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LEAVING YOUR MAMMA: WHY SO LATE IN ITALY?

by Enrica Di Stefano*

Abstract

In Italy, young adults tend to postpone their transition to adulthood and live with their parents until very late compared with other countries. A dynamic discrete choice model is proposed in which agents choose residential arrangements, together with labor supply and marital status, conditional on the economic and institutional framework and on other agents' choices. The model is structurally estimated with the Simulated Method of Moments for non-student high-school graduate males and then used to assess, through a variety of counterfactual experiments, the relative importance of factors that are claimed to influence the choice to leave home in the existing literature: labor market conditions, parental resources, housing market conditions and social interaction. Results suggest that Italians choose to remain with their parents due to a combination of poor labor market conditions and high housing costs. The relatively high income of parents could contribute to the patterns observed by acting as an insurance against unemployment. Finally, estimates indicate that individuals tend to conform to a social norm that is influenced by external conditions.

JEL Classification: J11, J12, H3, D10, D31.
Keywords: transition to adulthood, co-residence, structural estimation.

Contents

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Introduction

The transition to adulthood is a complex process made of several steps such as leaving school, finding a job, finding a partner, *et cetera*. It culminates with the formation of an independent household, possibly with a partner, and usually implies moving out of the parental home. From an economic point of view, the time at which such residential shift occurs is relevant at both individual, household and aggregate levels. When an individual separates from his/her parents, the child's and parents' budget constraints split, influencing the future choices of both. Parents are, at least partially, freed from the obligation of providing housing and financial support, while the child must find a new shelter and rely on alternative sources of income: a job, a partner's income, or both. From an aggregate point of view, a late exit might have important demographic and economic implications. For instance, as long as living on one's own is considered a desirable precondition for having children, a delayed nest leaving might translate into lower fertility rates. Also, as long as young adults can rely on their parents' financial support, they might choose not to work, causing a loss in the country's aggregate productivity. Finally, the combination of a delay in the labor force entry and of lower fertility rates (if not compensated by legal immigration) might generate, at some point, issues about the sustainability of a country's pension system.

In Italy, the exit from the family of origin occurs relatively late. At the age of 30, almost 30 percent of men and 21 percent of women are still reported to live with their parents, compared to only 9 and 5 percent, respectively, in the United States. The delay is found to be more severe among men and younger generations.

Several papers study the determinants of young adults living arrangements. A great amount of literature focuses on the role of parental resources (Avery *et al.*, 1992; le Blanc and Wolff, 2006). But the family of origin could influence the timing of home exit through other channels as well. For instance, Fogli (2004) finds that the family of origin may act as an insurance mechanism against unemployment or credit market imperfections, while Stella (2016) finds that the increase in childrens nest-leaving, observed around the time of paternal retirement, does not appear to be fully justified by changes in parental resources and suggests that channels involving the supply of informal child care provided by grandparents or the quality of the home should be explored. The role of the housing market is explored by Ermisch and Di Salvo (1997) who look at the impact of the price of housing on both the timing and destination of first departure. Haurin *et al.* (1993) suggest that the impact of the housing cost may be different depending on the level of wages and on labor market conditions available to young individuals. Modena and Rondinelli (2011) find similar results with Italian data. The Italian case is also studied by Manacorda and Moretti (2001, 2005) who focus on the role of parental income and labor market regulations in the residential choices within a bargaining framework of parents versus children. More recently, Billari and Tabellini (2010) explore to what extent the late transition to adulthood contributed to the disappointing performance of the Italian economy of recent years. Taking the opposite point of view, Ahn and Sánchez-Marcos (2017) focus, instead, on the effect of the Spanish recession of 2009-2013 on the emancipation rate of young adults. Several researchers have looked at the role of cultural differences and social norms. Giuliano

(2006) looks at second-generation European immigrants to the US. She finds that their living arrangements mimic those in the countries of origin; and that the changes in the US over time by country of origin mimic the European changes; the duplication of the European pattern in a neutral environment, suggests a major role for culture in determining living arrangements. Alesina and Giuliano (2007) confirm a significant influence of the strength of family ties on economic outcomes by looking at a larger number of countries. More recently, Aparicio-Fenoll and Oppedisano (2016) find that peer effects among siblings do have a role in the decision of leaving the parental home and that imitation is more likely to prevail among close-in-age siblings.

Relatively few papers model the residential choice together with other choices that typically describe the transition to adulthood, namely the entrance in the labor market and marriage. Relevant exceptions exist. McElroy (1985) is the first to model the joint determination of household membership and work supply with parents and children interacting in a game and choosing the family resources allocation according to a Nash criterion function. Later, Rosenzweig and Wolpin (1993, 1994) consider the choice of co-residence as the outcome of a game between parents and children under the assumption that parents care for their children (and make transfers to them) but, at the same time, suffer from a 'privacy cost' that is increasing in time. This work is more closely related to this branch of research. For an excellent survey on dynamic discrete choice model refer to Eckstein and Wolpin (1989).

This paper proposes a dynamic stochastic discrete choice model in which the young adults choose their residential arrangement simultaneously with labor supply and marital status. Since the school/work choice is not included, only individuals homogeneous in terms of educational attainments and investment in human capital are selected. The residential choice also responds to the external environment. Labor market conditions (unemployment rates, wage levels, etc.), labor market regulations (*e.g.* unemployment benefits access rules), and housing market conditions are modeled explicitly. In particular, the labor market regulations refer to the qualification requirements for unemployment benefits (UB). These may influence the choice of forming a separate household because, a risk averse young worker who does not qualify for UB payments might postpone the exit from the parental home and wait for a better job. This effect could be significant when finding another job requires a lot of time or when the value of parental transfers is high, or both. Other aspects, such as the quality of the institutions or cultural norms, are indirectly taken into account estimating the model on separate subsamples considered to be homogeneous in terms of those qualitative aspects. Finally, the role of social interaction is modeled by assuming that agents tend to conform to their peers' behaviors. In particular, agents interact with each other in a non-cooperative game in which they tend to conform to the prevailing social norm on the age at first marriage. Every agent is therefore influenced by the expected behavior of the other agents. In this framework, the strategic interaction is not between parents and children but rather between the young adults and their peers. The model is structurally estimated on a subset of high-school male graduates with the Simulated Method of Moments (SMM) using the *Survey on Household Income and Wealth* (SHIW) of the Bank of Italy. The estimated model is then used to perform a variety of counterfactual experiments to explore the role of labor market conditions, parental

resources, housing market conditions, and social interaction on the observed patterns of residential, employment and marriage choices. It is also discussed which policies could be more effective in anticipating the exit from the family of origin.
This work contributes to the existing literature with a structural model that can account for most of the described mechanisms within a unique framework. It allows residential, working and marriage choices to be made simultaneously and in a dynamic setting. The structural estimation allows to assess the efficacy on the home leaving choice of alternative economic policies and the relative importance of parental resources, labor market conditions and other environmental characteristics. Finally, although estimated for Italy, the setting can be easily applied to other countries.
The rest of the paper is organized as follows. In the next section, I provide some evidence from the data on the late transition to adulthood in Italy compared to other countries. Section 2 presents the model and the solution technique. The estimation method and the results are discussed in Sections 3 and 4. The last section concludes.

