICS

Variable	Definition	Source	Mean	St. Dev.
poor50_consumption	1 if the equivalized household consumption is lower than 50% of the median equivalized household consumption expenditure, 0 otherwise	SHIW	0.168	0.374
poor60_consumption	1 if the equivalized household consumption is lower than 60% of the median equivalised household consumption expenditure, 0 otherwise	SHIW	0.228	0.420
poor40_consumption	1 if the equivalized household consumption is lower than 40% of the median equivalised household consumption expenditure, 0 otherwise	SHIW	0.115	0.319
poor30_consumption	1 if the equivalized household consumption is lower than 30% of the median equivalised household consumption expenditure, 0 otherwise	SHIW	0.063	0.244
poor50_income	1 if the equivalized household disposable income is lower than 50% of the median equivalised net household income, 0 otherwise	SHIW	0.188	0.391
poor60_income	1 if the equivalized household disposable income is lower than 60% of the median equivalised net household income, 0 otherwise	SHIW	0.236	0.425
poor40_income	1 if the equivalized household disposable income is lower than 40% of the median equivalised net household income, 0 otherwise	SHIW	0.130	0.336
poor30_income	1 if the equivalized household disposable income is lower than 30% of the median equivalised net household income, 0 otherwise	SHIW	0.088	0.283
FI	1 if one or more bank or postal accounts are available in the household, 0 otherwise	SHIW	0.916	0.278
FI (On-line banking)	1 if anybody in the household makes use of remote access to banking services, 0 otherwise	SHIW	0.160	0.366
FI (Debit and/or credit card)	1 if one or more debit, credit or pre-paid cards are available in the household, 0 otherwise	SHIW	0.738	0.440
Female	1 if female, 0 if male	SHIW	1.521	0.500
Age	Age (in years)	SHIW	52.594	1.809
No education	1 for no education, 0 otherwise	SHIW	0.039	0.193
Primary	1 for primary education, 0 otherwise	SHIW	0.221	0.415
Lower secondary	1 for lower secondary education, 0 otherwise	SHIW	0.277	0.447

TABLE 3
Continued

Variable	Definition	Source	Mean	St. Dev.
Upper secondary	1 for upper secondary education, 0 otherwise	SHIW	0.355	0.479
Higher education	1 for higher education, 0 otherwise	SHIW	0.107	0.310
Married	1 if married/in a couple, 0 otherwise	SHIW	0.620	0.485
Single	1 if single, 0 otherwise	SHIW	0.236	0.425
Divorced/separated	1 if divorced/separated, 0 otherwise	SHIW	0.039	0.195
Widowed	1 if widowed, 0 otherwise	SHIW	0.102	0.302
Blue collar	1 if blue collar, 0 otherwise	SHIW	0.151	0.358
White collar	1 if white collar, 0 otherwise	SHIW	0.146	0.353
Manager/CEO	1 if manager/CEO, 0 otherwise	SHIW	0.027	0.163
Self-employed	1 if self-employed, 0 otherwise	SHIW	0.067	0.249
Atypical/temporary worker	1 if atypical/temporary worker, 0 otherwise	SHIW	0.017	0.128
Unemployed	1 if unemployed, 0 otherwise	SHIW	0.036	0.186
First job seeker/student	1 if first job seeker/student, 0 otherwise	SHIW	0.083	0.275
Retired	1 if retired, 0 otherwise	SHIW	0.335	0.472
Other inactive	1 for other forms of inactivity, 0 otherwise	SHIW	0.137	0.344
Number of members	Number of household members	SHIW	2.948	1.270
Number of children_0-5	Presence of children under 5	SHIW	0.074	0.261
Number of children_6-11	Presence of children between 6 and 11 years	SHIW	0.107	0.309
Number of children_12-17	Presence of children between 12 and 17 years	SHIW	0.142	0.349
House ownership	1 for house ownership, 0 otherwise	SHIW	0.746	0.435
Employment growth rate	Growth rate of employment, 20-64 years	ISTAT	-0.265	2.685
Per-capita GDP growth rate	Growth rate of GDP per capita	ISTAT	-0.619	4.722

TABLE 4
ESTIMATION RESULTS: UNIVARIATE RANDOM-EFFECTS FIRST-ORDER MARKOV MODEL, BASELINE SPECIFICATION, INCOME AND CONSUMPTION-BASED POVERTY MEASURES

