CeRP
CENTER FOR RESEARCH ON PENSIONS AND WELFARE POLICIES

Working Paper 122/11

HOW CREDIT MARKETS AFFECT HOMEOWNERSHIP: AN EXPLANATION BASED ON DIFFERENCES BETWEEN ITALIAN REGIONS

Serena Trucchi

How credit markets affect homeownership: an explanation based on differences between Italian regions

Serena Trucchi*

Abstract

This paper deals with the importance of liquidity constraints in shaping one of the main consumption and investment choices households make in their life: the purchase of a house. When borrowing and lending rates differ from each other and from the implicit rate of interest paid by real estate, the structure of those rates influences the decision to buy a house, and its impact depends on household characteristics and, in particular, on the slope of their resources profile over time. The empirical analysis is based on the Bank of Italy's Survey on Household Income and Wealth and exploits regional heterogeneity in financial market conditions to assess their effect on household tenure in a single country setting. The results show strong evidence that the interest rate spread interacts with the time path of resources and alters the desired age profile of housing tenure by discouraging or postponing the dwelling purchase by households with steeper resource profiles.
Key words: Housing tenure, liquidity constraints, interest rate spread
JEL: D1, G21, R21.

1 Introduction and motivations

One of the main consumption and investment choices households make in their life is housing tenure. A house is the main asset held by households

*CeRP-Collegio Carlo Alberto. E-mail: trucchi@cerp.unito.it.
I thank Luigi Benfratello, Giuseppe Bertola, Margherita Borella, John V. Duca, Elsa Fornero, Giovanni Mastrobuoni, Giovanna Nicodano and Alessandro Sembenelli for useful comments and suggestions. I also gratefully acknowledge comments from the participants to the 4^{th} ICEEE Congress (Pisa, 2011), XXXV Simposio de la Asociacion Espanola de Economia (Madrid, 2010), IREBS 2010 Conference (Regensburg, 2010), the 2^{nd} Italian Doctoral Workshops (Moncalieri, 2009), the 7^{th} International Workshop on Pension, Insurance and Saving (Paris, 2009), the ESPE 23^{rd} Annual Conference (Seville, 2009), the SAVE conference (Deidesheim, 2009) and to the seminars at Uppsala University and University of Verona. All remaining errors are mine.

in the majority of European countries. According to aggregate data, in 2004 the ratio of housing wealth to disposable income was 2.8 in Germany, 4 in Italy, 4.2 in the United Kingdom, and 4.3 in France.[1] Using Italian microdata from the Survey on Household Income and Wealth (SHIW), Table 1 shows that on average the home represents 85% of a homeowner's total net wealth; this percentage increases up to 93% if households older than 50 years are excluded.[2] One of the characteristics of a house is that it is also a consumption good. According to SHIW data, housing services represent a quarter of total household consumption and absorb a relevant share of family income (Table 2): On average, tenants spend almost 20% of their earnings for rent.[3] Housing tenure would therefore sensibly impact on household portfolio composition, consumption life-cycle profiles, and, in turn, aggregate savings. It also deeply affects other dimensions of economic behavior, such as mobility and job search efforts (Oswald, 1996; Munch et al., 2006), labor force participation (Del Boca and Lusardi, 2003), children's school attendance (Green and White, 1997) and political and social activities (Dietz and Haurin, 2003).

The importance of real estate in household consumption and investment decisions and the relevant impact of housing tenure on several economic outputs have attracted the interest of economists and social scientists. European countries are characterized by great heterogeneity in homeownership rates: Table 3 shows that in 2000 the homeownership rate ranged between 43% in Germany to over 80% in Greece and Spain. This evidence is suggestive of the relevant role of the economic environment in shaping tenure. The goal of this paper is to analyze the impact of market conditions, particularly of credit markets, on the house purchase.

In principle, homeownership does not necessarily have to be preferable to renting: Individuals may choose not to carry the risks and costs related to owning a home and may prefer more flexible living arrangements (Green, 1996).[4] If credit is not rationed, tenure is determined by personal charac-

[1] Data from the National Statistical Institutes, Bundesbank, and OECD.

[2] Figures from the survey data fit the observed paths well: The homeownership rate is 68.47% according to the 2002 SHIW, and 71.31% according to the 2001 census.

[3] According to data from Italy's National Institute of Statistics (Indagine sui consumi delle famiglie), in 2004 rents were 16.5% of tenants' total expenditure (Cipolletta et al., 2005).

[4] Nevertheless, in many countries homeownership is identified as the preferred form of tenure. In analyzing several European countries, Diaz-Serrano and Stoyanova (2010) argues that, when compared to other forms of living arrangements, homeownership promotes higher levels of housing satisfaction across all individuals. In the same direction, Ben-Shahar (2008) shows that psychological factors are more relevant than economic ones

teristics and preferences and the cost of owning relative to renting. When liquidity constraints are binding, the timing of resources also matters: Constraints interact with the time path of wealth and makes homeownership less attractive for people with a steep resource profile, particularly the young as found in the U.S. (Duca and Rosenthal, 1994).

A further implication concerns consumption and welfare inequality. Financial markets can reduce consumption inequality among people endowed with different resources at the beginning of their life (Bicakova and Sierminska, 2007; Bertola and Koeniger, 2004): All else being equal, agents with less initial wealth will benefit more from weaker liquidity constraints that allow them to buy their own dwelling, thus reducing homeownership inequality among the young.

Even if it is almost natural to think that credit constraints affect housing tenure, this need not be the case; indeed, family networks can circumvent them and intergenerational transfers can weaken their effect. Moreover, if young households expect to receive a house as a bequest, they may choose to rent and wait to receive it.[5] Thus the effect of liquidity constraints is not *a priori* obvious, which makes the empirical analysis more insightful. In this perspective, Italy is a case study worth investigating, since it is characterized by high ownership rates and low mortgages take-up rates, as pointed out by Bicakova and Sierminska (2007); Bartiloro et al. (2007); Crook (2006) and shown in Table 4. At first glance, these data appear to bear out the claim that family ties lessen the function of credit markets. However, evidence of a relevant effect of credit rationing on housing tenure confirms results by Guiso and Jappelli (1991) and Casolaro et al. (2006), further sustaining the role of intergenerational transfers as a tool to address borrowing constraints.

The effect of liquidity constraints has been analyzed by previous literature, mainly from a cross-country perspective (Chiuri and Jappelli, 2003; Bicakova and Sierminska, 2007). But several factors differ across countries, such as the tax treatment of owning and renting or rental market regulations, and it is therefore difficult to isolate the effect of borrowing constraints. This paper exploits a characteristic feature of the Italian case, that is, its great heterogeneity in regional financial market conditions, to address the issue in a single-country setting.[6] This approach does not weaken the relevance of the results that are indeed an important contribution to the investigation

in shaping tenure decisions.

[5] As a consequence of population aging, this happens later in life, and, therefore, the role of bequests in weakening borrowing constraints is lessening.

[6] This heterogeneity has been documented by Guiso et al. (2004) and Guiso et al. (2007), and exploited by Bertola et al. (2005), Casolaro et al. (2006) and Benfratello et al. (2008).

of the heterogeneity in homeownership rates that characterizes European countries. Moving the focus from a cross-country comparison to a within-country analysis also provides another opportunity: Rather than focusing on the macro effects of credit rationing on homeownership rate, this paper also studies its micro effects, showing its impact on individual households.

A further contribution of this work consists in the use of a broad definition of credit rationing: While previous literature centered on homeownership choices identifies and measures borrowing constraints as quantity restrictions on the mortgage value (the loan-to-value ratio), here borrowing constraints assume the form of a spread between borrowing and lending rates. Jaffee and Stiglitz (1990) define credit rationing as a situation in which there is an excess of demand for loans at the current interest rates of primary lenders. A strict interpretation identifies liquidity-constrained individuals as agents who face quantity restrictions on the amounts they can borrow, while, according to a weaker interpretation, this definition also includes consumers for whom interest rates depend on their asset positions.[7] This definition seems to fit the Italian case better, where, as is clear from Table 4, quantity limits on mortgage values do not seem to be binding.

The structure of this paper is as follows: After a brief review of the related literature in Section 2, Section 3 outlines the theoretical framework and Section 4 describes the data. The core part of the work is the empirical analysis, developed in Section 5. Section 6 briefly presents the study's conclusions.

2 Related literature

The rationale of the impact of liquidity constraints on the house purchase has been modeled by Artle and Varaya (1978). Moving from the assumption that owning is always preferred to renting, the authors show that liquidity constraints can lead agents with low initial resources or high intertemporal discount rates to optimally choose to be a tenant. Indeed, a down payment for a house purchase would require large savings at the beginning of one's lifetime, which would lead to suboptimal life-cycle consumption paths.[8] Some years later, Henderson and Ioannides (1983) extended the model of Artle

[7] The former interpretation is a special case of the latter, that is, when the interest rate goes to infinity at the borrowing limit (Attanasio et al., 2000).

[8] A different but related approach is followed by Ortalo-Magne and Rady (1999). The authors implement an equilibrium model of the housing market to explain the co-movement of house prices and homeownership rates for different age classes in response to income and credit market shocks.

and Varaya (1978) by relaxing the assumption of the dominance of owning over renting: An externality is associated with renting, and it is shown to be responsible for the relative attractiveness of owning.

Empirical analysis on the effect of credit rationing on homeownership have originally been carried out through simulations (Barakova et al., 2003; Quercia et al., 2003; Haurin et al., 1997; Linneman et al., 1997).[9] Other single-country studies (Bostic and Surette, 2000; Di and Liu, 2005) exploit time trends to identify the impact of credit rationing. For instance, Di and Liu (2005) find evidence that suggests that the importance of wealth in predicting homeownership has declined over time, and claim that "these results provide some support for the view that the proliferation of mortgage products allowing for low down payments in the late 1990s may have contributed to a reduction in the importance of wealth for achieving homeownership."[10]

To the best of my knowledge, Chiuri and Jappelli (2003) and Bicakova and Sierminska (2007) are the only ones to attempt to address the issue from a cross-country perspective. The former find credit rationing, measured by the loan-to-value ratio, to have a significant impact, and the latter show the economic environment has a significant impact on homeownership and its distribution across the youth population.

Another group of papers is related to the empirical analysis carried out in this paper by the strategy used to identify the effect of credit market conditions. Time- and region-specific variability in local market indicators have been exploited in previous literature Guiso et al. (2004); Bertola et al. (2005); Casolaro et al. (2006) and Benfratello et al. (2008) to assess their impact on several real outputs.

3 A simple model for housing tenure

This section develops a two-period model to describe the mechanisms and relations that underlie housing tenure choices. Even if admittedly simplified, the model provides a conceptual framework with which to investigate the home purchase decision.

In the maximization problem, agents decide whether to buy or rent a

[9] These papers estimate the desired house value for a subsample of unconstrained agents and, in a further step, they evaluate the effects of constraints, comparing desired and observed house values (see Feldman (2002) for a review).