1 Data

The transition to adulthood is analyzed by looking at the percentage of young men residing with their parents, employed and ever married[1] in Italy compared to the United States and to other European countries. Moreover, within Italy, the behaviors of different cohorts are also compared to show the dynamics of the phenomenon over the years.

Italy versus the United States. The analysis compares information from two databases: the *Survey of Households' Income and Wealth* (SHIW) for Italy, and the *Integrated Public Use Microdata Series of the Current Population Survey* (IPUMS-CPS) for the United States (see the Appendix for details).
The selected sample consists of male individuals born between 1970 and 1974, and observed from the age of 15 to 39. This age range is crucial for the discrete choices considered here: in fact, at 15 years old individuals can legally work and, under special circumstances, they can marry; on the other hand, by the age of 39, most of them have completed the transition to adulthood. The cohort 1970-1974 has been chosen because it is the youngest one fully observable in the data collection (those born in 1974 turned 40 in 2014). An individual is considered as living with his/her parents when reported as 'son or daughter of the head of the household' and *not main income earner*. The latter condition has been imposed to exclude children that had actually left but later rejoined their parents to take care of them. Figure 1 compares the percentage of males in each age class living with their parents, employed and ever married in both countries. The differences are striking. Between 15 and 19 years old, about 15 percent of Americans have already moved out, compared to only 5 percent in Italy. In the United States, 80 percent of men have left by the age of 29; in Italy that percentage

[1]The *ever married* include divorced, separated and widowed individuals, *i.e.* anybody who has married in the past at least once. This is because the the big step in the transition to adulthood is best represented by the choice of getting married for the first time.

decreases 59 percent.[2] The largest gap between the two countries is observed in the age class 25-29 (42 pp.). Even at older age classes, the gap remains large and it does not close completely. By the age of 40, around 13 percent of Italian men are still residing with their parents.

Large differences are also observed in terms of employment rates. In both countries, employment rates increase with age. The differences suggest that the entry in the labor market in Italy occurs later or not at all. In the United States, the percentage of employed individuals is higher until the age of 29. At older age classes the employment percentage of Italian men equates and even overcomes the one in the United States. When put in relation with the residential arrangements of Italians, this fact shows that a significant percentage of grown-up men (30 or older) live with their parents despite having a job and, therefore, an independent source of income. This is also consistent with the observed patterns for marriage. In both countries, the percentage of individuals who got married at least once is increasing with age but in Italy it occurs later. The gap is the largest among men of 25 to 29 years old and it does not close at older ages. In the last observed age class (35-39) one third of Italian men is still never married, compared to one fifth in the United States.

Italy versus other European countries. Italy is compared to other European countries by using the *European Community Household Panel* (ECHP), a panel survey which covers a wide range of topics concerning living conditions of European households from 1994 to 2001. The data are reported in Table 3.[3] The figures confirm that, not only Italy, but also Spain and Portugal have very high co-residence rates (above 75 percent) if compared to countries like Denmark (24 percent), the Netherlands (36 percent), and the UK (38 percent). As pointed out by Chiuri and Del Boca (2009), in spite of differences among countries, a common international pattern in the home leaving choice is that women tend to leave the parental home earlier than men.

Home exit choice across different cohorts. Table 4 displays the residential, employment and marriage choices of three non-overlapping Italian cohorts of individuals born in 1970-74, 1975-79, and 1980-84. Two facts are worth noticing. First, the late exit, low labor market participation and late marriage observed above for the cohort 1970-74 is valid for the younger cohorts, as well. Second, the patterns are different for men and women, suggesting that they should be analyzed separately and, as it will be argued below, this paper will focus on men. Third, younger men (born in 1980-84) display a significant increase in the co-residency, most notably in the age class 30 to 34, with an increase of 10.2 percentage points relative to the cohort 1970-74. This is a huge increase, considering that the two cohorts are only ten years apart. The later exit is also accompanied by both lower employment rates and lower marriage rates.[4]

[2]In part, this might be related to the very common habit of remaining at home while attending college. Nevertheless, in Italy the percentage of male students in the age class 25-29 is only 14 percent; it then lowers rapidly to around 3 in the age class 30-34, and close to zero at older ages.

[3]The comparison is made for the age class 20-24 because it has the most comparable information with the data reported in Table 1. In fact, the short length of the ECHP implies that the selected cohort 1970-74 is not fully observable in any of the other age classes proposed above.

[4]The understanding of what induced such increases goes beyond the scope of this analysis but my guess is that it might be connected to the recession that hit Italy for several years in the period 2009-2013, *i.e.*

According to the evidence presented above, in Italy the transition to adulthood occurs late, relative to other countries. Why is that so? What makes it persistent over time? To answer these questions, the next section presents a theoretical framework of the transition to adulthood to understand what are its determinants and their relative importance in generating the observed patterns.

2 Model

The economy is composed of a large number of male individuals. They are observed for $T = 5$ periods, each lasting five years and corresponding to the following age classes: 15 to 19, 20 to 24, 25 to 29, 30 to 34, and 35 to 39. The model has a recursive structure. At the beginning of each period t, each agent is in a given state in terms of living arrangements, employment and marriage. Then, new information arrives; for instance, the agent may or may not receive a job offer. Conditional on the initial state and on the observed information, the agent chooses his residential (s_t), employment (e_t), and marital status (m_t). Each choice is described by a 0-1 indicator. In each period, the choice set is therefore described by[5]

$$J_t := \{(s_t, e_t, m_t) : s_t \in \{0,1\}, e_t \in \{0,1\}, m_t \in \{0,1\}, \forall t\}$$

The choice maximizes the expected discounted value of the utility subject to the budget constraint. Individuals also take into account the conditions on the labor markets (job offer arrival and wage level), the existing labor markets regulations, the cost of housing that they would have to pay upon moving out, and the amount of transfers received from the parents. The choice made in t determines the entering state in $t+1$, and so on in every period. I now turn to the description of the theoretical model in greater detail.