	Consumption-based measure		Income-based measure	
	[1]	[2]	[3]	[4]
Poor_{t-1}	0.490***	0.500***	0.740***	0.700***
	[0.040]	[0.056]	[0.030]	[0.054]
FI_{t-1}	−0.303***	−0.298***	−0.066*	−0.083**
	[0.037]	[0.043]	[0.036]	[0.040]
$\text{Poor}_{t-1} \times \text{FI}_{t-1}$		−0.012		0.052
		[0.057]		[0.054]
$\ln \sigma_\alpha^2$	−1.503***	−1.501***	−1.045***	−1.050***
	[0.136]	[0.136]	[0.076]	[0.079]
Log-likelihood	−9933.38	−9933.36	−18542.00	−18541.53
# observations	60098	60098	60098	60098
# subjects	22495	22495	22495	22495
Δentry		−0.027***		−0.012**
		[0.004]		[0.006]
Δexit		0.044***		0.007
		[0.007]		[0.012]

Notes: *p-value < 0.10, **p-value < 0.05, ***p-value < 0.01. Standard errors in square brackets are clustered at the household level and computed by the Delta method. Both specifications include an intercept term, year dummies, regional dummies, and all the explanatory variables listed in the online Appendix, Table C1. Integral approximation was performed by the Gauss-Hermite quadrature method with 24 grid points. The average estimated entry and exit rates in columns [2] and [4] are computed as per expression (6) and (7).

of a first-order Markov formulation for modeling poverty transitions. The estimated log of the variance of permanent unobserved heterogeneity ($\ln \sigma_\alpha^2$) denotes a non-negligible role of the unobserved heterogeneity in predicting the probability of deposit ownership and poverty, however measured.

Moving on to financial inclusion, owning deposits at time $t-1$ (i.e., $FI_{t-1} = 1$) significantly reduces the probability of being poor at time t both in terms of consumption and income, even if the decreasing effect is larger for the consumption-based measure of poverty. This indicates a key role for financial inclusion in helping people to escape poverty by enabling them to smooth consumption in the face of negative income shocks, improving savings behavior in good times and easing access to credit in bad times.

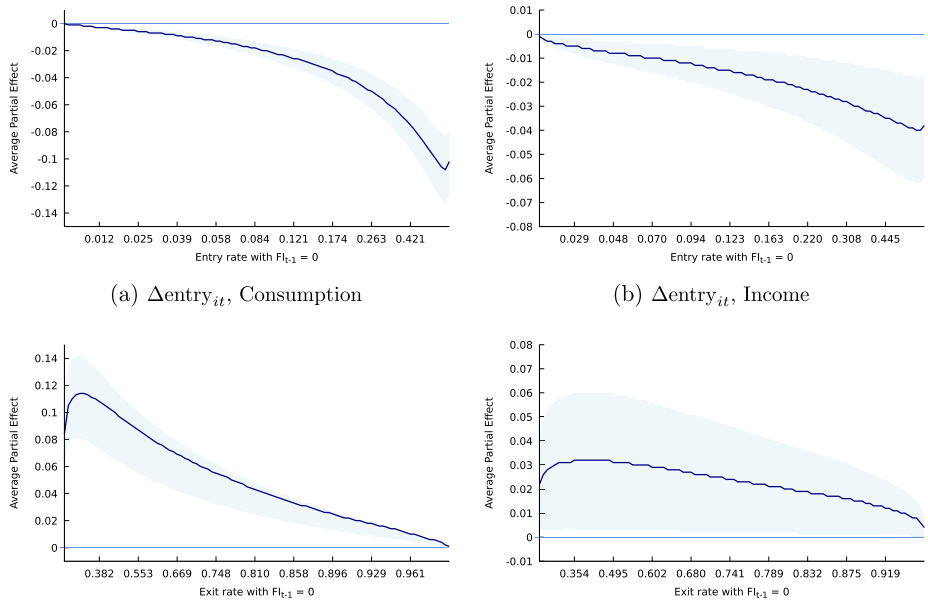
In order to assess the effect of being banked on the transition probabilities in and out of poverty, we consider the estimation results reported in columns 2 and 4, so as to allow for the state dependence parameter to switch according to the deposit account ownership in $t-1$. Poverty state dependence remains positive and strongly significant in both models. The effect of financial inclusion on poverty seems to be almost entirely captured by the lagged value of deposit account ownership, whereas the interaction terms with poverty status are not statistically significant. However, as is well known, single coefficients may not be informative about the sign and magnitude of the average partial effects of deposit account ownership on the probability of being poor as well as on the entry and exit rates (Ai and Norton, 2003). Therefore,

we compute the average partial effects of financial inclusion on poverty entry and exit rates, as derived in expressions (6) and (7).