[10] In a related study on the Italian case, Guiso and Jappelli (2002) estimate a selection model to evaluate the impact of transfers on the time to acquire savings before the house purchase and on the house value. Their results indicate that transfers shorten savings times and are associated with higher house values.

house by choosing the tenure status that yields the highest indirect utility. In this economy there is only one kind of house with value H and, moreover, uncertainty is ruled out.[11] Utility is assumed to be separable, increasing, and concave in current non-housing consumption (C) and in funds available for future consumption (A).[12] To obtain a closed-form solution within this more general class of functions, a logarithmic utility function is used.

In a world with perfect information and without friction, interest rates on assets (r_a) and liabilities (r_d) coincide and are equal to the real estate ones: $r_a = r_d = r_h$. In this framework, agents are indifferent between owning and renting. But to get rental payments, landlords bear the cost of collecting rent and the risk that tenants will damage the house.[13] To let landlords buy houses, the net revenue yielded by real estate must be greater or equal to interests paid by financial assets. This inequality implies that $r_h > r_a$[14] and, in turn, that the cost of housing services for tenants (rental payments $R = r_h H$) is higher than for homeowners (the opportunity cost of holding housing wealth $r_a H$).[15]

But credit is rationed: Even if the house purchase can be financed through mortgages, the interest charged on the debt is higher than that paid by financial assets: $r_a < r_h < r_d$. Household budget constraints are therefore discontinuous, and steeper if households borrow in the first period.[16]

Agents solve

$$\max_C \log C + \log A \tag{1}$$

[11] Ortalo-Magne and Rady (2002); Diaz-Serrano (2005a,c,b) analyze housing tenure choices under uncertainty.

[12] Housing consumption is not a choice variable, since only one kind of house is available: The utility yielded by housing services would therefore shift utility upward by the same amount for everyone in this economy. Moreover, the intertemporal discount rate is assumed to be zero; allowing for the discounting of future utility would imply more complex but qualitatively similar relations and results.

[13] An interesting interpretation of c is given by Henderson and Ioannides (1983). According to their model, an externality is associated with renting, and it is shown to be responsible for the relative attractiveness of owning.

[14] A similar assumption is made in Campbell and Cocco (2007).

[15] The difference between the interest paid by financial and real estate assets is positive only for the house. The net interest paid by other properties is r_a, since the cost c must be effectively paid by the landlord to get the rent. It follows that, apart for the dwelling, agents are indifferent to investing in real estate or financial assets; hence some of them will become landlords.

[16] It is worth noting that quantity limits to borrowing are a special case of this constraint: A value of r_d that goes to infinity simply means that access to credit is denied.

subject to

$$A = Y + \begin{cases} (W-C)(1+r_a) - R & \text{if renter} \\ (1-\tau q)H + (W - C - (1+\tau)H)(1+r_a) & \text{if owner and } W > H(1+\tau) + C \\ (1-\tau q)H + (W - C - (1+\tau)H)(1+r_d) & \text{if owner and } W \leq H(1+\tau) + C \end{cases} \quad (2)$$

where Y is the amount of purchasing power that will become available (with certainty) in the future and W is the current cash-on-hand. For simplicity, the rental payment R is timed in the second period, τ is the rate charged on the house value H to sustain transaction costs, and q is the probability of residential moving in the second period. Hence, if they move, homeowners have to pay the transaction cost τH to buy a new house, while renters are not charged any additional cost.

Households solve the optimization problem for each alternative and compare pairwise the indirect utilities obtained. The solution of such a comparison leads unconstrained households (with $W > H(1+\tau) + C^*$)[17] to follow the standard condition for purchase:

$$\frac{1+r_h}{1+r_a} > 1 + \tau + \frac{\tau q}{1+r_a}. \quad (3)$$

If households are not constrained, they will buy their dwelling whenever the present value of the revenue from real assets $\left(\frac{1+r_h}{1+r_a}\right)$ is greater than the cost of the purchase $(1+\tau)$. If the probability of moving is positive, a greater rate of return on real assets is required to buy the house (Haurin and Gill, 2002): This effect is captured by the term $\frac{\tau q}{1+r_a}$. Equation (3) can alternatively be seen as the condition for purchase when credit is not rationed ($r_d = r_a$). In that case, agents choose to be owner or tenants, depending on the expected value of q.

When a share of the house value must be borrowed ($W < H(1+\tau)+C^*$), the purchase condition is function of model variables.

Particularly, the effect of the timing of resources on $U^*_{OD} - U^*_R$ is summarized by equations (4) and (5):[18]

$$\frac{\partial(U^*_{OD} - U^*_R)}{\partial W} = \sqrt{1+r_d}(\sqrt{1+r_d} - \sqrt{1+r_a}) > 0 \quad (4)$$

$$\frac{\partial(U^*_{OD} - U^*_R)}{\partial Y} = -\frac{1}{\sqrt{1+r_a}}\left(\sqrt{1+r_d} - \sqrt{1+r_a}\right) < 0 \quad (5)$$

[17] C^* is the optimal level of consumption.

[18] U^*_{OD} and U^*_R are indirect utility of, respectively, the owner with debt and the renter.

First, it is worth noting that the timing of resources influences tenure decisions only if credit is rationed (if $r_d = r_a$, the expressions in equations (4) and (5) collapse to zero). All else being equal, greater cash-on-hand reduces the share of H that must be borrowed and weakens the effect of liquidity constraints (equation (4)): Hence the derivative of $U^*_{OD} - U^*_R$ with respect to W is positive. In a parallel way, households that, all else being equal, will achieve higher incomes in the future are more constrained. Consumption is indeed a positive function of lifetime resources, and, therefore, a higher future income entails lower savings and resources available for the house purchase (equation (5)). In conclusion, agents with steeper resource profiles would borrow a larger fraction of the house value and are therefore more constrained by the higher rate r_d; the magnitude of this effect is proportional to the interest rate spread.

4 Data and descriptive statistics

4.1 Household data

The empirical analysis is based on data from the Bank of Italy's SHIW and relies on the 1993, 1995, 1998, 2000, and 2002 waves. Each wave surveys a representative sample of the Italian resident population and covers about 8000 households. The head of the household is conventionally identified with the person primarily responsible for the household budget. The net response rate (ratio of responses to households contacted, net of ineligible units) was 34.3% in the 2002 wave.[19] Furthermore, the SHIW dataset has a panel component: Since 1989, part of the sample has consisted of households that were interviewed in previous surveys. In each wave, these households comprise about half of the sample (approximately 4000 households).

In this study, the unit of analysis is the family, and demographic characteristics refer to the household head; the sample is restricted to households aged between 25 and 50 years.[20] Households younger than 25 are excluded, since there should be some form of selection in the choice of household formation; this selection is relevant in Italy, where most young adults live with their parents. On the other hand, housing tenure choices made by agents older than 50 might be driven by factors related to retirement and/or health

[19] Brandolini and Cannari (1994) present a detailed discussion of sample design, attrition, and other measurement issues and compare the SHIW variables with the corresponding aggregate quantities.

[20] To check the sensitivity of results to this age restriction, estimates are performed on different subsamples (these estimates are not reported but are available on request).

and family shocks. Finally, homeowners who inherited their house or received it as a gift are dropped from the sample, since they do not face the choice of buying or renting their house.[21] Some descriptive statistics for the sample used for the regression are reported in Tables 4 and 5.

4.2 The spread

Identification of the econometric model exploits time- and region-specific variability in the spread between borrowing and lending interest rates. Even if not directly relevant for the house purchase, their levels and the spread are related, over time and across regions, to those applicable to household mortgages and deposits.[22] Table 6 documents the variability of those interests and their differences across regions and over time.

Two main objections can be raised against the use of the regional interest rate spread as a measure for the strength of liquidity constraints.[23] First, the interest rate spread may be driven by region- and time-specific clustering of individual characteristics that determine the average default risk. It is worth noting that in all the estimates, I control for factors that are region or time specific, and, therefore, this objection refers only to time- and region-specific foreclosure risk. Moreover, in line with Guiso et al. (2004), this would not be a source of concern if the individual characteristics that make somebody a good or bad borrower were unobservable to both the econometrician and the banker. Indeed, under this assumption, *ceteris paribus* a household will receive credit at lower cost in a region where the spread is smaller, which is consistent with the use of spread as a measure of credit rationing. If, instead, bankers observed features that affected the borrower's expected

[21] In principle, they could sell their house and rent another one, but this event would be uncommon, and the choice is still a different one. Furthermore, one might argue that this could introduce a possible selection effect. I addressed the issue in two ways. First, I estimate the model on the whole sample, and the results are qualitatively similar. Second, I use income as a proxy for wealth (since it is not endogenous in the selection equation) and I estimate the probit model with sample selection, using as exclusion restriction parental education and job (a dummy that is one if parents are self-employed). The null hypothesis that the two equations are independent cannot be rejected (the p-value is 0.928).

[22] In fact, the interest rate charged to one's loan is matter of choice between a fixed or a variable interest rate and between a set of available mortgage lives. This work does not investigate mortgage choices.

[23] A further potential caveat concerns the endogeneity of the region of residence: People may move to other regions to exploit better market conditions. It is, however, plausible to assume this choice to be predetermined with respect to housing tenure, and, therefore, exogenous. Moreover, if the same model is estimated only for those who were born in the region where they actually live, the main findings are confirmed.

repayment, they would be able to discriminate: Two individuals with the same characteristics (included those observed by the bankers and not by the econometrician) are charged the same borrowing interest rate, even if they live in different regions. In this case, the identification approach used in this paper may incorrectly attribute to credit constraints some effects they do not have. To address this issue, I included in the regression the share of overdue debt in the region for the period 1998-2002 (source of the index: Unioncamere and Istituto Tagliacarne (2003)), but it did not have a significant effect. However, there might still be unobservable differences in the clustering of characteristics that affect the individual default risk like, for instance, job and wage stability that is not captured by the covariates. If job and wage stability is relatively low in a region with respect to the other ones, in that region the average risk and, in turn, the spread will be higher. Indeed, if a household with relatively unstable job and wage is less likely to be homeowner, regardless of credit market conditions, the effect of wage instability may appear as the effect of the interest rate spread. To avoid this problem, I instrument spread with variables that describe the regional structure of financial markets in 1936. A detailed discussion of the instruments and their validity is provided in Section 5.2.
The second objection is that the level of spread may be the effect of sudden shifts in the demand for credit driven by local idiosyncratic shocks that may also influence observed tenure. However, along the lines outlined above, I address this potential endogeneity problem.