Period utility. Agents maximize the expected discounted value of a period utility function given by

$$U(c_t, M_t, S_t) = c_t + m_t M_t - s_t S_t$$

In every period they derive utility from the consumption of goods (c_t) and from marriage (M_t) if they are married ($m_t = 1$). On the other hand, they pay a "privacy cost" in terms of utility (S_t) if they reside with their parents ($s_t = 1$), similar to Rosenzweig and Wolpin (1993, 1994):

$$S_t = \gamma_0 + \gamma_1 t + \gamma_2 (m_t + m_{t-1}) + \eta_t$$

It is assumed that this cost is paid by the children and that depends on age and on the child being married while residing with his parents.[6] The privacy cost S_t is also subject to a preference shock (η_t) with known distribution.

when the cohort 1980-1984 was around 30 years old.

[5]For instance, the status 'being employed, not living with parents, never married' would be represented by the triplet $(1, 0, 0)$.

[6]The longer the agent remains at home after getting married, the higher the privacy cost is assumed to be. The number of periods of marriage is limited to 2 but could be extended to $T - 1$. This choice keeps the state space to a treatable dimension and, since 1 period corresponds to 5 years in the data, it does not seem a limiting assumption.

Marriage and social interaction. While marriage increases the cost of residing with the parents, it also provides a utility which depends on age, on the age at marriage (t_M), on the expected mean age at marriage of the other agents (t_M^e), and on a preference shock (ε_t). In formula:

$$M_t = \rho_0 + \rho_1 t + \rho_2 |t_M - t_M^e| + \varepsilon_t$$

In terms of interpretation, $\rho_0 = E[M_t|t = 0]$ measures the expected utility from being married at age 15, ρ_1 measures the desirability of marriage when the agent grows older; the dependence on other agents' expected behavior occurs through ρ_2, in particular, the expected aggregate behavior influences the agent's choice only if $\rho_2 \neq 0$. Further, if $\rho_2 < 0$ then the agent pays a cost anytime he chooses to marry earlier or later than his peers, i.e. if $t_M \neq t_M^e$. The larger the ρ_2 the stronger the social-norm effect. Notice that no restrictions are imposed on the domain of ρ_2 whose value will therefore be entirely determined by the maximization process of the estimation in order to match the observed patterns.

Labor market. In Italy, a reform of the labor market, started in the late 1990's and completed in mid-2000's, introduced new types of short-term contracts and created, in fact, two separate categories of workers. On the one hand, those employed with a traditional no-term contract would typically qualify for unemployment benefits (UB) and would face a low probability of becoming unemployed.[7] On the other hand, those employed with new contracts would typically not qualify for UB and would face a higher probability of becoming unemployed because of the intrinsic short-term duration of their contracts.[8] Since the new regulations applied only to new job contracts, workers without UB coverage are mostly from younger cohorts. Another category which is typically not covered by UB is represented by workers employed in the black market, a fraction that could be significant, especially in Southern regions. The model explicitly assumes that there are two types of jobs: good- and bad-quality. Good-quality jobs qualify workers for UB, have a lower probability of displacement and, as showed by Rosolia and Torrini (2007), pay higher wages. In particular, the wage (w_t) evolves according to the Mincer's equation:

$$ln(w_t) = \alpha_0 + \alpha_1 e_{t-1} + \alpha_2 good_t + u_t$$

u_t is an i.i.d. shock with known distribution. Experience is proxied by having worked during the previous model-period ($e_{t-1} = 1$).[9] The parameter α_1 is the return on experience and α_2 allows for the existence of a job-quality premium. The variable $good_t$ is a dummy equal to 1 if the job is of good quality, and to 0 otherwise. The role of educational attainment does not enter the equation because the choice on education is not explicitly modeled. Instead, the educational attainment is exogenously controlled for by estimating the model on a subset of individuals homogeneous in terms of educational attainment and investment in human capital.[10]

[7] According to the Italian labor laws, workers could be dismissed only in a limited number of cases.

[8] Refer to Dankova *et al.* (2014) for a description of the reform (in Italian).

[9] One period in the model corresponds to 5 years in the data.

[10] In particular, the sample includes all male individuals aged 15 to 19 plus high school graduates. Individuals with higher educational attainment and/or students are excluded.

Housing market. The existing literature suggests that rents and wage levels play an important role in the home leaving choice. Agents face housing costs (H_t) after leaving the parental home. Instead, no costs are paid while residing with their parents. Housing costs are proxied by the average rental cost, for a person of that age in the geographic area of current residence. Under the assumption that young people tend to move close to their families (a reasonable assumption in Italy), the rent in the area of current residence is a good measure of how much the individual should expect to pay if living alone. The expenses for food, furniture, household appliances, and extraordinary maintenance have not been considered because they depend on the parents' preferences and do not provide clear information on the expenses that will be paid by the child when on his own. Finally, the amounts reported as mortgage payments have not been considered because they refer to contracts subscribed in the past by the parents and do not influence children's choices. In general, it would be interesting to have information on the current credit market conditions such as interest rates levels and credit access conditions. In fact, the existence of access limits to the credit market has been proven to have an important role in the choice of residential arrangement (Fogli, 2004). This notwithstanding, credit markets are not taken into account here because there is no savings and, therefore, there is no demand for credit.

Parental transfers. Individuals' decisions are also influenced by the propensity of parents to share resources with them. In this setting, transfers can be *monetary* and proportional to the current parental net income (Y_t) and *non-monetary*, *i.e.* the value of good and services available in the parental home free of charge (heating, TV, phone, etc.), which are assumed to be proportional to parental wealth (W) as in Fogli (2004). The level of transfers is exogenous in the children's problem and, following the evidence provided by Rosenzweig and Wolpin (1994), it is assumed to change conditionally on the residential and employment status. Specifically, I allow for the possibility that the parental transfers continue after the child has moved out.