With respect to the consumption-based poverty measure, the average partial effects are statistically significant on both the entry and exit rates: as shown at the bottom of Table 4, on average, deposit account ownership reduces the probability of entering poverty by about 2.7 pp, whereas it increases the probability of exiting poverty by 4.4 pp. As for the income-based poverty measure, having access to a deposit account in $t-1$ significantly reduces, on average, the probability of entering poverty at time t by 1.2 pp whereas no significant impact is detected on the probability of exiting poverty. Considering the average entry and exit rates reported in Table 2, the economic impact of financial inclusion on poverty dynamics is sizable, especially on the probability of entering poverty.

The average effect of financial inclusion on poverty dynamics for the whole sample may be reasonably expected to hide very differentiated effects according to whether the probability of individuals entering and exiting poverty is however high or low. To explore this possibility, we compute the average partial effects of *FI* on Δentry and Δexit by centiles of the probability of entering/exiting poverty, conditional on not owning deposit accounts in $t-1$. These are depicted in Figure 2. For both consumption- and income-based poverty measures, the effect on the entry rate is always negative, statistically significant, and increasing (in absolute value) in the probability of entering poverty for those who do not own any deposit account. As expected, being financially included has nearly no effect for individuals that have virtually no risk of becoming poor. However, for those whose chance of entering consumption or income poverty is higher than 40 percent, financial inclusion reduces the entry rate by, respectively, 11 or 4 percentage points. Similarly, the average effect of financial inclusion on the exit rates is always positive and overall decreasing in the unconditional exit rates, although barely statistically significant for the income-based measure. In this respect, having a deposit account may increase the likelihood of exiting poverty by up to 12 percentage points for those whose exit rate from consumption-based poverty is about 35 percent.

When interpreting our results, we have to take into account that the positive role of bank account ownership on poverty dynamics could merely capture the access to anti-poverty cash transfer programs that require the availability of a bank account in order to be paid to the beneficiary. In particular, in Italy, since the Decree Law 44/2012, recipients of welfare benefits, including income-support measures to fight poverty as, for example, the public pension for indigent senior citizens, have to own a deposit account or at least a prepaid/rechargeable card with an account number (IBAN). Up to 2012, instead, the Italian social security agency (INPS) could issue a bank transfer to the post office in the municipality of the recipient, who had the opportunity to withdraw the amount in cash even without owning any account there. In spite of this change in the way transfers are paid, the descriptive evidence that we gather from the SHIW data does not indicate a significant increase in financial inclusion of poor households after 2012. If we look at the dynamics of bank account ownership among the poor, which should somehow reflect the new rule for transfer payments, we can see that 42 percent of financially excluded poor households open a new account between 2012 and 2014, slightly less



(a) Δentry_{it}, Consumption (b) Δentry_{it}, Income

(c) Δexit_{it}, Consumption (d) Δexit_{it}, Income

Figure 2. Average partial effects of FI_{t-1} on entry/exit rate by percentiles of the entry/exit rate conditional on $FI_{t-1} = 0$.

Notes: The light blue area represents the confidence interval at the 95 percent level. [Colour figure can be viewed at wileyonlinelibrary.com].

than the average wave-to-wave variation in our sample (44 percent).[16] That said, in the next section we take into account potential biases deriving from unobserved anti-poverty measures and other possible omitted factors by estimating a bivariate first-order Markov model.

Bivariate first-order Markov model

Endogeneity issues may arise because of simultaneity biases stemming from time-varying and/or time-invariant unobserved factors that influence both the financial inclusion and poverty status and financial inclusion of individuals. In the baseline specification, we use the lagged value of the financial inclusion indicator and we approximate the correlation between α_i and financial inclusion by including FI_{i0} in equation (2), aiming to counteract at least some of the endogeneity biases.

In order to investigate whether this identification issue is properly dealt with, we set up a bivariate model that requires the set of covariates in the financial inclusion equation to include an overidentifying restriction. This helps improve

[16] A more pronounced increase can be detected when looking at the incidence of pre-paid cards in the same years: among unbanked poor households, the presence of a pre-paid card as sole measure of financial inclusion increased by 9 percent between 2012 and 2014, compared to an average wave-to-wave variation by 4 percent. In Section 5.3 we use an alternative proxy for financial inclusion based on the availability of either debt or credit cards, excluding pre-paid cards.

the model's identification which would otherwise rely exclusively on the distributional assumptions concerning the error terms. The variable we choose as the overidentifying restriction is the growth rate of the number of bank branches per 10,000 inhabitants at the regional level as provided by the Bank of Italy's Statistical Database, which captures the local supply of financial services.