5 The empirical analysis

5.1 Basic model: A probit model on a pooled sample

There are two main predictions of the stylized theoretical model. The first is that households whose resources increase more steeply over the life-cycle would like to borrow a large fraction of the house value and are, thus, more constrained by the interest rate spread. The second is that the strength of this effect increases with the spread. To analyze the determinants of housing tenure and to test these and other theoretical implications, a standard probit model is estimated. Since information about household characteristics at the time of house purchase are not provided by the SHIW data, the empirical analysis focuses on the tenure status as a latent variable. The dependent variable is therefore equal to one if the household owns its dwelling, and zero otherwise. The vector of explanatory variables includes individual characteristics and market indexes (average rent, house price, and interest

rate spread). According to theoretical predictions, individual variables that are expected to influence homeownership are those related to cash-on-hand, future income, and the probability of moving in the future. The slope of the earning profile is captured by education: More educated agents are indeed expected to have steeper labor income paths (Borella, 2004). Since current income has larger relative effects on loan supply and expected income has relatively larger effects on credit demand, steeper income profiles are likely to be positively correlated with being credit constrained. Other variables that can influence the income profile (occupation and sector of employment), expectations about future mobility (marital status, age, private versus public employment sector, and city size), or tastes (gender, family size) are added as controls. Time and regional dummies are also included to control for time- and region-specific factors, respectively (see Appendix A for a description of the explanatory variables).

Regression results are reported in Table 7: The simplest specification is in model (1), where the effect of the spread index does not depend on any other variable. In column (2), the interactions of spread with current resources and education are added; and, in the last column, robustness to the addition of other controls is addressed. As expected, the likelihood of homeownership increases with available resources and decreases with education in the first specification. Estimated coefficients of market-level variables have the expected sign (house prices and rental payments have, respectively, a negative and a positive impact), but the coefficient of the interest rate spread is not statistically significant. But this result does not hold if the impact of the spread is allowed to differ according to household characteristics (column 2 of Table 7). More severe liquidity constraints reduce the likelihood of homeownership, and the magnitude of this effect is lower for households that are less constrained, that is, have greater wealth and/or less education. These results are in line with theoretical predictions: The path of resources does not affect tenure choice if credit is not rationed; it becomes significant if borrowing is constrained, and its effect increases with the interest rate spread.

The marginal effects reported in Table 7 are computed at the sample mean of the regressors, but they are not sufficient to pin down the overall impact of explanators that are interacted with other variables. Hence, Figure 1 plots the marginal effect of the interest rate spread as a function of total wealth (expressed in thousands of 2002 euros) for the reference household.[24]

[24]The reference household is a couple with a male household head aged 35 years, with a high school diploma, who is an employee living in a medium-sized city in Lombardia in

An increase in the spread by one percentage point reduces the probability of homeownership by 4-6% for households endowed with less than 50,000 euros. The negative effect slowly decreases with wealth: The null hypothesis that the marginal effect of spread is zero cannot be rejected for resources greater than 58,000 euros at the 5% level, and for resources greater than 65,000 euros at the 10% level.[25] Figure 2 draws the increasing marginal effect of wealth as a function of the interest rate spread: It is always positive and significant and increasing with spread.

The results presented above may be sensitive to arbitrary age restrictions: The same model is therefore estimated for different age brackets. In general, the sign and significance of the coefficients are confirmed, and the effect of the main variables is greater for younger households.[26]
The results shown in Table 7 are based on the entire sample, which includes both constrained and unconstrained agents. But credit market features are expected to be relevant only for liquidity-constrained households. To address this issue, the model is estimated for different subsamples of agents that are more likely to be liquidity constrained and the main insights are confirmed.

Since the interest rate spread is correlated with broader local credit market conditions, it may also capture the effect of credit denial. To address this concern, the model for tenure is estimated, excluding from the sample those agents who have been denied credit or who have been discouraged from applying (3.4% of the sample). Estimate coefficients are basically unchanged.

A final remark concerns the use of spread and variables evaluated in the year of the interview, while, in principle, relevant factors would refer to the year of the house purchase. I address the issue empirically by estimating the probability of buying a house, given that the household rented in the previous period. Despite the drawbacks of this regression, the results from this exercise are similar to the earlier findings:[27] The direction of the effect of the main explanatory variables is basically confirmed, and, among them, spread and its interaction with wealth are found to be especially powerful.

1998. Other variables are at their median value.

[25] Around 40% of the households in the reference category hold less than these jj

[26] This and the following robustness checks are not reported but are available on request.

[27] The sample size is cut by more than half and, moreover, the most appropriate duration model cannot be implemented because of the small size of the panel and the small number of shifts in tenure status recorded in the data.

5.2 Addressing the endogeneity of the interest rate spread and wealth: A control function approach

Up to this point, both the interest rate spread and available wealth are assumed to be exogenous. But, in principle, idiosyncratic regional shocks can influence both tenure and spread: the endogeneity of spread may therefore be an issue. Moreover, the spread may capture any geographical clustering of individual characteristics that make someone a good or a bad borrower. For this reason, the spread may pick up other factors that are time- and region-specific (see Section 4.2 for a more detailed discussion about this issue). Furthermore, households that are willing to buy their dwelling may save more (Haurin et al., 1993) or increase their labor supply (mainly through the labor force participation of women) to reduce the amount of debt. In this case, both the probability of owning and the level of wealth are driven by preferences for homeownership: The level of resources may hence be correlated with the error term, and the endogeneity of wealth may bias the results.

To address this concern, one must identify a set of determinants of wealth and interest rate spread (instruments) that are not correlated with the error term in the homeownership equation. Following the strategy by Guiso et al. (2004) and Benfratello et al. (2008), instruments for the interest rate spread are variables for the banking structure in 1936, the year of a radical reorganization of the banking system.[28] Guiso et al. (2004) explain in detail why these variables have predictive power for the level of banking development in the more recent past. The basic idea is that different types of banks faced different constraints in opening new branches. More specifically, variables that would be relevant in shaping the structure of the banking system are the number of total branches in each region in 1936 and the share of branches owned by local versus national banks, since the former had more flexibility to grow. Moreover, since among the local banks, savings banks had more flexibility than cooperative ones, the numbers of cooperative and savings banks per million inhabitants are also included.[29] These variables are expected to be relevant and, according to Guiso et al. (2004, 2007), they are not correlated with regional development in 1936 and are therefore exogenous. Instruments for wealth are indeed two dummies that capture whether at least one parent of each partner is self-employed, and a dummy that is equal to one if at least one parent of the partner is alive, and zero

[28] See Appendix B for the motivation for this choice.

[29] These variables are time invariant but are allowed to have a different effect on the spread in each period.

otherwise. The rationale for the use of these variables is that the parents' self-employment is expected to be positively related to their income[30] or can capture the effect of family networks in boosting the initial income of children (Capuano, 2010). If the parents are alive, they can boost their children's resources with intergenerational transfers or by helping them with child care, fostering the labor market participation of wives.[31]

A control function approach is followed to address the potential endogeneity of wealth with respect to credit constrains. (Rivers and Vuong, 1988), and results are reported in Table 8. The OLS estimates for spread are shown in the last column of Table 8.[32] The fitted residuals from these equations are then added in the main equation that is estimated by maximum likelihood (column 2 in Table 8). The estimate for spread illustrates that 1936 instruments are significant in explaining current regional spreads, and all of them have the expected sign. The t-test on the significance of the fitted residual of the model for wealth and spread in the probit model provides a valid test for the exogeneity of the two regressors. While the exogeneity of wealth is rejected, the coefficient of the fitted residual of spread is not statistically different from zero, meaning that the spread is not endogenous in the probit model.

Hence a broader control function model can be estimated, including also the interest rate spread in the vector of explanators for wealth. The results are reported in Table 9. As expected, all the dummy variables have a positive effect on the stock of wealth (column 3 of Table 9).[33] Even if the exogeneity of wealth is rejected, the main findings of the previous section are maintained: The sign and significance of the coefficients estimated under

[30] Information about parental wealth and income are not provided by the SHIW data.

[31] A caveat about the use of these instruments, particularly of parents' self-employment, comes from the function of parental resources as collateral for children's debt: Parental self-employment may be correlated with unobservables that affect the likelihood of getting a loan, and, in turn, tenure. It is, however, worth noting that the distribution of credit denial is independent of parental self-employment: The p-values of the null hypothesis that credit denial and self-employment of the parents of, respectively, the household head and the partner are independent are 0.941 and 0.608. Moreover, as shown later in this section, the Hansen J test fails to reject the exogeneity of the instruments.

[32] The OLS estimates for wealth are not reported.

[33] As shown later by tests on generalized method of moments (GMM) estimates, these are valid instruments. If the same estimate is done using as instruments only the two dummies for self-employment, the results are confirmed (but the Hansen test cannot be run in the linear probability model). Alternatively, the dummy for living parents may be substituted by the interaction of the dummy for self-employment of the parents of the household head with the interest rate spread. The results are also confirmed in this case: Wealth is endogenous, but the main findings are robust.

the hypothesis of exogeneity (column 1 of Table 9) and the corrected ones (column 2 of Table 9) are similar.

The main drawback of the control function approach is that the validity of instruments cannot be tested. For this reason, a linear probability model has been estimated by a two-step GMM. The two-step GMM allows one to test the relevance of the instruments used, and, since the model is over-identified, Hansen's J test can be implemented. The F test on excluded instruments rejects their weakness and the J test fails to reject the null hypothesis of the exogeneity of the instruments (the p-value is 0.554).

5.3 Controlling for individual unobserved heterogeneity: Random effect and fixed effect models

The previous section deals with the endogeneity of cash-on-hand. But a more general source of endogeneity can arise: Individual specific unobservables, such as ability, tastes, intertemporal discount rates, and preferences for homeownership, may indeed be correlated with some of the explanatory variables. To address the issue, the panel dimension of part of the sample is exploited to allow some form of correlation between the regressors and the unobserved heterogeneity.

A solution *à* la Chamberlain (Wooldridge, 2001) is a natural starting point. Hence, an arbitrary correlation between the individual unobserved heterogeneity and the regressors is assumed: The former depends on the mean of the wealth and family size over time. An even broader model is the conditional logit model: Regressors are assumed to be exogenous with respect to idiosyncratic shock, without any additional requirement of orthogonality between individual heterogeneity and the explanators. The main drawback of these two approaches is that they rely on a smaller sample. Despite this shortcoming, the main findings of previous sections are confirmed (Table 10). Nevertheless, the interaction between spread and years of education of education is marginally significant; however, this result may be driven by the reduced sample size (the same coefficient is significant only at the 10% level in pooled probit estimate as well). It is worth noting that the mean wealth is significant in the random effect model (column 2 of Table 10) estimate, confirming the correlation between wealth and unobserved heterogeneity.

6 Conclusions

This paper contributes to the literature on the effects of liquidity constraints on consumption and savings by investigating their role in shaping homeownership. Housing tenure is driven by household and environmental factors that affect the relative attractiveness of the alternatives. When credit is rationed, the timing of resources becomes a relevant explanator: Agents with a steeper earning profile are indeed more constrained, and, in turn, less likely to become homeowners. Even if it is almost natural to think that credit constraints affect housing tenure, it is not necessarily true if intra-household transfers lessen their effect on youth tenure decisions. From this perspective, Italy is a case study worth investigating, since it is characterized by high ownership rates and low mortgage take-up rates.