2.1 The solution technique

The optimal stopping problem is

$$\max_{(e_t,s_t,m_t)} E\left[\sum_{t=1}^{T}\beta^{t-1}U(c_t,M_t,S_t)|\Omega_t\right]$$

such that

$$\begin{aligned}
c_t+(1-s_t)H_t &\leq e_t[w_t+s_t(\phi_1 Y_t+\phi_2 W)]\\
&+ (1-e_t)[good_t b+s_t(\phi_3 Y_t+\phi_4 W)]\\
&+ (1-s_t)\phi_5 Y_t\\
\ln w_t &= \alpha_0+\alpha_1 e_{t-1}+u_t\\
M_t &= \rho_0+\rho_1 t+\rho_2|t_M-t_M^e|+\varepsilon_t\\
S_t &= \gamma_0+\gamma_1 t+\gamma_2(m_t+m_{t-1})+\eta_t
\end{aligned}$$

The distributions of the shocks are known and Ω_t is the information set available in t; it includes the initial state, the realization of the shocks, the level of parental

resources and all available information of the future such as job arrival probabilities, share of "good" jobs, etc.
The left hand side of the budget constraint measures expenditures, the right hand side includes the sources of income. Income may derive from wage, UB payments and parental transfers. The employed agent receives a wage which follows the Mincer's equation introduced above. Parental transfers are expressed as a fractions of both current net income (Y_t) and wealth (W). The former are monetary transfers, while the latter measure the monetary value of non-transferable goods available in the parents' house free of charge. Transfers depend on the agent status. In particular, the non-monetary component disappears when the agent moves out. The agent receive unemployment benefits, b, only if he qualifies for unemployment benefits.[11] The qualification is captured with the dummy $good_t$ which equals 1 if the worker (i) was employed in the previous period ($e_{t-1} = 0$) and (ii) had been working in a "good" job in $t-1$. The fraction q_t of jobs that qualify workers for UB is estimated. At the beginning of each period unemployed agents face a known probability of receiving a job offer. On the other hand, employed agents face a known probability of being fired which is conditional on the type of jobs they hold.
This optimization problem does not have an analytical solution but can be solved backwards numerically. To this goal, define the function $V_t(\Omega_t)$ as the maximal value of the optimization problem at t:

$$V_t(\Omega_t) = \max_{(e_t, s_t, m_t)} E\left[\sum_{\tau=t}^{T} \beta^{\tau-t} U(c_t, M_t, S_t)|\Omega_t\right]$$

V_t can be written recursively according to the Bellman's equation

$$V_t(\Omega_t) = U(c_t, M_t, S_t) + \beta E \max_{(e_t, s_t, m_t)} [V_{t+1}(\Omega_{t+1})|\Omega_t]$$

The horizon of the problem is finite but agents do not die at time T. Instead, they enjoy a continuation value which depends on their status at T. In particular, the present value of the utility at $T+1$ is assumed to be a linear function of the choices made in T:

$$V_{T+1}(\Omega_T) = v_1 e_T + v_2 m_T$$

The value of $E[V_{t+1}(\Omega_{t+1})|\Omega_t]$ for $t < T$ is then computed recursively proceeding backward from period $T-1$ to period 1. This procedure involves a numerical complexity because the value function requires high dimensional integration for the computation of the "Emax function" at *each* point of the state space. Monte Carlo integration is used to evaluate the multivariate integrals. Notice that individual choices depend on the expected mean age at marriage (t^e) which belongs, therefore, to the state space Ω_t. Agents form a belief on t^e and choose their optimal patterns according to the best response functions. The simulated mean age at marriage, $\bar{t}^e$, corresponding to the

[11] The parameter b is set equal to the average payment in case of unemployment. According to the Italian laws (D.L. n.86/1988 and Circ. INPS n.159/1988) the unemployment benefits were paid for a total of 8 months. They amounted to 60 percent of the wage during the first 6 months of unemployment, 50 percent during the next 2 months and 40 percent during the next 2 months. These rules were changed in 2013.

generic t^e and the t^e itself are, in general, not equal, but since the Nash equilibrium of this social game requires that beliefs realize, the condition $t^e = \bar{t}^e$ is imposed in equilibrium. The existence of an equilibrium as a fixed point is discussed in the Appendix. The numerical solution requires V_t to be calculated for each $t^e \in [0, T]$ which makes the state space continuous and the full computation unfeasible. The issue is handled by following the procedure of Keane and Wolpin (1994), *i.e.* the expected value of V_t is evaluated over a subset of $[0, T]$ and the remaining values are interpolated.[12]

3 Estimation

The model is estimated on two subsamples, North and South, based on the place of residence of the household because the two areas differ significantly in terms of institutional framework.[13]

Individuals in the two subsets differ in terms of home leaving patterns. Those residing in the North exit home earlier and a larger share works. Marriage differences are instead less pronounced (Table 2).

Differences between North and South exist also in terms of structural parameters (Table 4, upper quadrant). Parents in the North are wealthier and have higher income but housing costs are also higher. In the job market, the fraction of good-quality jobs is higher in the North.[14]

The estimation technique is based on the Simulated Method of Moments (McFadden, 1989). For a given vector of parameters θ, let m_k^D be the k^{th} moment in the data, and let $m_k^S(\theta)$ be the correspondent simulated moment arising in equilibrium. Define the distance vector

$$g(\theta) = [m_1^D - m_1^S(\theta), ..., m_k^D - m_k^S(\theta), ..., m_K^D - m_K^S(\theta)]'$$

where K is the total number of moments.

At the beginning of each estimation step n, a guess on the parameter vector θ_n is used to simulate the model, to compute the correspondent simulated moments, and the following (loss) function:

$$J(\theta) = g(\theta)' W' W g(\theta)$$

If the value of J is small enough, the procedure ends, otherwise the vector of parameters is updated. The update is made consistently with the numerical partial derivatives of J with respect to each parameter, therefore θ_{n+1} depends on θ_n. Given θ_{n+1} the computer starts the next step until the value of J is sufficiently small. In the expression above W is an array of instruments. Following McFadden (1989), since the computation makes the exact calculation of instruments impractical, I set each element in W equal to the

[12] In the code, I use a grid with a step of 0.2 corresponding to a one year period.

[13] In particular, the Italian regions included in the North are: Abruzzo, Emilia Romagna, Friuli Venezia Giulia, Lazio, Liguria, Lombardia, Marche, Molise, Piemonte, Toscana, Trentino Alto Adige, Val d'Aosta, and Veneto.

[14] The difference is possibly driven by a larger black market in Southern regions.

partial derivative of the loss function. This provides a template for instruments that, with relatively crude approximation to the real moments, will yield efficient estimators.