The density of bank branches has often been used as an aggregate proxy for financial inclusion when no information on deposit account ownership was available at the individual level. In addition, evidence has been provided on how the expansion of bank branches improves financial inclusion at the individual level, both in developed and developing countries, especially for low–income households (Allen *et al.*, 2014; Brown *et al.*, 2016; Brown *et al.*, 2019; Célerier and Matray, 2019). Therefore, we exploit the strong, positive correlation between household-level account ownership and the local supply of banking services. At the same time, we can be confident that the latter is independent of the individual poverty status conditional on the macroeconomic phenomena, such as GDP and employment growth rates, that may be driving variations in the aggregate demand side of financial services. Moreover, regional-level structural characteristics affecting both individual poverty and bank branch growth rates are captured by the NUTS2 fixed-effects included in our estimated specification. The identification strategy thus relies on the intraregional variation in the stock of bank branches over time.

Estimation results for the dynamic bivariate random-effects probit model are reported in Table 5. The relevance of the overidentifying restriction is confirmed by the values of the first–stage F tests for all the specifications considered. The estimated coefficients for the poverty equations closely mirror those in Table 4. Even though the correlation coefficients between the unobserved effects entering the poverty and financial inclusion equations, κ, and between time-varying error terms, ρ, are statistically significant, suggesting some residual correlation in the unobservables unaddressed by the baseline specification, the average effects on entry and exit rates are very similar to those obtained by estimating the single–equation model. For this reason, we stick to our baseline specification for the remaining of the paper.

5.2. *Robustness checks*

Alternative estimation methods

In this section, we investigate an alternative method for dealing with the problem of the initial conditions entailed by the recursive nature of the first–order Markov model. The unobserved heterogeneity α_i in (1) is correlated with $\text{poor}_{i,t-1}$, and this requires the initialization for the conditional distribution of $\text{poor}_{i0}|\alpha_i$. As discussed in Section 3, we rely on Wooldridge's (2005) approach and specify the conditional distribution of α_i given poor_{i0} as in (2). Alternatively, one could follow Heckman (1981b) and specify an additional equation that approximates the conditional distribution of poor_{i0} given α_i (see above, footnote 5).

The estimation results obtained by using Heckman's (1981b) approach are reported in Table B5 of the online Appendix. The different initialization for the dependent variable leads to estimated state dependence parameters and effect of the lagged financial inclusion that are slightly larger, in absolute terms, than

TABLE 5
ESTIMATION RESULTS: BIVARIATE RANDOM-EFFECTS FIRST-ORDER MARKOV MODEL, BASELINE SPECIFICATION, CONSUMPTION- AND INCOME-BASED POVERTY MEASURES

	Consumption-based measure		Income-based measure	
	[1]	[2]	[3]	[4]
$Poor_{t-1}$	0.500***	0.525***	0.742***	0.700***
	[0.077]	[0.100]	[0.030]	[0.055]
FI_{t-1}	−0.328***	−0.313***	−0.134***	−0.151***
	[0.051]	[0.061]	[0.034]	[0.039]
$Poor_{t-1} \times FI_{t-1}$		−0.040		0.050
		[0.094]		[0.055]
σ_α	0.472***	0.474***	0.591***	0.600***
	[0.013]	[0.013]	[0.007]	[0.007]
σ_η	0.598***	0.599***	0.627***	0.627***
	[0.020]	[0.020]	[0.022]	[0.022]
κ	−0.408***	−0.410***	−0.102*	−0.102*
	[0.110]	[0.067]	[0.057]	[0.057]
ρ	−0.240***	−0.240***	−0.076***	−0.076***
	[0.031]	[0.067]	[0.024]	[0.024]
First-stage F test	21.298	21.298	21.390	21.390
Log-likelihood	−19485.46	−19485.22	−28280.47	−29133.07
# observations	60098	60098	60098	60098
# subjects	22562	22562	22562	22562
Δ entry		−0.035***		−0.023***
		[0.007]		[0.006]
Δ exit		0.051***		0.020**
		[0.012]		[0.010]

Notes: *p-value < 0.10, **p-value < 0.05, ***p-value < 0.01. Standard errors in square brackets are clustered at the household level and computed by the Delta method. Both specifications include an intercept term, year dummies, regional dummies, and all the explanatory variables listed in the Online Appendix, Table C2. The first-stage F test is based on a linear probability model for the deposit equation. Integral approximation was performed by the Gauss-Hermite quadrature method with 24 grid points. The average estimated entry end exit rates in Columns [2] and [4] are computed as per expression (6) and (7).

those reported in Table 4, whereas the effects of financial inclusion on poverty entry and exit rates are a few percentage points smaller in absolute value in all the specifications considered. It must however be mentioned that the model for the initial condition equation is hampered by a complete separation problem that arises with the set of dummies describing the occupational status, that had therefore to be dropped from the set of covariates in order to achieve identification. For this reason, the results presented in Tables 4 and B5, although broadly similar, are not directly comparable.