To empirically investigate the issue, probability models for housing tenure have been estimated using the Bank of Italy's data. The main contribution of this work is to exploit the within-region heterogeneity in local financial markets to assess their role in determining homeownership, keeping fixed other institutional factors such as rental market regulations or the tax code. Furthermore, this analysis relies on a broad definition of liquidity-constrained consumers that includes not only agents who face quantity limits on the amount they can borrow, but also households for whom interest rates on borrowing and lending are different.

The results basically confirm the predictions: Credit rationing has a negative impact on homeownership, and its effect is lower for richer and less educated households that have a flatter income profile and are therefore less constrained. A rise in the interest rate spread by one percentage point is estimated to reduce the probability of homeownership by 4-6% for medium-educated households. The impact of liquidity constraints on housing tenure decisions decreases with wealth, and is zero for (medium-educated) households endowed with more than 65,000 euros. These results turn out to have relevant policy implications: Policies aimed at boosting the income earning potential of younger workers would make the earnings profile less steep, and thereby also increase homeownership rates.

A potential pitfall of this analysis is the endogeneity of the interest rate spread and of wealth. Hence idiosyncratic regional shocks can influence both tenure and spread, and, moreover, the latter may be correlated with unobserved variables. In addition, households that are willing to buy their dwelling may save more or increase their household labor supply (mainly through the labor force participation of women) to reduce the amount of money they must borrow. The endogeneity of regressors is ad-

dressed through a control function approach that shows how the exogeneity of wealth is rejected, but the main findings are robust. More general sources of endogeneity can arise if individual specific unobservables are correlated with some of the explanatory variables. To address the issue, the panel dimension of part of the sample is exploited to estimate a Chamberlain probit model and a conditional fixed effect logit that allow unobserved heterogeneity to be correlated with regressors. Even if evaluated on a smaller sample, these estimates basically confirm previous findings.

In conclusion, the results of this analysis are in line with previous cross-country studies (Chiuri and Jappelli, 2003; Bicakova and Sierminska, 2007) that find credit market conditions to have a significant effect on homeownership rates. While this study refers to Italy, it carries more general insights, assessing the crucial role played by financial markets in shaping geographical heterogeneity in homeownership rates.

References

Artle, R. and P. Varaya (1978). Life cycle consumption and homeownership. *Journal of Economic Theory 18*, 38–58.

Attanasio, O., P. Goldberg, and E. Kyriazidou (2000). Credit constraints in the market for consumer durables: Evidence from micro data on car loans. NBER Working Paper 7694.

Barakova, I., R. W. Bostic, P. S. Calem, and S. M. Wachter (2003). Does credit quality matter for homeownership? *Journal of Housing Economics 12*(4).

Bartiloro, L., M. Coletta, and R. De Bonis (2007). Italian household wealth in a cross-country perspective. Presented at the conference 'Household Wealth in Italy', Banca d'Italia, Perugia 16-17 October 2007.

Ben-Shahar, D. (2008). Tenure choices in the housing market. psychological versus economic factors. *Environment and behavior 20*(10).

Benfratello, L., F. Schiantarelli, and A. Sembenelli (2008). Banks and innovation: microeconometric evidence on Italian firms. *Journal of Financial Economics 90*(2).

Bertola, G., S. Hochguertel, and W. Koeniger (2005). Dealer pricing of consumer credit. *International Economic Review 46*(4).

Bertola, G. and W. Koeniger (2004). Consumption smoothing and the structure of labor and credit markets. Discussion Paper 1052, IZA.

Bicakova, A. and E. Sierminska (2007). Homeownership inequality and the access to credit markets (can credit availability explain cross-country differences in the inequality of homeownership across income of young households?). Working Paper 5, Luxembourg Wealth Study.

Borella, M. (2004). The distributional impact of pension system reforms: an application to the Italian case. *Fiscal Studies 25*(4).

Bostic, R. and B. J. Surette (2000). Have the doors opened wider? trends in homeownership rates by race and income. Finance and Economics Discussion Series 2000-31, Board of Governors of the Federal Reserve System (U.S.).

Bourassa, S. C., D. R. Haurin, R. J. Haurin, and P. H. Hendershott (1993). Independent living and homeownership: an analysis of Australian youth. Working Paper 4450, NBER.

Brandolini, A. and L. Cannari (1994). Methodological appendix: the Bank of Italy survey on household income and wealth. In A. Ando, L. Guiso, and I. Visco (Eds.), *Saving and the Accumulation of Wealth*. Cambridge University Press.

Campbell, J. Y. and J. F. Cocco (2007). How do house prices affect consumption? Evidence from micro data. *Journal of Monetary Economics 54*(3), 591–621.

Cannari, L. and I. Faiella (2007). Housing prices and housing wealth in Italy. Presented at the conference 'Household Wealth in Italy', Banca d'Italia, Perugia 16-17 October 2007.

Capuano, S. (2010). Student mobility and highly skilled migration: Theory and evidence. Phd thesis.

Casolaro, L., L. Gambacorta, and L. Guiso (2006). Regulation, formal and informal enforcement, and the development of the household loan market: lesson from Italy. In G. Bertola, R. Disney, and C. Grant (Eds.), *The economics of consumer credit*. The MIT Press.

Chiuri, M. C. and T. Jappelli (2003). Financial markets imperfections and home ownership: a comparative study. *European Economic Review 47*.

Cipolletta, I., M. Buffo, G. de Caprariis, S. Gambuto, and A. Guelfi (2005). Mercato degli affitti, regole e mobilita. Technical report, Confindustria Centro Studi.

Crook, Jonathan, N. (2006). Household debt demand and supply. In G. Bertola, R. Disney, and C. Grant (Eds.), *The economics of consumer credit*. The MIT Press.

Del Boca, D. and A. Lusardi (2003). Credit market constraints and labor market decisions. *Labour Economics 10*(6).

Di, Z. X. and X. Liu (2005). The importance of wealth and income in the transition to homeownership. Working Papers W05-6, Joint Center for Housing Studies - Harvard University.

Diaz-Serrano, L. (2005a). Income volatility and residential ortgage delinquency across the EU. *Journal of Housing Economics 14*.

Diaz-Serrano, L. (2005b). Labor income uncertainty, skewness and homeownership: A panel data study for Germany and Spain. *Journal of Urban Economics 58*(1).

Diaz-Serrano, L. (2005c). On the negative relationship between labor income uncertainty and homeownership: Risk-aversion vs. credit constraints. *Journal of Housing Economics 14*(5).

Diaz-Serrano, L. and A. P. Stoyanova (2010). Mobility and housing satisfaction: an empirical analysis for 12 EU countries. *Journal of Economic Geography 10*(5).

Dietz, R. D. and D. R. Haurin (2003). The social and private micro-level consequences of homeownership. *Journal of Urban Economics 54*(3), 401–450.

Duca, J. V. and S. S. Rosenthal (1994). Borrowing constraints and access to owner-occupied housing. *Regional Science and Urban Economics 24*(3).

Feldman, R. (2002). Mortgage rates, homeownership rates, and government-sponsored enterprises. *Annual Report*, 4–23.

Green, R. K. (1996). Should the stagnant homeownership rate be a source of concern? *Regional Science and Urban Economics 26*(3-4).

Green, R. K. and M. J. White (1997). Measuring the benefits of homeowning: Effects on children. *Journal of Urban Economics 41*(3).

Guiso, L. and T. Jappelli (1991). Intergenerational transfers and capital market imperfections : Evidence from a cross-section of italian households. *European Economic Review 35*(1).

Guiso, L. and T. Jappelli (2002). Private transfers, borrowing constraints and the timing of homeownership. *Journal of Money, Credit and Banking 34*(2).

Guiso, L., P. Sapienza, and L. Zingales (2004). Does local financial development matter? *The Quarterly Journal of Economics 119*(3).

Guiso, L., P. Sapienza, and L. Zingales (2007). The cost of banking regulation.

Haurin, D. R. and H. L. Gill (2002). The impact of transaction costs and the expected length of stay on homeownership. *Journal of Urban Economics 51*(3).

Haurin, D. R., P. H. Hendershott, and D. Kim (1993). Wealth accumulation and housing choices of young households: an exploratory investigation. *The Review of Economics and Statistics 75*(2).

Haurin, D. R., P. H. Hendershott, and S. M. Watcher (1997). Borrowing constraints and tenure choice of young households. *Journal of Housing Research 8*(2).

Hendershott, P. H. and M. White (2000). Taxing and subsidizing housing investment: The rise and fall of housing's favored status. NBER Working Papers 7928, National Bureau of Economic Research, Inc.

Henderson, J. V. and Y. M. Ioannides (1983). A model of housing tenure choice. *American Economic Review 73*(1).

Jaffee, D. and J. Stiglitz (1990). Credit rationing. In B. M. Friedman and H. F. H. (Eds.), *Handbook of Monetary Economics*, Volume 2. Amsterdam: North Holland.

Jentzsch, N. and A. San Jose' Riestra (2006). Consumer credit markets in the United States and Europe. In G. Bertola, R. Disney, and C. Grant (Eds.), *The economics of consumer credit*. The MIT Press.

Linneman, P., I. F. Megbolugbe, S. M. Wachter, and M. Cho (1997). Do borrowing constraints change U.S. homeownership rates? *Journal of Housing Economics 6*(4).

Munch, J. R., M. Rosholm, and M. Svarer (2006). Are homeowners really more unemployed? *Economic Journal 116*(514).

Ortalo-Magne, F. and S. Rady (1999). Boom in, bust out: Young households and the housing price cycle. *European Economic Review 43*(4-6).

Ortalo-Magne, F. and S. Rady (2002). Tenure choice and the riskiness of non-housing consumption. *Journal of Housing Economics 11*(3).

Oswald, A. J. (1996). A conjecture on an explanation for high unemployment in the industrialized nations: part I. Working paper 475, University of Warrick.

Quercia, R. G., G. W. McCarthy, and S. M. Watcher (2003). The impacts of affordable lending efforts on homeownership rates. *Journal of Housing Economics 12*.

Rivers, D. and Q. H. Vuong (1988). Limited information estimators and exogeneity tests for simultaneous probit models. *Journal of Econometrics 39*(3), 347–366.

Unioncamere and Istituto Tagliacarne (2003). Le dinamiche creditizie a livello provinciale - un'analisi per gli anni 1998 - 2002. Le ricerche, Istituto Guglielmo Tagliacarne.

Wooldridge, J. M. (2001). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Massachusetts: The MIT Press.

Table 1: Incidence of the dwelling over total net wealth

	Own. rate	Mean	Std. Dev.
All	66.22%	55.92%	1.28
Aged 25-50	59.55%	54.95%	1.90
Owners		84.85%	1.5
Owners 25-50		92.63%	2.38

Source: elaboration on SHIW data (1993-2002).