The selected moments to match are those of interest for the exercise. Specifically, the fraction of people living with their parents, ever married and employed in each age class; mean and standard deviations of wages in each age class. The total number of moments used is 52. The parameters to be estimated are those in the wage equation, in the utility function, in the budget constraint, the weights in the end-condition of the value function, the variance/covariance of the shocks and job offer probabilities. All shocks are assumed to be independent and normally distributed with zero mean. All parameters are geographic-area specific. The intertemporal discount factor β is set equal to 0.95.[15] Housing costs, parental income and wealth are exogenously taken from the data together with the fraction of jobs that guarantee UB coverage.

3.1 Identification

Given the non-linearity of the model, it is difficult to establish theoretical and practical identification. Nevertheless, a necessary condition is that each parameter should affect some moments in the population. This condition is discussed in this section for the most important parameters. Consider first the parameters related to the privacy cost: γ_0, γ_1, and γ_2. These are identified by the fraction of people residing with their parents. In fact, the initial residential distribution (at $t = 0$ when $m_0 = m_1 = 0$) identifies the γ_0; the fraction of individual leaving at home for $t \geq 1$, conditional on their marital status, identify γ_1 and γ_2.

Consider now the parameters affecting the marriage choice, ρ_0, ρ_1 and ρ_2. The main source of identification comes from the observed percentages of married individuals. In particular, the initial marital status distribution identifies ρ_0; ρ_1 is identified by the fraction of individuals married at each age class and by the change in such fraction relative to the previous period.

Moving to the Mincer's equations, the fixed effect (a_0) is identified using the observed wages at $t = 1$ when there is no experience by assumption; a_1 on the other hand uses the information from the observed combined evolution of the fraction employed and of the observed wages.

Finally, regarding the parameters on the budget constraint, the main issue is the identification of the fraction of income and wealth transferred to children. The two are disentangled because wealth is constant and income changes. The behavior in terms of employment and residential status are the main sources of identification for the fractions transferred conditionally on those statuses.

4 Results

The model works well in replicating the observed data. Figures 1-2 show the unconditional choice proportions and the most relevant conditional choice proportions for both

[15] Since one period corresponds to 5 years, this value is equivalent to an annual intertemporal discount factor of 0.99.

North and South. Mean wages and their standard deviations are reported in Figure 3.

Role of parental transfers. Parents' transfers are expressed as fractions of their income and wealth. The amounts are conditional on the employment and residential status. When moving out, the agent status switches from $s_t = 1$ to $s_t = 0$. This affects the budget constraint in two ways. From the theoretical model we know that the exit both increases the expenditure side due to housing costs (H_t), and changes the amount of parental transfers received through the composite effect of the ϕ's. The total change is measured by:

$$\text{Cost of exit} = H_t + e_t[(\phi_1 - \phi_5)Y_t + (1 - e_t)[(\phi_3 - \phi_5)Y_t + \phi_4 W]$$

The higher H_t or the parental wealth, the higher the cost of moving out. The effect of parental income depends instead on the ϕ's parameters. According to the estimation results, the cost of moving out *increases* with parental income, because $\phi_1 > \phi_5$ and $\phi_3 > \phi_5$. Results are also consistent with the view that parental resources provide an insurance against non-voluntary unemployment. In fact, the cost of being fired can be computed from the theoretical model as the net change in the budget constraint when the status switches from *employed* to *unemployed* and is given by:

$$\text{Cost of being unemployed} = w_t - good_t b + s_t[(\phi_1 - \phi_3)Y_t + (\phi_2 - \phi_4)W]$$

when living by himself, the individual can rely only on UB, if any, to cover for the cost of losing his job. On the other hand, while living with the parents, such cost also depends on how parental transfers change conditionally on the new status. The estimation delivers $\phi_3 > \phi_1$ and $\phi_4 > \phi_2$ which implies that living with parents lowers the cost of being fired therefore supporting the claim that parents act as an insurance against unemployment, at least in the North.

Role of labor market and housing conditions. As noted above, individual living in Southern regions tend to enter later in the labor market, therefore worse (estimated) labor market conditions are expected in the South. The structural estimation confirms this idea and goes further in providing a more precise picture on which aspects are actually worse. In particular, the estimated α_0 and α_1 do not differ very much by geographic area, with entry wages being higher in the North but return on experience being larger in the South. Instead, differences are significant in terms of the estimated job arrival probabilities which are lower in Southern regions, risk of displacement (higher) and UB coverage (lower). On the other hand, housing costs are significantly higher in the North. The key messages from the results can be summarized as follows. In Southern regions, the main problem is the lack of job offers and the lower share of good-quality jobs rather than the wage levels, which are as high as in the North in nominal terms and higher in real terms if compared to the cost of housing. Instead, in Northern regions, the probability of receiving a job offer and the share of good-quality jobs are both higher but the wage level is low in real term, considering that housing costs are almost twice as much with respect to the South.

Role of social interaction. The choices related to social interaction (staying at home, marrying) are influenced by the cost of privacy (S) and the value of marriage (M). The former is always positive. It increases with age and in case of co-residence

after marriage ($\gamma_1 > 0$ and $\gamma_2 > 0$). Marriage choices arise from the game with the other agents: although getting married very young is a costly choice ($\rho_0 < 0$), the value of marriage increases with age ($\rho_1 > 0$) and compensates the loss in utility, as age increases. The estimated ρ_2 are different than zero in both regions, confirming that the expected behavior of their peers does influence the agents' choices. Moreover, since $\rho_2 < 0$ a *social norm effect* exists because a higher (lower) expected "appropriate" age at marriage (t^e_M) is associated to a lower (higher) utility from marriage and therefore induces, *ceteris paribus*, a higher (lower) optimal individual age at marriage. In other words, since $\rho_2 < 0$, individuals tend to converge toward the expected aggregate one, conforming to the aggregate behavior. This social-norm channel is stronger in Southern regions.

5 Counterfactual experiments

I used the estimated model to run several counterfactual experiments and compared the effects on the share of people living at home, employed, and ever married against some of the results found in the existing literature. Tables 6-8 display the differences in percentage points with respect to the simulated patterns.