Misspecification: the role of household indebtedness

Poverty status can be significantly affected by the level of household indebtedness, especially for those individuals that are very close to the poverty line. For the highly indebted, even a transient negative income shock can then accelerate entry into poverty, or translate into persistent poverty. In turn, household indebtedness is also correlated with proxies for financial inclusion. Getting a house mortgage indeed

requires the availability of a deposit account where the bank credit the requested amount and charge the arranged installments. At the same time, households that have no relationship with the banking system could rely on alternative forms of debt, such as consumer credit and informal loans received from their relatives, which are likely to impact poverty status as well.

For these reasons, we estimate an alternative version of our baseline specification where we control for the different proxies of household indebtedness available in the survey: house mortgage, consumer credit and informal debts towards relatives and friends. These are all defined as dummy variables that take value 1 when the household currently has that type of debt.

Results are reported in Table 6. The proxy for financial inclusion is still highly significant across all specifications, with the exception of column 2, and exerts a negative effect on the likelihood of being poor. Among the different forms of debt, whereas house mortgages and consumer credit hardly exert any impact on the poverty status, the latter is positively correlated with the presence of informal loans from relatives and friends. The average effects of financial inclusion on poverty entry and exit rates, reported in the lower part of the Table, are consistent with our baseline specifications. Even if we control for household indebtedness, financial inclusion significantly reduces the likelihood of falling into poverty and increases the chances of escaping poverty, with effects that are in some cases larger in magnitude than those reported in Table 4. When considering house mortgages, for example, the effect of financial inclusion on the probability of both exiting and entering consumption-based poverty is greater compared to the baseline specification (6.1 versus 4.4 percent in terms of exit rate and 5.3 versus 2.7 percent in terms of entry rate).

5.3. *Alternative poverty and financial inclusion measures*

In order to further test the validity of our results, we perform the baseline estimates by employing either different thresholds for poverty or different proxies for financial inclusion. Results are reported in Table 7.

Poverty thresholds

As far as poverty indicators are concerned, we adopt different definition of the poverty line. We consider either extremely poor individuals, whose equivalized household consumption/income is below 40 percent of the median equivalized household consumption/income,[17] or those at risk of poverty, with an equivalized household consumption/income lower than 60 percent of the median threshold.[18] In addition, we use the consumption-based relative poverty definition adopted by ISTAT as a two-person household with a level of consumption expenditure lower than the average per-capita consumption in Italy.

Results are reported in Panel A of Table 7. The effects of financial inclusion on poverty entry rates in terms of both consumption and income are similar

[17]We also considered 30 percent of the median equivalized household consumption/income as poverty thresholds. Results are reported in Table B6 in the online Appendix.

[18]A similar procedure is followed by Eurostat to compute the dispersion around the poverty line.

TABLE 6
ESTIMATION RESULTS: UNIVARIATE RANDOM-EFFECTS FIRST-ORDER MARKOV MODEL, SPECIFICATION WITH PROXIES FOR HOUSEHOLD INDEBTEDNESS, CONSUMPTION- AND INCOME-BASED POVERTY MEASURES

	Consumption [1]	Income [2]	Consumption [3]	Income [4]	Consumption [5]	Income [6]
$Poor_{t-1}$	0.798***	1.136***	0.682***	0.809***	0.676***	0.807***
	[0.083]	[0.083]	[0.076]	[0.062]	[0.076]	[0.062]
FI_{t-1}	−0.409***	−0.048	−0.335***	−0.181***	−0.345***	−0.174***
	[0.074]	[0.066]	[0.061]	[0.050]	[0.061]	[0.050]
House $mortgage_{t-1}$	0.109***	0.038				
	[0.039]	[0.032]				
Consumption $debt_{t-1}$			−0.105***	0.035		
			[0.038]	[0.028]		
Debt toward $relative/friends_{t-1}$					0.211***	0.171***
					[0.054]	[0.047]
$Poor_{t-1} \times FI_{t-1}$	0.164*	−0.065	0.165**	0.177***	0.177**	0.178***
	[0.085]	[0.084]	[0.069]	[0.063]	[0.069]	[0.063]
$\ln \sigma_\alpha^2$	−3.301***	−3.960***	−2.141***	−9.000	−2.187***	−3.796***
	[0.990]	[1.493]	[0.311]	[11.860]	[0.323]	[1.228]
Log-likelihood	−5861.390	−8871.374	−7399.411	−11371.740	−7396.074	−11365.880
# observations	29131	29131	35037	35037	35037	35037
# subjects	13387	13387	16350	16350	16350	16350
Δ entry	−0.053***	−0.008	−0.042***	−0.033***	−0.044***	−0.032***
	[0.011]	[0.011]	[0.007]	[0.009]	[0.008]	[0.010]
Δ exit	0.061***	0.037	0.037**	0.001	0.037**	−0.001
	[0.021]	[0.027]	[0.015]	[0.020]	[0.015]	[0.020]