Table 2: Incidence of the expenditure for housing services

	on total consumption[a]		on income[b]	
	Mean	Std. Dev.	Mean	Std. Dev.
All	25.01%	0.12	24.88 %	0.17
Renters	19.70%	0.11	18.63 %	0.14
Aged 25-50	24.29%	0.11	23.10 %	0.15
Renters 25-50	19.93%	0.11	18.87 %	0.14

Source: elaboration on SHIW data (1993-2002).

Notes: *a*: ratio between rental payments and non durable consumption (included rent). Household evaluation of potential rental payment at market price is used to measure housing consumption by homeowners.
b: ratio between rental payments and annual household labor income.

Table 3: Owner occupation rate

Austria	53.7%
Denmark	65.0%
France	62.7%
Germany	43.4%
Greece	83.6%
Italy	75.5%
Netherlands	54.4%
Portugal	65.0%
Spain	85.3%
Sweden	59.9%
UK	70.6%

Source: Jentzsch and San Jose' Riestra (2006): Eurostat (data for 2000).

Table 4: Incidence of debt for homeowners

		25-50	25-37	38-50
Homeownership rate		59.55%	49.51%	65.04%
Homeowners with debt		27.01%	30.47%	25.58%
Mortgage value	Owners	7 973	10 097	7 091
	Owners with debt	29 633	33 244	27 845
Mortgage/house value	Owners	5.95%	8.20%	5.01%
	Owners with debt	22.05%	26.92%	19.63%

Source: SHIW 1993-2002.

Mortgage value: debt for house purchase or renovation (also on real estate different from the house). Mortgage/house value=real estate debt/ house value.

Table 5: Descriptive statistics

	All		Tenants		Homeowners	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Owner	62.23%	0.48				
Age	40.40	6.58	39.12	6.80	41.17	6.33
Male	76.50%	0.42	73.21%	0.44	78.50%	0.41
Family size	3.37	1.23	3.22	1.34	3.46	1.15
Married	79.85%	0.40	72.52%	0.45	84.30%	0.36
No education	1.12%	0.11	2.18%	0.15	0.47%	0.07
Compulsory education	49.78%	0.50	59.44%	0.49	43.92%	0.50
College	38.11%	0.49	30.56%	0.46	42.69%	0.49
Degree or more	10.99%	0.31	7.82%	0.27	12.92%	0.34
Years of education	10.41	3.97	9.51	3.91	10.95	3.90
Employee	67.94%	0.47	68.11%	0.47	67.83%	0.47
Self-employed	19.68%	0.40	16.03%	0.37	21.90%	0.41
Private sector	66.17%	0.47	68.73%	0.46	64.62%	0.48
Wealth	129.47	180.56	19.81	60.55	196.03	196.05
Small city ($< 20\ 000$)	22.79%	0.42	17.98%	0.38	25.70%	0.44
Large city ($> 500\ 000$)	11.06%	0.31	14.39%	0.35	9.04%	0.29
House surface	101.94	52.13	81.34	29.76	114.44	58.43
House value	130.74	99.74	92.90	64.63	153.19	109.64
House price (sqm.)	1.29	0.71	1.15	0.70	1.38	0.70
Price small city	1.15	0.73	1.00	0.76	1.21	0.70
Price medium city	1.29	0.67	1.13	0.66	1.39	0.66
Price large city	1.60	0.78	1.41	0.73	1.78	0.79
Rent per sqm.	0.05	0.03	0.04	0.03	0.05	0.03
Rent small city	0.04	0.03	0.04	0.03	0.04	0.02
Rent medium city	0.05	0.03	0.04	0.03	0.06	0.03
Rent large city	0.07	0.04	0.05	0.04	0.08	0.03
Observations	11515		4349		7166	

Notes : income, wealth, price, rent and house value are in thousand euro 2002.

Table 6: Financial indexes

Variable		Mean	Std. Dev.
Interest rate on debt	overall	0.1093	0.0344
	between		0.0096
	within		0.0331
Interest rate on deposits	overall	0.0467	0.0250
	between		0.0016
	within		0.0250
Spread	overall	0.0626	0.0134
	between		0.0103
	within		0.0088

Source: elaboration on Bank of Italy data. Years 1993-2002.

Notes: 100 observations (20 regions observed 5 times).

Table 7: Probit regression on the probability of being owner: basic model on pooled sample.

	(1)	(2)	(3)
Wealth	0.014***	0.000	0.000
	-0.001	-0.003	-0.003
	[0.004]	[-0.000]	[-0.000]
Spread	-0.047	-0.107**	-0.102*
	-0.041	-0.055	-0.055
	[-0.012]	[-0.027]	[-0.026]
Years of education	-0.018***	0.034	0.040
	-0.005	-0.025	-0.025
	[-0.004]	[0.008]	[0.010]
Spread*wealth		0.003***	0.003***
		-0.001	-0.001
		[0.001]	[0.001]
Spread*years of education		-0.009**	-0.010**
		-0.004	-0.004
		[-0.002]	[-0.003]
House price per sqm.	-0.867***	-0.929***	-0.857***
	-0.228	-0.230	-0.230
	[-0.215]	[-0.234]	[-0.216]
Rent per sqm.	20.820***	28.418***	27.334***
	-5.962	-6.256	-6.253
	[5.175]	[7.153]	[6.901]
Household size	0.057***	0.021	0.017
	-0.015	-0.018	-0.018
	[0.014]	[0.005]	[0.004]
Age	0.002	0.002	0.002
	-0.003	-0.003	-0.003
	[0.000]	[0.000]	[0.000]
Married		0.232***	0.219***
		-0.053	-0.058
		[0.062]	[0.059]
Employee			0.093*
			-0.052
			[0.024]
Self-employed			-0.023
			-0.073
			[-0.006]
Male			0.018
			-0.049
			[0.005]
Private sector			-0.062
			-0.043
			[-0.015]
Small city (¡ 20 000)			0.189***
			-0.050
			[0.045]
Large city (¿500 000)			-0.230***
			-0.067
			[-0.063]
Observations	11515	11515	11515
Log likelihood	-3852.438	-3829.389	-3804.233
χ^2	786.398	914.950	952.011

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. All regressions include a constant, time and regional dummies. Standard errors are in brackets, marginal effects computed at the mean of independent variables are in square brackets. Standard errors are robust to heteroskedasticity and to correlation within repeated observations of the same household. Monetary variables are expressed in thousand euro 2002.

Table 8: Addressing the endogeneity of spread and wealth: a control function approach

	Basic	Second step	First step spread
Wealth	-0.005	-0.008	
	(0.004)	(0.005)	
Spread*wealth	0.325***	0.325***	
	(0.060)	(0.089)	
Spread	-8.991	-3.446	
	(7.402)	(11.282)	
Years of education	0.058*	0.098***	
	(0.030)	(0.033)	
Spread*years of education	-1.323***	-1.355**	
	(0.499)	(0.547)	
House price per sqm.	-0.558**	-0.152	0.003
	(0.279)	(0.384)	(0.004)
Rent per sqm.	25.350***	26.752***	-0.421***
	(7.131)	(8.563)	(0.137)
Employee	0.079	0.013	
	(0.058)	(0.067)	
Self-employed	-0.026	0.120	
	(0.079)	(0.090)	
Age	0.002	0.014**	
	(0.003)	(0.006)	
Male	0.048	0.088*	
	(0.052)	(0.052)	
Married	0.220***	0.272***	
	(0.063)	(0.058)	
Household size	0.008	0.044**	
	(0.020)	(0.021)	
Private sector	-0.045	-0.057	
	(0.046)	(0.038)	
Small city (< 20 000)	0.202***	0.231***	
	(0.051)	(0.048)	
Large city (> 500 000)	-0.167**	-0.139**	
	(0.073)	(0.070)	
Residual wealth		0.003**	
		(0.001)	
Residual spread		-7.409	
		(13.040)	
Nb. branches*1993			-18.773
			(15.975)
Nb. branches*1995			-22.514
			(16.369)
Nb. branches*1998			-14.391
			(15.332)
Nb. branches*2000			-8.553
			(14.605)
Nb. branches*2002			0.608
			(15.241)
Share of branches from local banks*1993			-0.037***
			(0.010)
Share of branches from local banks*1995			-0.041***
			(0.010)
Share of branches from local banks*1998			-0.042***
			(0.009)
Share of branches from local banks*2000			-0.032***
			(0.010)
Share of branches from local banks*2002			-0.030***
			(0.009)
Savings banks per capita*1993			-584.471
			(470.421)
Savings banks per capita*1995			-1400.979***
			(476.475)
Savings banks per capita*1998			-909.131**
			(443.803)
Savings banks per capita*2000			-786.978*
			(442.635)
Savings banks per capita*2002			-640.787
			(444.432)
Cooperative banks per capita*1993			894.538***
			(281.524)
Cooperative banks per capita*1995			1037.550***
			(284.537)
Cooperative banks per capita*1998			742.138**
			(289.018)
Cooperative banks per capita*2000			378.435
			(292.980)
Cooperative banks per capita*2002			115.834
			(315.855)
Observations	8853	8853	95
Log-likelihood	-2982.728	-2977.352	
χ^2	818.108	986.698	

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. All regressions include a constant, time and regional dummies; only time dummies are in the model for spread. Marginal effects computed at the mean of independent variables are in square brackets. Standard errors (in round brackets) are robust to correlation within repeated observations of the same household; for the second step standard errors are computed by bootstrapping (100 replications). Monetary variables are expressed in thousand euro 2002.