Role of labor market conditions. In general, poor labor market conditions can be important factors influencing the transition to adulthood. Rosolia and Torrini (2007) provide evidence that, in Italy, there exist a generation wage gap: young workers are currently offered lower entry wages which grow at the same rate as older cohorts'. This generates a loss in terms of life-time disposable income. They argue the gap is probably the result of partial labor market reforms completed in 2002 that generated a dual labor market along the age dimension, opening a gap between the earnings of old incumbent workers and those of new labor market entrants. In order to test such hypotheses, I run three experiments affecting the conditions in the labor market. I first allow for full UB coverage. Then, I test the effects of a 20% reduction of the entry wage and finally I test the effects of higher probabilities of receiving job offers ($\pi_t = 1 \forall t$). My results are consistent with the conclusions of Rosolia and Torrini (2007). In the North, lower wages induce lower employment rates and increase the share of young men living with parents, while the effects on the marital status are limited. The labor supply does not change in the South, probably due to the already extremely low level of employment, especially a younger ages. On the contrary the labor supply in the South increases enormously if the job arrival probability increases.

Role of parental resources. The existing literature does not provide a clear answer on the role of parental income in the home leaving choice by young adults. Here this issue is explored by simulating the effect of changes in both the parental income and wealth. Consistently with the results in Manacorda and Moretti (2001), an income increase of 20 percent would correspond to higher shares of people co-residing with parents and to a lower share of employed, in all age classes. A 10 percent increase in the wealth would induce changes in the same direction although to a more limited extent. It is interesting to notice that changes in the parental income induce asymmetric effects. Namely, the (negative) effect of an increase in the parental income

is larger than the (positive) effect of a reduction. This result is consistent with a recent natural experiment studied by McKeehan (2017). She finds that in the US the increase in the familys income, induced by the Earned Income Tax Credit (EITC) tax reform, decreased labor force participation of adult children.

Role of housing costs. High housing costs have often been listed among the determinants of the residential choice. Aparicio-Fenoll and Oppedisano (2014) studied the effect of a monthly cash rent subsidy, introduced in Spain in 2008, on the probability that young adults live apart from parents. Their estimates show positive effects of the policy on the probability of leaving home. The effects are larger among young adults earning lower incomes and living in high rental price areas. The hypothesis that youngsters may delay their household formation due to a housing cost too high relative to their income is tested with two experiments. In the first one, I lower the housing costs by 20 percent; in the second one, a subsidy is given to the youngest age class. In both cases, the percentage of men living at home lowers. The effect is stronger in the North, consistently with the fact that in Northern regions the estimated housing costs are about twice as much as in the South.

Role of social interaction. The importance of cultural norms is confirmed by the existing literature. Giuliano (2006) and Alesina *et al.* (2007), among others, confirm a significant influence of the strength of family ties on individuals' choices. In order to test how important the social interaction mechanism is in this framework a counterfactual simulation is performed in which agents are assumed not to care about their peers behavior ($\rho_2 = 0$ is imposed). In a model with no social interaction marriage occurs, on average, much earlier. While the largest effects are observed on the marriage choices, significant changes are also induced in the residential choices. In particular, the share of men living with their parents lowers in each age class, with the largest drop occurring between 25 to 29 years old, -9.8 pp.in the North and -6.7 pp. in the South.

To summarize, the results of the counterfactual experiments suggest that in Italy parental resources are the most important channel affecting both residential and employment status. Labor supply is instead mostly responsive to the level of housing costs relative to the wages offered on the labor market and to the labor market conditions in terms of job arrival and displacement probabilities, the wage levels have instead limited effects. Finally, the tendency of individuals to conform to each other is confirmed to be a key determinant of individual choices, especially on marriage and residential arrangements.

Conclusions

On October 2007, the Italian finance minister, Mr. Tommaso Padoa-Schioppa, stated: "Let's get those *big babies* out of the house. Let's incentivize the exit from home of those young adults that stay with their parents, don't get married and do not become independent. It is important". There were many reactions to such statement and many responded that, in Italy, living with one's parents is not really a choice but rather a necessity due to the lack of labor, the low wages and the high cost of life. The debate

has continued during the last ten years but nobody clarified whether in Italy the late exit is due to exogenous economic and institutional factors that prevent young adults from choosing what they would like, or rather to *social* factors intrinsic in the Italian society. As a matter of fact, according to recent OECD data, in Italy the percentage of young adults residing with their parents is about 80 percent, the largest among developed countries (OECD, 2016).

In this paper, a dynamic discrete choice model is developed to study the sequential choices of young Italians on residential, labor supply and marital status. I then structurally estimate it on a subset of male individuals homogeneous in terms of human capital accumulation and geographic area of residency. This framework combines, within a unique framework, most of the mechanisms that are proved to influence the transition to adulthood by the existing literature. Nevertheless, several simplifications were necessary to keep the model simple and computationally tractable.

First, there are no savings, therefore, the model cannot provide any insight on the role of the credit markets imperfections. This simplification is often imposed in dynamic models with multiple discrete choices (Ge, 2011 among others) for computational tractability. In fact, the amount saved in any period t would enter as a state variable in period $t + 1$. Since this is a continuous variable, the space state would explode. In models which focus on the intertemporal allocation of financial resources (Rosenzweig and Wolpin, 1993), ignoring savings would jeopardize the credibility of the results. In those cases the problem has been partially overcome by "discretizing" the level of savings and assuming that savings are a continuous function of a set of discrete variables. It should be pointed out, though, that this limit is less relevant a framework like this one that does not consider the life-cycle allocation of resources but rather focuses on the behavior of young individuals.

Second, the choice on education is not modeled. Instead, the educational attainment is exogenously controlled by estimating the model on a subset of individuals homogeneous in terms of educational attainment and investment in human capital. Such simplification is not very harmful for the Italian case where the percentage students is low. Moreover, SHIW does not provide good information on the school/work choice, as individuals are registered as either students or workers, never both, depending on what they self-report to be their main occupation. Further, introducing and additional state variable would have increased the computational burden substantially. Nevertheless, in order to test the robustness of the results, the estimation over the full sample of individuals was also performed. Results and main findings do not change much. Why is that? Probably because, on the one hand, the share of graduate men is relatively low and, on the other hand, the home exit patterns in the full and selected samples are similar.

Third, fertility choices are not taken into account in modeling the social interaction and the market for marriage. Therefore this framework cannot contribute to the understanding of the gender differences in the home leaving patterns that are well-known in the literature (see Chiuri and Del Boca, 2010, among others). The simplification was made because the SHIW data do not provide reliable information on the age at the arrival of children. To limit as much as possible the distortions arising from this choice, the model is estimated for males only. The choice does not rely on the assumption that

men do not care about having children but rather on the fact that they experience a much slower reduction in their ability of conceiving than women. For this reason men's fertility choices are less likely to become urgent or predominant with respect to their choices on residency, employment and marriage. Therefore lowering the risk to ignore a key determinant of the home leaving choice.