Notes: *p-value < 0.10, **p-value < 0.05, ***p-value < 0.01. Standard errors in square brackets are clustered at the household level and computed by the Delta method. All specifications include an intercept term, year dummies, regional dummies, and all the explanatory variables listed in the online Appendix, Table C4. Integral approximation was performed by the Gauss-Hermite quadrature method with 24 grid points. The average estimated entry end exit rates are computed as per expression (6) and (7).

to the baseline specification, even if they are greater for the AROP threshold (columns 3–4) compared to the 40 percent threshold (columns 1–2). In terms of exit rates, the impact of FI_{t-1} is statistically significant only when considering the at-risk-of-poverty threshold. When employing the ISTAT definition of consumption-based poverty (column 5), the positive impact of financial inclusion on exit rates is almost identical to our baseline specification whereas the effect gets slightly larger in terms of probability to exit poverty.

Financial inclusion proxies

Another possible concern is that bank account ownership is too broad a measure of financial inclusion, which does not properly capture the actual ability of individuals to access financial services at affordable costs. In this section, we consider alternative proxies for financial inclusion available in the SHIW dataset. First, we use a dummy variable that takes the value 1 if at least one debit or credit card is available to the household in period $t-1$, and 0 otherwise. Following Bachas *et al.*, (2018a,b), the idea is that having access to a bank card for managing the deposit account, withdrawing and depositing money, and making payments improves saving behavior and the ability to use credit and savings services. We exclude prepaid or rechargeable cards, whose availability could be simply driven by the need of poor households to access nationwide income-support schemes. Therefore, the sole availability of a prepaid or rechargeable card is not sufficient to be considered financially included in our definition.

TABLE 7
ESTIMATION RESULTS: UNIVARIATE RANDOM-EFFECTS FIRST-ORDER MARKOV MODEL, ALTERNATIVE POVERTY AND FINANCIAL INCLUSION MEASURES

	Panel A. Poverty thresholds				
	(40% median)		(60% median, AROP)		Istat
	Consumption [1]	Income [2]	Consumption [3]	Income [4]	Consumption [5]
$Poor_{t-1}$	0.553***	0.269**	0.384***	0.689***	0.407***
	[0.191]	[0.108]	[0.051]	[0.051]	[0.055]
FI_{t-1}	−0.526***	−0.264***	−0.329***	−0.115***	−0.301***
	[0.114]	[0.042]	[0.041]	[0.039]	[0.044]
$Poor_{t-1} \times FI_{t-1}$	0.243	0.311***	0.128**	0.075	−0.001
	[0.188]	[0.107]	[0.050]	[0.050]	[0.056]
$\ln \sigma_\alpha^2$	−2.131***	−0.978***	−1.393***	−1.167***	−1.242***
	[0.755]	[0.096]	[0.152]	[0.078]	[0.107]
Log-likelihood	−990.251	−5506.664	−15184.25	−21600.72	−11565.28
# observations	60098	60098	60098	60098	60098
# subjects	22495	22495	22495	22495	22495
Δ entry	−0.005***	−0.012***	−0.046***	−0.021***	−0.031***
	[0.001]	[0.006]	[0.006]	[0.007]	[0.005]
Δ exit	0.007	−0.004	0.038***	0.011	0.044***
	[0.006]	[0.008]	[0.009]	[0.013]	[0.008]
	Panel B. Financial inclusion proxies				
	Debit and/or credit card		On-line banking		
	Consumption [1]	Income [2]	Consumption [3]	Income [4]	
$Poor_{t-1}$	0.488***	0.750***	0.515***	0.753***	
	[0.057]	[0.043]	[0.041]	[0.030]	
FI_{t-1}	−0.259***	−0.055*	−0.186***	−0.137***	
	[0.039]	[0.033]	[0.056]	[0.040]	
$Poor_{t-1} \times FI_{t-1}$	−0.016	−0.029	−0.081	−0.138**	
	[0.062]	[0.043]	[0.180]	[0.063]	
$\ln \sigma_\alpha^2$	−1.699***	−0.989***	−1.411***	−1.042***	
	[0.187]	[0.083]	[0.129]	[0.079]	
Log-likelihood	−7732.40	−16188.17	−9999.56	−1534.44	
# observations	54653	54653	60098	60098	
# subjects	20930	20930	22495	22495	
Δ entry	−0.019***	−0.007	−0.013***	−0.019***	
	[0.003]	[0.005]	[0.004]	[0.005]	
Δ exit	0.033***	0.019**	0.031*	0.061***	
	[0.007]	[0.010]	[0.018]	[0.013]	