Table 9: Addressing the endogeneity of wealth: control function approach

	Basic	Second step	First step
Wealth	-0.005	-0.008*	
	(0.004)	(0.005)	
	[-0.001]	[-0.002]	
Spread*wealth	0.325***	0.325***	
	(0.060)	(0.085)	
	[0.085]	[0.085]	
Spread	-8.265	-5.725	729.599
	(7.512)	(7.964)	(773.279)
	[-2.157]	[-1.493]	
Years of education	0.058*	0.107***	14.705***
	(0.030)	(0.037)	(2.736)
	[0.015]	[0.028]	
Spread*years of education	-1.323***	-1.482***	-39.127
	(0.499)	(0.533)	(41.534)
	[-0.345]	[-0.387]	
House price per sqm.	-0.562**	-0.181	119.949***
	(0.279)	(0.287)	(27.596)
	[-0.147]	[-0.047]	
Rent per sqm.	24.521***	27.266***	947.672
	(7.289)	(7.700)	(690.875)
	[6.399]	[7.109]	
Employee	0.079	0.014	-20.810***
	(0.058)	(0.060)	(7.688)
	[0.021]	[0.004]	
Self-employed	-0.025	0.122	43.013***
	(0.079)	(0.096)	(9.297)
	[-0.007]	[0.031]	
Age	0.002	0.014**	4.031***
	(0.003)	(0.006)	(0.325)
	[0.000]	[0.004]	
Male	0.049	0.090*	13.052**
	(0.052)	(0.049)	(5.699)
	[0.013]	[0.024]	
Married	0.221***	0.273***	8.826
	(0.063)	(0.063)	(9.207)
	[0.061]	[0.076]	
Household size	0.008	0.044*	11.489***
	(0.020)	(0.023)	(2.431)
	[0.002]	[0.011]	
Private sector	-0.045	-0.058	-4.565
	(0.046)	(0.041)	(4.613)
	[-0.012]	[-0.015]	
Small city (< 20 000)	0.201***	0.231***	8.254
	(0.051)	(0.043)	(5.221)
	[0.050]	[0.057]	
Large city (> 500 000)	-0.169**	-0.141**	10.226
	(0.073)	(0.057)	(6.906)
	[-0.047]	[-0.039]	
Fitted residual		0.003**	
		(0.001)	
		[0.001]	
Parent alive			6.233
			(6.447)
Parent hh head self-employed			34.007***
			(5.254)
Parent partner self-employed			13.356**
			(5.464)
Observations	8853	8853	8853
Log likelihood	-2982.684	-2977.416	
χ^2	818.018	837.468	

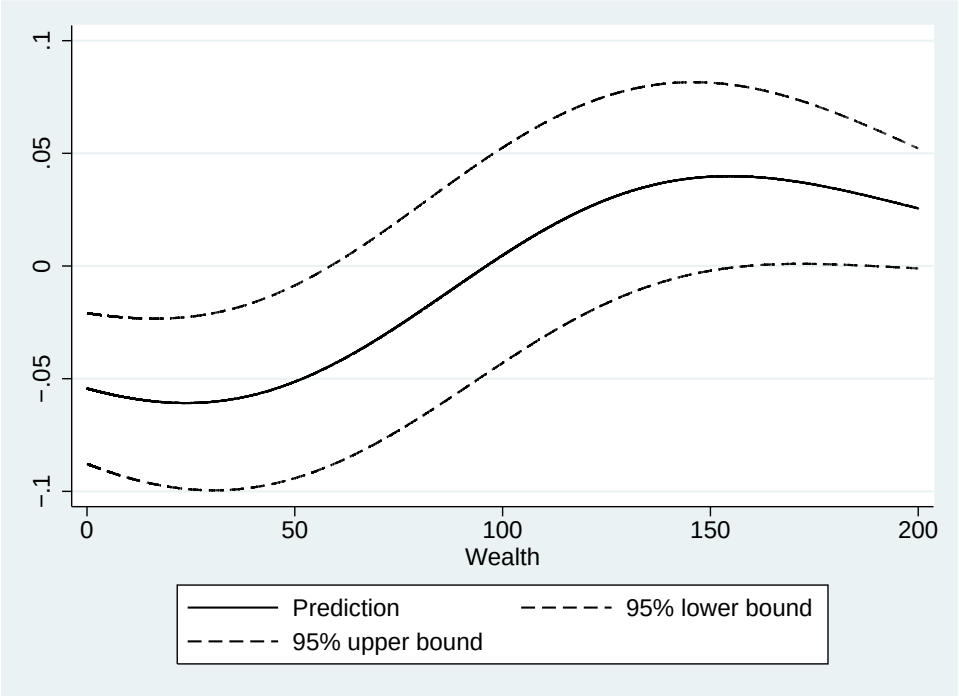
Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. All regressions include a constant, time and regional dummies. Marginal effects computed at the mean of independent variables are in square brackets. Standard errors (in round brackets) are robust to correlation within repeated observations of the same household; for the second step standard errors are computed by bootstrapping (100 replications). Monetary variables are expressed in thousand euro 2002.

Table 10: Exploiting the panel dimension: Chamberlain random effect probit and conditional logit

	Pooled	RE probit	FE logit
Wealth	-0.000	0.004	-0.011
	(0.005)	(0.005)	(0.029)
Spread*wealth	0.268***	0.419***	1.124**
	(0.086)	(0.077)	(0.523)
Spread	-11.477	-6.486	47.075
	(10.237)	(32.473)	(101.813)
Years of education	0.040	0.027	
	(0.044)	(0.123)	
Spread*years of education	-1.382*	-2.742	-3.135
	(0.751)	(1.964)	(3.376)
House price per sqm.	-1.210***	-2.732**	-7.954*
	(0.391)	(1.251)	(4.510)
Rent per sqm.	23.307**	57.380*	223.550**
	(9.354)	(31.490)	(113.322)
Employee	0.074	0.135	-0.530
	(0.079)	(0.298)	(1.126)
Self-employed	-0.141	-0.490	-1.956
	(0.118)	(0.402)	(1.999)
Age	-0.002	0.017	0.135
	(0.005)	(0.019)	(0.254)
Male	0.074	0.163	
	(0.083)	(0.290)	
Married	0.154	0.678*	9.758
	(0.101)	(0.354)	(8.804)
Household size	-0.003	0.307	0.376
	(0.033)	(0.206)	(0.488)
Private sector	-0.022	-0.192	0.464
	(0.071)	(0.228)	(0.873)
Small city (< 20 000)	0.060	0.287	
	(0.093)	(0.313)	
Large city (> 500 000)	-0.178	-1.001*	
	(0.116)	(0.523)	
Mean wealth		0.032***	
		(0.003)	
Mean hh size		-0.315	
		(0.236)	
Observations	5311	5311	535
Log likelihood	-1634.437	-1109.218	-39.634
χ^2	439.657	1436.901	322.369

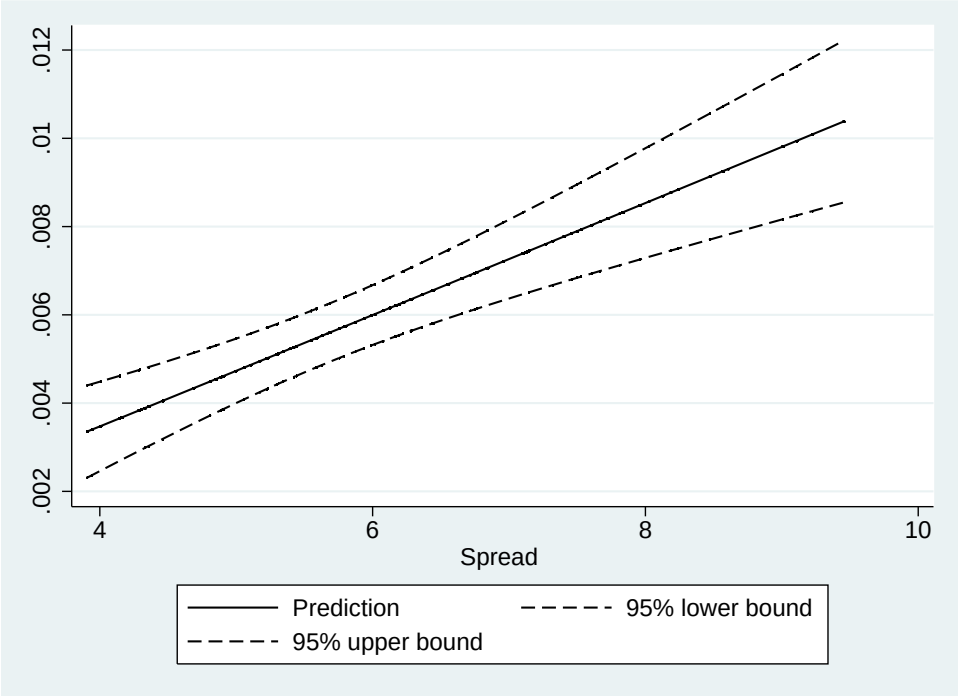
Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Constant term, time and regional dummies are included. Standard errors are in brackets. Monetary variables are expressed in thousand euro 2002.

Figure 1: Marginal effects of interest rate spread



Notes: Marginal effects are computed for a couple with a male household head aged 35 years, with a high school diploma, who is an employee living in a medium-sized city in Lombardia in 1998. Other variables are at their median value. Wealth is expressed in thousand euros 2002.

Figure 2: Marginal effects of wealth



Notes: Marginal effects are computed for a couple with a male household head aged 35 years, with a high school diploma, who is an employee living in a medium-sized city in Lombardia in 1998. Other variables are at their median value. Wealth is expressed in thousand euros 2002.

Appendix A. Description of the variables.

Individual variables

Wealth: it is measured by the stock of total net wealth independently on how it has been invested, i.e real estate and financial assets net of liabilities (without business equity, trade assets and liabilities).
Years of education: Years of schooling necessary for the highest educational qualification earned.
Male: the household head is a male.
Age: age of the household head.
Employee, Self-employed: dummies equal to one if the worker is respectively an employee or a self-employed. The reference category is "not employed".
Married: the marital status is married.
Household size: number of persons from 0 years of age upwards living in the household.
Private sector: the employee, retired or unemployed do/did not work in the public sector.
Small city, Large city: the town where the household lives has respectively less than 20,000 or more than 500,000 inhabitants.

Market variables

Interest rate spread: borrowing and lending interest rates refer, respectively, to short run (up to 18 months) interest charged on all customers and to interest yielded by overall deposits (current and deposit accounts, fixed term deposits, interest-bearing bonds and certificate of deposit).
House price per sqm., Rent per sqm.: they are computed as the average regional level of house value and annual rental payments per squared meter computed from each wave of SHIW data. Both informations are available for owners and renters. Hence interviewees report the market price of the house where they live and, moreover, tenants declare the amount of rental payment and homeowners the amount they would collect by renting their dwelling. Supporting the suitability of SHIW data for house price, Cannari and Faiella (2007) show that SHIW estimates for 2002 turn out to be very close to market values computed resorting other data sources.[34]

Other environmental variables that might affect the relative attractiveness of owning or renting are transaction costs, the tax code and policies

[34]The main dataset they use are gathered by Consulente Immobiliare and Osservatorio Mercato Immobiliare dell'Agenzia del Territorio (OMI). I do not rely on these measure because the first one collects information only on a small sample of municipalities, while the second one is available only from 2002.

supporting one of the alternatives (Bourassa et al., 1993; Hendershott and White, 2000). As for transaction costs related to housing turnover, they include duties on purchase, notary and real estate agency fees. While the former are geographically homogeneous throughout the country, the level of fees might indeed differ across region and years; time-varying measures for these costs are however not available.[35] The tax code might have a substantial impact not only on transaction costs but also on the relative profitability of owning with respect to renting and on the cost of loans. Some aspects of the tax system are set at the central level and are homogeneous across regions (for instance imputed rents of dwellings are not taxed); they are therefore irrelevant for this analysis. The main tax charged on real estate properties (Imposta Comunale sugli Immobili, ICI) is however determined at the municipal level and might matter.[36] But its limited heterogeneity make it less powerful: the mean value of the ICI tax rate was indeed 5.20% in 2006 and 72% of Italian councils enforced a tax rate between 4.5 and 5.5%;[37] a homegeneous and quantitatively relevant deduction makes the net tax rate even less widespread across councils.[38] Moreover the tax is computed on the basis of the officially recorded rent ('rendita catastale'), that is often not updated and is not informative about the house market value. Tenure choices might also be influenced by policies implemented at local level to support homeownership by young households. In order to check the robustness of findings to this issue, I therefore estimate the model for different age brackets.