The results of the structural estimation provide indications on the relative role of labor market conditions, housing market conditions, parental resources and social interactions in shaping the observed late transition to adulthood of young Italian men. In particular, the delay is mainly driven by a combination of poor labor market conditions and high housing costs. Results are also consistent with the view that parental resources provide an insurance against non-voluntary unemployment. Results were also used to assess the differences between North and South. In Southern regions, the main problem seems to be the lack of job offers and the lower share of good-quality jobs rather than the wage levels, which are as high as in the North in nominal terms and higher in real terms if compared to the cost of housing. Instead, in Northern regions, the probability of receiving a job offer and the share of good-quality jobs are both higher but the wage level is low in real term, considering that housing costs are almost twice as in the South. The social interaction component is stronger in the South where the tendency to conform to other people's behavior in the marriage market is stronger and the privacy cost from residing with the parents is relatively lower. The fraction of parental resources transferred to the children is also larger in the South, despite the lower parental income and wealth. Moreover, estimates suggest that individuals tend to conform to each other. Given the large differences observed in the structural parameters between Northern and Southern regions, the key findings could be also useful to understand the main forces driving the leaving decision across countries, although this extension is left for future research. Finally, the counterfactual experiments suggest that the parental resources could be a key channel affecting both residential and employment status. Employment choices are instead mostly responsive to the level of housing costs relative to the wages offered on the labor market and to the rate of arrival of job offers. In this sense, a subsidy on the rent given to young adults could be effective. Finally, the tendency of individuals to conform to each other is confirmed to be an important determinant of individual choices, especially on marriage and residential arrangements. In this respect, since the prevailing norm is itself influenced by the economic and institutional background, economic policies supporting the home leaving process could actually take advantage of such social mechanism that could boost the effect of the policy if it succeed in changing the individual expectations.

References

[1] Alesina, Alberto and Giuliano, Paola (2007), "The power of the family", *NBER Working Paper Series*, no. 13051.

[2] Ahn, Namkee and Sánchez-Marcos, Virginia (2017), "Emancipation under the great recession in Spain", *Review of the Economics of the Household*, No. 15: 477-495.

[3] Aparicio-Fenoll, Ainhoa and Oppedisano, Veruska (2014), "Fostering household formation: Evidence from a Spanish Rental Subsidy", *The B.E. Journal of Economic Analysis and Policy*, Vol. 15, No. 1: 53-84.

[4] Aparicio-Fenoll, Ainhoa and Oppedisano, Veruska (2016), "Should I stay or should I go? Sibling effects in household formation", *Review of the Economics of the Household*, No. 14: 1007-1027.

[5] Avery, Roger; Goldscheider, Frances Kobrin and Speare, Alden Jr. (1992), "Feathered Nest/Gilded Cage: Parental Income and Leaving Home in the Transition to Adulthood", *Demography*, Vol. 29, No. 3: 375-388.

[6] Billari, Francesco C. and Tabellini Guido (2010), "Italians Are Late: Does It Matter?", chapter in *Demography and the Economy*, University of Chicago Press.

[7] Chiuri, Maria Concetta and Del Boca, Daniela (2010), "Home-leaving Decisions of Daughters and Sons", *Review of Economics of the Household*, Vol. 8, No. 3: 393-408.

[8] Dankova, Desislava; Di Domenico, Germana; Infantino, Giancarlo and Plmera, Manuela (2014), "Mercato del lavoro tra riforme e crisi economomiche: quali effetti su dualismo e instabilit dell'occupazione?", *Note Tematiche del Ministero dell'Economia e delle Finanze - Dipartimento del Tesoro*, No. 1/2014.

[9] Eckstein, Zvi and Wolpin, Kenneth (1989), "The Specification and Estimation of Dynamic Discrete Choice Models: A Survey", *The Journal of Human Resources*, Vol. 24, No. 4: 562-598.

[10] Ermisch, John and Di Salvo, Pamela (1997), "The Economic Determinants of Young People's Household Formation", *Economica*, New Series, Vol. 64, No. 256: 627-644.

[11] Fogli, Alessandra (2004), "Endogenous Labor Market Rigidities and Family Ties", New York University and Federal Reserve Bank of Minneapolis, unpublished.

[12] Ge, Suqin (2011), "Women's College Decisions: How Much Does Marriage Matter?", *Journal of Labor Economics*, Vol. 29, No. 4: 773-818.

[13] Giuliano, Paola (2006), "Living Arrangements in Western Europe: Does Cultural Origin Matter?", *IZA Discussion Paper Series*, No. 2042.

[14] Haurin, Donald R.; Hendershott, Patric H. and Kim, Dongwook (1993), "The Impact of Real Rents and Wages on Household Formation", *The Review of Economics and Statistics*, Vol. 75, No. 2: 284-293.

[15] Keane, Michael P. and Wolpin Kenneth I. (1994), "The Solution and Estimation of Discrete Choice Dynamic Programming Models by Simulation and Interpolation:

Monte Carlo Evidence", *The Review of Economics and Statistics*, Vol. 76, No. 4: 648-672.

[16] le Blanc, David and Wolff, Franois-Charles (2006), "Leaving Home in Europe: The Role of Parents' and Children's Income", *Review of the Economics of the Household*, No. 4: 53-73.

[17] Manacorda, Marco and Moretti, Enrico (2001), "The Living Arrangements of Young Italian Men", *University of California at Berkeley*, mimeo.

[18] Manacorda, Marco and Moretti, Enrico (2005), "Why Do Most Italian Men Live with Their Parents? Intergenerational Transfers and Household Structure", *CEPR Discussion Papers*, No. 5116.

[19] McElroy, Marjorie B. (1985), "The Joint Determination of Household Membership and Market Work: The Case of Young Men", *Journal of Labor Economics*, Vol. 3, No. 3: 293-316.

[20] McFadden, Daniel (1989), "A Method of Simulated Moments for Estimation of Discrete Response Models Without Numerical Integration", *Econometrica*, Vol. 57: 995-1026.

[21] McKeehan, Margaret Katherine (2017), "The EITC and the Labor Supply of Adult Dependents: Direct Effects and Family Income Effects", *Review of the Economics of the Household*, forthcoming.

[22] Modena, Francesca and Rondinelli, Concetta (2011), "Leaving home and housing prices. The experience of Italian youth emancipation", *Bank of Italy Working Paper Series*, No. 818.