Notes: *p-value < 0.10, **p-value < 0.05, ***p-value < 0.01. Standard errors in square brackets are clustered at the household level and computed by the Delta method. All specifications include an intercept term, year dummies, regional dummies, and all the explanatory variables listed in the online Appendix, Tables C5 and C6. Integral approximation was performed by the Gauss-Hermite quadrature method with 24 grid points. The average estimated variations in entry and exit rates are computed as per expression (6) and (7).

The second alternative proxy for financial inclusion refers to remote access to banking services such as mobile banking or home banking technologies and is equal to 1 if someone in the household makes use of such services, and 0 otherwise. Once again, the idea is that using remote banking services captures the ability of individuals to exploit the credit and savings opportunities that financial inclusion opens up.

Whatever the proxy used for financial inclusion, the related coefficient is always negative and significant. When considering the availability of bank cards (Table 7, panel B, columns 1–2), the effect on poverty exit rates is slightly smaller compared to the baseline specification for consumption-based poverty (3.3 versus 4.4 percent), whereas it gets larger and statistically significant for income-based poverty (1.9 percent vs. 0.7 percent). The effect of access to bank cards on both consumption- and income-based poverty entry rates is smaller than that of account ownership, even if Δentry is statistically significant only in terms of consumption-based poverty.

The beneficial effects of financial inclusion on poverty entry and exit rates are confirmed also when we measure it by access to remote banking services (columns 3–4). In this case, the estimated values of Δentry are broadly similar to those of the baseline specification, whereas the impact on exit rates is smaller with the consumption-based poverty indicator, but greater with the income-based one.

5.4. *Heterogeneity*

Finally, we explore whether the effects of financial inclusion on poverty vary by gender and age. Females and young adults tend to be less financially included than males and older adults (Demirguc-Kunt *et al.*, 2018). However, they are also more credit-constrained if financially included (Bellucci *et al.*, 2010; Alesina *et al.*, 2013). In addition, females have a higher propensity to save and have conservative saving plans (Sunden and Surette, 1998; Seguino and Floro, 2003). For such reasons we can expect that financial inclusion matters more in explaining poverty dynamics of males and mature adults.

Both gender and age are measured by indicator variables: *Female* takes the value 1 for females and 0 for males; $Age > 45$ distinguishes people above (value 1) or below (value 0) the median age in our sample, which is 45. In order to allow for heterogeneous impacts of financial inclusion according to the gender and age of individuals, we interact these two variables with the proxy for financial inclusion, past poverty status and with the interaction between FI_{t-1} and $Poor_{t-1}$. The inclusion of this triple interaction, in particular, is essential to separately compute the impact of financial inclusion on transition matrices for different groups of individuals.

Results reported in Table 8 are consistent with the hypothesis that the impact of financial inclusion is not homogeneous across demographic groups. The effects on poverty entry and exit rates are significant for male individuals, and for people over 45 years old. For females and for the young, instead, such effects are weaker, especially as far as the income-based measure is considered. In particular, results for females show a negative and statistically significant effect of financial inclusion in terms of income-based poverty exit rate. This may become a further disadvantage

TABLE 8
ESTIMATION RESULTS: UNIVARIATE RANDOM-EFFECTS FIRST-ORDER MARKOV MODEL, SPECIFICATION WITH INTERACTION TERMS WITH GENDER AND AGE, CONSUMPTION- AND INCOME-BASED POVERTY MEASURES