Family background variables

Parent hh head self-employed, Parent partner self-employed: at least one parent of, respectively, the household head or the partner was self employed when she/he was the current age of the interviewed (if the parent was retired or deceased at that age, the information refers to time preceding retirement or death). Self-employed are members of the professions, entrepreneurs and free lances.

Parent alive: at least a parent of the partner is alive.

[35] The maximum and minimum thresholds for notary fees are decided at the state level but -within this range - their observed level is determined by the local Notary Council. As for real estate agency, an indicator for charged fees is not available and factors like tax evasion make its measure difficult.

[36] This tax has been removed for the dwelling in 2008.

[37] Elaboration on IFEL (Istituto per la Finanza e l'Economia Locale) data. Results are similar across regions.

[38] The amount of this deduction is 103.29 euro but it can be raised by local administration.

Appendix B. The institutional framework

Credit markets[39]

As illustrated by Casolaro et al. (2006), the Italian loan market has three distinctive features. First, it is small with respect to that of other European counties: In 2006, the ratio between mortgages and the gross domestic product was less than 20% in Italy, and around 80% in the United Kingdom. This evidence is confirmed by data in Table 4 that show a low mortgage take-up rate and a low incidence of debt on house values. Second, the household loan market has been growing very quickly during the last years, with regard to both consumer credit and mortgages (e.g., the ratio between mortgages and GDP rose from less than 4% in 1984 to 13% in 2003 (Casolaro et al., 2006)).

A third characteristic of the Italian credit market is its heterogeneity across regions, as seen from an analysis of several financial indicators.[40] This situation is partly the outcome of strict market regulation of the banking system that took place during the '30s and had long-lasting effects. The Italian banking law of 1936 was introduced in response to the 1930-1931 banking crisis, with the goal of enhancing bank stability through severe restrictions on competition and geographical spreading. Even if homogeneously imposed throughout the country, the law impacts different areas differently, according to the structure of the banking sector in 1936. However, according to Guiso et al. (2004, 2007), the structure of the banking system in 1936 was unrelated to the level of economic development. Each credit institution was assigned a geographical area of competence based on its presence in 1936, and its ability to grow and lend was restricted to this area. A further directive, issued in 1938, established that national banks could open branches only in the main cities; cooperative and local commercial banks could only open branches within the boundaries of the province in which they operated in 1936, while savings banks could expand within the boundaries of the region - comprising several provinces - they operated

[39]The main references for this paragraph are Guiso et al. (2004, 2007) and Casolaro et al. (2006).

[40]First, bank branch density is widely used in the literature as a measure for financial development (Benfratello et al., 2008): In 2000, it ranged between one branch for 5000 individuals in Calabria and Campania and one branch for 1000 people in Trentino Alto Adige.[41] In addition, access to the credit market differs across regions: The index built by Guiso et al. (2004) to measure this variable shows that, all else being equal, the probability of getting a loan in Marche is 50% higher than in Calabria, where access is the most difficult. The spread between borrowing and lending interest rates is heterogeneous across regions as well: In 2002, it ranged between 4.29% in Emilia Romagna and 7.32% in Calabria.

in 1936 (Guiso et al., 2007). This regulatory system, which enhanced the wide heterogeneity in regional financial market conditions, was maintained almost unchanged until the 1980s, when the process of European integration triggered radical reforms. Hence, in 1986, the procedure to open new branches was facilitated, and entry was completely liberalized in 1990, by removing authorizations and restrictions to entry and opening new branches. The deregulation process boosted a convergence in the degree of financial development (Casolaro et al., 2006), but, as anticipated, significant variability is still evident. These geographical differences are partly driven by differences in the stringency of the 1936 Banking Law: The third column of Table 8 reports the OLS estimate for the regional interest rate spread and shows a significant effect of the variable for the banking structure in 1936 (see Section 5.2 for comments about the sign and significance of the coefficients.).[42]

Rental markets

The Italian rental market is relatively thin with respect to other countries. According to Cipolletta et al. (2005), in 2003 only 19% of houses were rented in Italy, versus more than 30% in Denmark, France, Finland, and the United Kingdom and more than 50% in Germany. This underdevelopment may be driven by a strict regulation that entails inefficiency in the market and by a legislation that makes it difficult to evict tenants. Until 1998, the law on controlled rent (*equo canone*) established rules to fix rental payments according to a house's characteristics, hampering bargaining between owners and tenants, and, in turn, the supply of houses for rent. This law was aimed at overcoming limits in the public supply of council houses, but it actually charged the burden of the provision of houses at low prices onto the private sector. To overcome these inefficiencies and reduce the size of the black market, a liberalization of rental contracts was implemented in 1998 (L. 431/98).[43] However, it failed to foster market development, which remains relatively thin and inefficient today.

[42] An investigation of the determinants of the persistence of this heterogeneity goes beyond the scope of this paper. An explanation for this evidence is proposed by Casolaro et al. (2006). The authors argue that financial market conditions are driven by differences in formal and informal loan contract enforcement, namely, the efficiency of the judicial system and the endowment of 'social capital'.

[43] It established four types of contracts: unregulated contracts (*completamente liberi*: tenant and landlord are free to choose the duration of the contract and the amount of the rent to be paid), semi-regulated rent (*canoni concordati*: the rent and the contract duration are subject to a binding regulation), short-term leases and student housing contracts, and short term contracts (3 months or longer) for students and transient workers.

Our papers can be downloaded at:

http://cerp.unito.it/index.php/en/publications

CeRP Working Paper Series

N° 122/11	Serena Trucchi	How credit markets affect homeownership: an explanation based on differences between Italian regions
N° 121/11	Elsa Fornero Chiara Monticone Serena Trucchi	The effect of financial literacy on mortgage choices
N° 120/11	Giovanni Mastrobuoni Filippo Taddei	Age Before Beauty? Productivity and Work vs. Seniority and Early Retirement
N° 119/11	Maarten van Rooij Annamaria Lusardi Rob Alessie	Financial Literacy, Retirement Planning, and Household Wealth
N° 118/11	Luca Beltrametti Matteo Della Valle	Does the implicit pension debt mean anything after all?
N° 117/11	Riccardo Calcagno Chiara Monticone	Financial Literacy and the Demand for Financial Advice
N° 116/11	Annamaria Lusardi Daniel Schneider Peter Tufano	Financially Fragile Households: Evidence and Implications
N° 115/11	Adele Atkinson Flore-Anne Messy	Assessing financial literacy in 12 countries: an OECD Pilot Exercise
N° 114/11	Leora Klapper Georgios A. Panos	Financial Literacy and Retirement Planning in View of a Growing Youth Demographic: The Russian Case
N° 113/11	Diana Crossan David Feslier Roger Hurnard	Financial Literacy and Retirement Planning in New Zealand
N° 112/11	Johan Almenberg Jenny Säve-Söderbergh	Financial Literacy and Retirement Planning in Sweden
N° 111/11	Elsa Fornero Chiara Monticone	Financial Literacy and Pension Plan Participation in Italy
N° 110/11	Rob Alessie Maarten Van Rooij Annamaria Lusardi	Financial Literacy, Retirement Preparation and Pension Expectations in the Netherlands
N° 109/11	Tabea Bucher-Koenen Annamaria Lusardi	Financial Literacy and Retirement Planning in Germany
N° 108/11	Shizuka Sekita	Financial Literacy and Retirement Planning in Japan
N° 107/11	Annamaria Lusardi Olivia S. Mitchell	Financial Literacy and Retirement Planning in the United States
N° 106/11	Annamaria Lusardi Olivia S. Mitchell	Financial Literacy Around the World: An Overview
N° 105/11	Agnese Romiti	Immigrants-natives complementarities in production: evidence from Italy
N° 104/11	Ambrogio Rinaldi	Pension awareness and nation-wide auto-enrolment: the Italian experience

N° 103/10	Fabio Bagliano Claudio Morana	The Great Recession: US dynamics and spillovers to the world economy
N° 102/10	Nuno Cassola Claudio Morana	The 2007-? financial crisis: a money market perspective
N° 101/10	Tetyana Dubovyk	Macroeconomic Aspects of Italian Pension Reforms of 1990s
N° 100/10	Laura Piatti Giuseppe Rocco	L'educazione e la comunicazione previdenziale - Il caso italiano
N° 99/10	Fabio Bagliano Claudio Morana	The effects of US economic and financial crises on euro area convergence
N° 98/10	Annamaria Lusardi Daniel Schneider Peter Tufano	The Economic Crisis and Medical Care Usage
N° 97/10	Carlo Maccheroni Tiziana Barugola	E se l'aspettativa di vita continuasse la sua crescita? Alcune ipotesi per le generazioni italiane 1950-2005
N° 96/10	Riccardo Calcagno Mariacristina Rossi	Portfolio Choice and Precautionary Savings
N° 95/10	Flavia Coda Moscarola Elsa Fornero Mariacristina Rossi	Parents/children "deals": Inter-Vivos Transfers and Living Proximity
N° 94/10	John A. List Sally Sadoff Mathis Wagner	So you want to run an experiment, now what? Some Simple Rules of Thumb for Optimal Experimental Design
N° 93/10	Mathis Wagner	The Heterogeneous Labor Market Effects of Immigration
N° 92/10	Rob Alessie Michele Belloni	Retirement choices in Italy: what an option value model tells us
N° 91/09	Annamaria Lusardi Olivia S. Mitchell Vilsa Curto	Financial Literacy among the Young: Evidence and Implications for Consumer Policy
N° 90/09	Annamaria Lusardi Olivia S. Mitchell	How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness
N° 89/09	Elena Vigna	Mean-variance inefficiency of CRRA and CARA utility functions for portfolio selection in defined contribution pension schemes
N° 88/09	Maela Giofré	Convergence of EMU Equity Portfolios
N° 87/09	Elsa Fornero Annamaria Lusardi Chiara Monticone	Adequacy of Saving for Old Age in Europe
N° 86/09	Margherita Borella Flavia Coda Moscarola	Microsimulation of Pension Reforms: Behavioural versus Nonbehavioural Approach
N° 85/09	Cathal O'Donoghue John Lennon Stephen Hynes	The Life-Cycle Income Analysis Model (LIAM): A Study of a Flexible Dynamic Microsimulation Modelling Computing Framework
N° 84/09	Luca Spataro	Il sistema previdenziale italiano dallo shock petrolifero del 1973 al Trattato di Maastricht del 1993
N° 83/09	Annamaria Lusardi Peter Tufano	Debt Literacy, Financial Experiences, and Overindebtedness