	Female		Age > 45	
	Consumption [1]	Income [2]	Consumption [3]	Income [4]
$Poor_{t-1}$	0.390***	0.342***	0.528***	0.525***
	[0.075]	[0.077]	[0.081]	[0.085]
FI_{t-1}	−0.317***	−0.238***	−0.283***	−0.006
	[0.057]	[0.053]	[0.065]	[0.056]
$Poor_{t-1} \times FI_{t-1}$	0.060	0.154*	−0.065	−0.023
	[0.083]	[0.082]	[0.089]	[0.087]
Female	−0.091	0.160**		
	[0.065]	[0.060]		
Female × FI_{t-1}	0.034	0.295***		
	[0.069]	[0.101]		
Female × $Poor_{t-1}$	0.205**	0.660***		
	[0.095]	[0.101]		
Female × $Poor_{t-1} \times FI_{t-1}$	−0.133	−0.264**		
	[0.113]	[0.109]		
Age > 45		0.009	−0.088	
		[0.071]	[0.063]	
Age > 45 × FI_{t-1}		−0.024	−0.144**	
		[0.073]	[0.064]	
Age > 45 × $Poor_{t-1}$		−0.049	0.298***	
		[0.097]	[0.103]	
Age > 45 × $Poor_{t-1} \times FI_{t-1}$		0.087	0.156	
		[0.116]	[0.110]	
$\ln \sigma_\alpha^2$	−1.509***	−1.486***	−1.966***	−1.177***
	[0.137]	[0.135]	[0.161]	[0.086]
Log-likelihood	−9930.09	−9940.63	−12883.61	−18471.40
# observations	60098	60098	60098	60098
# subjects	22495	22495	22495	22495
Male: Δ entry	−0.029***	−0.030***		
	[0.006]	[0.007]		
Male: Δ exit	0.035***	0.015		
	[0.010]	[0.014]		
Female: Δ entry	−0.024***	0.009		
	[0.005]	[0.008]		
Female: Δ exit	0.031**	−0.057**		
	[0.015]	[0.025]		
Age ≤ 45: Δ entry		−0.025***	−0.001	
		[0.007]	[0.001]	
Age ≤ 45: Δ exit		0.050***	0.007	
		[0.011]	[0.020]	
Age > 45: Δ entry		−0.027***	−0.021***	
		[0.005]	[0.007]	
Age > 45: Δ exit		0.055***	0.046**	
		[0.017]	[0.027]	

Notes: *p-value < 0.10, **p-value < 0.05, ***p-value < 0.01. Standard errors in square brackets are clustered at the household level and computed by the Delta method. All specifications include an intercept term, year dummies, regional dummies, and all the explanatory variables listed in the online Appendix, Table C7. Integral approximation was performed by the Gauss-Hermite quadrature method with 24 grid points. The average estimated entry and exit rates are computed as per expression (6) and (7).

for fragile categories that are usually overrepresented among precarious low-paid jobs as well as among the unemployed and/or inactive.

6. Conclusions

In this study, we provide novel empirical evidence on the role of financial inclusion in affecting transitions into and out of poverty in the context of an advanced economy. Our results supports a significant and positive impact of financial inclusion on poverty transitions among Italian households in recent years. In particular, access to a bank account has been shown to reduce entry rates and increase exit rates, when both income-based and consumption-based poverty indicators are considered. Results are robust to the use of alternative proxies for financial inclusion, such as the availability of debit, credit or pre–paid cards and the use of remote banking services. We also take into account different poverty thresholds, which correspond to 30, 40 and 60 percent of the median consumption/income in our sample, 50 percent being our baseline reference.

By reducing the risk of impoverishment and the likelihood of getting trapped into poverty, access to financial services improves the living conditions of the poorest households and is likely to exert long-lasting effects on their economic well–being. According to our baseline specification, the risk of falling below the poverty line is reduced by 2.7 percentage points and the chance of exiting poverty increases by 4.4 percentage points.

Access to bank accounts stimulates savings, improves consumption smoothing possibilities and helps people to become integrated in market economies and increase earning opportunities through payment facilities. At the same time, access to formal credit services enables low-income individuals to invest in education, health and micro-entrepreneurial activities. Although the existing debate focuses mainly on developing countries, the evidence provided for Italy in this paper shows that the poverty-reducing role for financial inclusion may be significant in the context of advanced economies as well. Granting access to financial services therefore needs to be a worldwide target, and the efforts in this direction may prove effective in alleviating poverty.

Finally, our results provide evidence that the beneficial effects of financial inclusion are highly heterogeneous across gender and age. Females and young people are confirmed as risk categories for which the poverty–reducing role of financial inclusion is weaker compared to males and mature people. Due to their economic fragility they need therefore to be safeguarded in order to achieve both gender and intergenerational equity.

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Supporting Information

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Appendix S1: Supporting Information.