N° 82/09	Carolina Fugazza Massimo Guidolin Giovanna Nicodano	Time and Risk Diversification in Real Estate Investments: Assessing the Ex Post Economic Value
N° 81/09	Fabio Bagliano Claudio Morana	Permanent and Transitory Dynamics in House Prices and Consumption: Cross-Country Evidence
N° 80/08	Claudio Campanale	Learning, Ambiguity and Life-Cycle Portfolio Allocation
N° 79/08	Annamaria Lusardi	Increasing the Effectiveness of Financial Education in the Workplace
N° 78/08	Margherita Borella Giovanna Segre	Le pensioni dei lavoratori parasubordinati: prospettive dopo un decennio di gestione separata
N° 77/08	Giovanni Guazzarotti Pietro Tommasino	The Annuity Market in an Evolving Pension System: Lessons from Italy
N° 76/08	Riccardo Calcagno Elsa Fornero Mariacristina Rossi	The Effect of House Prices on Household Saving: The Case of Italy
N° 75/08	Harold Alderman Johannes Hoogeveen Mariacristina Rossi	Preschool Nutrition and Subsequent Schooling Attainment: Longitudinal Evidence from Tanzania
N° 74/08	Maela Giofré	Information Asymmetries and Foreign Equity Portfolios: Households versus Financial Investors
N° 73/08	Michele Belloni Rob Alessie	The Importance of Financial Incentives on Retirement Choices: New Evidence for Italy
N° 72/08	Annamaria Lusardi Olivia Mitchell	Planning and Financial Literacy: How Do Women Fare?
N° 71/07	Flavia Coda Moscarola	Women participation and caring decisions: do different institutional frameworks matter? A comparison between Italy and The Netherlands
N° 70/07	Radha Iyengar Giovanni Mastrobuoni	The Political Economy of the Disability Insurance. Theory and Evidence of Gubernatorial Learning from Social Security Administration Monitoring
N° 69/07	Carolina Fugazza Massimo Guidolin Giovanna Nicodano	Investing in Mixed Asset Portfolios: the Ex-Post Performance
N° 68/07	Massimo Guidolin Giovanna Nicodano	Small Caps in International Diversified Portfolios
N° 67/07	Carolina Fugazza Maela Giofré Giovanna Nicodano	International Diversification and Labor Income Risk
N° 66/07	Maarten van Rooij Annamaria Lusardi Rob Alessie	Financial Literacy and Stock Market Participation
N° 65/07	Annamaria Lusardi	Household Saving Behavior: The Role of Literacy, Information and Financial Education Programs (Updated version June 08: “Financial Literacy: An Essential Tool for Informed Consumer Choice?”)
N° 64/07	Carlo Casarosa Luca Spataro	Rate of Growth of Population, Saving and Wealth in the Basic Life-cycle Model when the Household is the Decision Unit

N° 63/07	Claudio Campanale	Life-Cycle Portfolio Choice: The Role of Heterogeneous Under-Diversification
N° 62/07	Margherita Borella Elsa Fornero Mariacristina Rossi	Does Consumption Respond to Predicted Increases in Cash-on-hand Availability? Evidence from the Italian "Severance Pay"
N° 61/07	Irina Kovrova	Effects of the Introduction of a Funded Pillar on the Russian Household Savings: Evidence from the 2002 Pension Reform
N° 60/07	Riccardo Cesari Giuseppe Grande Fabio Panetta	La Previdenza Complementare in Italia: Caratteristiche, Sviluppo e Opportunità per i Lavoratori
N° 59/07	Riccardo Calcagno Roman Kraeussl Chiara Monticone	An Analysis of the Effects of the Severance Pay Reform on Credit to Italian SMEs
N° 58/07	Elisa Luciano Jaap Spreeuw Elena Vigna	Modelling Stochastic Mortality for Dependent Lives
N° 57/07	Giovanni Mastrobuoni Matthew Weinberg	Heterogeneity in Intra-Monthly Consumption. Patterns, Self-Control, and Savings at Retirement
N° 56/07	John A. Turner Satyendra Verma	Why Some Workers Don't Take 401(k) Plan Offers: Inertia versus Economics
N° 55/06	Antonio Abatemarco	On the Measurement of Intra-Generational Lifetime Redistribution in Pension Systems
N° 54/06	Annamaria Lusardi Olivia S. Mitchell	Baby Boomer Retirement Security: The Roles of Planning, Financial Literacy, and Housing Wealth
N° 53/06	Giovanni Mastrobuoni	Labor Supply Effects of the Recent Social Security Benefit Cuts: Empirical Estimates Using Cohort Discontinuities
N° 52/06	Luigi Guiso Tullio Jappelli	Information Acquisition and Portfolio Performance
N° 51/06	Giovanni Mastrobuoni	The Social Security Earnings Test Removal. Money Saved or Money Spent by the Trust Fund?
N° 50/06	Andrea Buffa Chiara Monticone	Do European Pension Reforms Improve the Adequacy of Saving?
N° 49/06	Mariacristina Rossi	Examining the Interaction between Saving and Contributions to Personal Pension Plans. Evidence from the BHPS
N° 48/06	Onorato Castellino Elsa Fornero	Public Policy and the Transition to Private Pension Provision in the United States and Europe
N° 47/06	Michele Belloni Carlo Maccheroni	Actuarial Neutrality when Longevity Increases: An Application to the Italian Pension System
N° 46/05	Annamaria Lusardi Olivia S. Mitchell	Financial Literacy and Planning: Implications for Retirement Wellbeing
N° 45/05	Claudio Campanale	Increasing Returns to Savings and Wealth Inequality
N° 44/05	Henrik Cronqvist	Advertising and Portfolio Choice
N° 43/05	John Beshears James J. Choi David Laibson Brigitte C. Madrian	The Importance of Default Options for Retirement Saving Outcomes: Evidence from the United States
N° 42/05	Margherita Borella Flavia Coda Moscarola	Distributive Properties of Pensions Systems: a Simulation of the Italian Transition from Defined Benefit to Defined Contribution

N° 41/05	Massimo Guidolin Giovanna Nicodano	Small Caps in International Equity Portfolios: The Effects of Variance Risk.
N° 40/05	Carolina Fugazza Massimo Guidolin Giovanna Nicodano	Investing for the Long-Run in European Real Estate. Does Predictability Matter?
N° 39/05	Anna Rita Bacinello	Modelling the Surrender Conditions in Equity-Linked Life Insurance
N° 38/05	Carolina Fugazza Federica Teppa	An Empirical Assessment of the Italian Severance Payment (TFR)
N° 37/04	Jay Ginn	Actuarial Fairness or Social Justice? A Gender Perspective on Redistribution in Pension Systems
N° 36/04	Laurence J. Kotlikoff	Pensions Systems and the Intergenerational Distribution of Resources
N° 35/04	Monika Bütler Olivia Huguenin Federica Teppa	What Triggers Early Retirement. Results from Swiss Pension Funds
N° 34/04	Chourouk Houssi	Le Vieillissement Démographique : Problématique des Régimes de Pension en Tunisie
N° 33/04	Elsa Fornero Carolina Fugazza Giacomo Ponzetto	A Comparative Analysis of the Costs of Italian Individual Pension Plans
N° 32/04	Angelo Marano Paolo Sestito	Older Workers and Pensioners: the Challenge of Ageing on the Italian Public Pension System and Labour Market
N° 31/03	Giacomo Ponzetto	Risk Aversion and the Utility of Annuities
N° 30/03	Bas Arts Elena Vigna	A Switch Criterion for Defined Contribution Pension Schemes
N° 29/02	Marco Taboga	The Realized Equity Premium has been Higher than Expected: Further Evidence
N° 28/02	Luca Spataro	New Tools in Micromodeling Retirement Decisions: Overview and Applications to the Italian Case
N° 27/02	Reinhold Schnabel	Annuities in Germany before and after the Pension Reform of 2001
N° 26/02	E. Philip Davis	Issues in the Regulation of Annuities Markets
N° 25/02	Edmund Cannon Ian Tonks	The Behaviour of UK Annuity Prices from 1972 to the Present
N° 24/02	Laura Ballotta Steven Haberman	Valuation of Guaranteed Annuity Conversion Options
N° 23/02	Ermanno Pitacco	Longevity Risk in Living Benefits
N° 22/02	Chris Soares Mark Warshawsky	Annuity Risk: Volatility and Inflation Exposure in Payments from Immediate Life Annuities
N° 21/02	Olivia S. Mitchell David McCarthy	Annuities for an Ageing World
N° 20/02	Mauro Mastrogiacomo	Dual Retirement in Italy and Expectations

N° 19/02	Paolo Battocchio Francesco Menoncin	Optimal Portfolio Strategies with Stochastic Wage Income and Inflation: The Case of a Defined Contribution Pension Plan
N° 18/02	Francesco Daveri	Labor Taxes and Unemployment: a Survey of the Aggregate Evidence
N° 17/02	Richard Disney and Sarah Smith	The Labour Supply Effect of the Abolition of the Earnings Rule for Older Workers in the United Kingdom
N° 16/01	Estelle James and Xue Song	Annuities Markets Around the World: Money's Worth and Risk Intermediation
N° 15/01	Estelle James	How Can China Solve ist Old Age Security Problem? The Interaction Between Pension, SOE and Financial Market Reform
N° 14/01	Thomas H. Noe	Investor Activism and Financial Market Structure
N° 13/01	Michela Scatigna	Institutional Investors, Corporate Governance and Pension Funds
N° 12/01	Roberta Romano	Less is More: Making Shareholder Activism a Valuable Mechanism of Corporate Governance
N° 11/01	Mara Faccio and Ameziane Lasfer	Institutional Shareholders and Corporate Governance: The Case of UK Pension Funds
N° 10/01	Vincenzo Andrietti and Vincent Hildebrand	Pension Portability and Labour Mobility in the United States. New Evidence from the SIPP Data
N° 9/01	Hans Blommestein	Ageing, Pension Reform, and Financial Market Implications in the OECD Area
N° 8/01	Margherita Borella	Social Security Systems and the Distribution of Income: an Application to the Italian Case
N° 7/01	Margherita Borella	The Error Structure of Earnings: an Analysis on Italian Longitudinal Data
N° 6/01	Flavia Coda Moscarola	The Effects of Immigration Inflows on the Sustainability of the Italian Welfare State
N° 5/01	Vincenzo Andrietti	Occupational Pensions and Interfirm Job Mobility in the European Union. Evidence from the ECHP Survey
N° 4/01	Peter Diamond	Towards an Optimal Social Security Design
N° 3/00	Emanuele Baldacci Luca Inglese	Le caratteristiche socio economiche dei pensionati in Italia. Analisi della distribuzione dei redditi da pensione (only available in the Italian version)
N° 2/00	Pier Marco Ferraresi Elsa Fornero	Social Security Transition in Italy: Costs, Distorsions and (some) Possible Correction
N° 1/00	Guido Menzio	Opting Out of Social Security over the Life Cycle