[23] OECD (2016), "OECD Affordable Housing Database - Living arrangements by age groups", URL: http://oe.cd/ahd

[24] Rosenzweig, Mark R. and Wolpin, Kenneth I. (1993),"Intergenerational Support and the Life-Cycle Incomes of Young Men and Their Parents: Human Capital Investment, Coresidence, and Intergenerational Financial Transfers", *Journal of Labor Economics*, Vol. 11, No. 1, Part 1: Essays in Honor of Jacob Mincer: 84-112.

[25] Rosenzweig, Mark R. and Wolpin, Kenneth I. (1994), "Parental and Public Transfers to Young Women and Their Children", *The American Economic Review*, Vol. 84, No. 5: 1195-1212.

[26] Rosolia, Alfonso and Torrini, Roberto (2007), "The generation gap: Relative earnings of young and old workers in Italy", *Bank of Italy Working Paper Series*, No. 639.

[27] Stella, Luca (2016), "Living arrangements in Europe: whether and why paternal retirement matters", *Review of the Economics of the Household*, No. 15: 497-525.

Tables

Table 1: Transition to adulthood in Italy and the US of HSG males (% of total)

	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39
Italy:					
Living with parents	94.9	86.0	59.7	26.0	10.6
Employed	15.1	49.4	83.7	92.7	94.6
Ever married	1.0	2.9	18.8	42.7	69.7
Living with parents/unemp./never married	82.8	61.6	28.1	11.7	5.6
Living with parents/emp./never married	3.4	8.4	19.2	28.2	20.3
Left parental home/emp./never married	0.2	1.2	16.6	40.0	60.9
Left parental home/emp./ever married	11.4	25.0	30.2	16.1	6.6
United States:					
Living with parents	85.3	43.7	20.1	11.0	9.4
Employed	18.9	80.5	85.6	84.4	83.0
Ever married	1.9	25.2	51.7	66.3	75.3
Living with parents/unemp./never married	51.2	18.5	4.2	2.5	1.8
Living with parents/emp./never married	6.8	23.8	29.1	21.3	14.9
Left parental home/emp./never married	1.3	14.2	42.7	58.2	65.5
Left parental home/emp./ever married	33.9	31.6	12.5	4.9	3.2

Source: SHIW and IPUMS, years 1989-2014. Weighted data.

Note: Males born between 1970 and 1974. The sample includes all individuals aged 15 to 19 plus high school graduates. Individuals aged 20 or more with higher educational attainment and/or students are excluded.

Table 2: Transition to adulthood in Italy of HSG males by region (% of total)

	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39
North:					
No. of observations	*948*	*374*	*317*	*363*	*306*
Living with parents	93.7	82.3	53.2	22.3	9.6
Employed	20.0	63.7	93.5	96.7	97.8
Ever married	0.7	3.3	20.6	43.4	73.1
Living with parents/unemp./never married	77.8	34.1	6.3	2.9	1.7
Living with parents/emp./never married	4.6	13.3	27.3	34.4	17.1
Left parental home/emp./never married	0.1	2.7	19.5	42.9	72.7
Left parental home/emp./ever married	15.3	47.6	45.8	18.9	7.5
South:					
No. of observations	*840*	*268*	*214*	*200*	*172*
Living with parents	96.5	92.5	69.7	33.7	12.8
Employed	0.9	24.0	68.5	84.3	87.5
Ever married	1.3	2.3	16.0	41.4	62.0
Living with parents/unemp./never married	89.4	74.6	27.4	11.5	6.1
Living with parents/emp./never married	1.8	6.3	13.5	25.0	23.1
Left parental home/emp./never married	0.4	1.0	14.0	38.0	58.3
Left parental home/emp./ever married	6.2	16.7	40.9	21.4	6.2

Source: SHIW 1989-2014. Weighted data.

Note: Males born between 1970 and 1974. The sample includes all individuals aged 15 to 19 plus high school graduates. Individuals aged 20 or more with higher educational attainment and/or students are excluded.

Table 3: Percentage living with parents in the age class 20-24

Country	All	Men	Women
Spain	81.1	82.0	80.1
Italy	80.9	83.0	78.8
Portugal	74.2	74.5	73.9
Belgium	68.7	77.3	60.2
Ireland	67.3	73.0	61.8
Greece	63.4	73.9	54.2
Germany	54.2	63.9	44.9
UK	37.7	47.1	27.2
Netherlands	35.9	48.4	23.2
Denmark	24.5	30.5	19.3

Source: ECHP, 1994-2001.

Note: weighted data.

Table 4: Transition to adulthood in Italy by cohort

	1970-1974	1975-1979	1980-1984
Living with parents:			
Age 15-19	94.9	96.6	95.7
Age 20-24	87.5	84.7	85.8
Age 25-29	59.5	59.1	60.0
Age 30-34	28.3	26.2	38.5
Age 35-39	12.9	16.0	...
Employed:			
Age 15-19	15.1	11.6	10.0
Age 20-24	34.7	44.3	37.7
Age 25-29	66.7	69.9	67.1
Age 30-34	84.7	84.1	71.5
Age 35-39	88.1	82.4	...
Ever married:			
Age 15-19	1.0	0.3	0.4
Age 20-24	2.6	1.9	2.0
Age 25-29	19.7	13.7	17.0
Age 30-34	42.6	46.6	32.7
Age 35-39	65.6	56.0	...

Source: SHIW, years 1989-2014. Weighted data.

Table 5: Estimation results

Exogenous parameter	Description	North	South
β	Intertemporal discount factor	0.95	0.95
W	Parental wealth	197,013	128,547
Y_1	Parental income in $t = 1$	22,771	16,720
Y_2	Parental income in $t = 2$	27,189	19,916
Y_3	Parental income in $t = 3$	32,194	23,530
Y_4	Parental income in $t = 4$	35,297	25,334
H_1	Housing cost in $t = 1$	3,694	2,367
H_2	Housing cost in $t = 2$	4,992	2,933
H_3	Housing cost in $t = 3$	6,510	3,869
H_4	Housing cost in $t = 4$	7,393	4,370
q_1	Share of good-quality jobs in $t = 1$	0.23	0.26
q_2	Share of good-quality jobs in $t = 2$	0.91	0.66
q_3	Share of good-quality jobs in $t = 3$	0.99	0.75
q_4	Share of good-quality jobs in $t = 4$	0.97	0.96
Estimated parameters	Description	North	South
α_0	Wage: constant term	8.69	8.63
α_1	Wage: return on experience	1.08	1.12
α_2	Wage: return on job quality	0.12	0.10
σ_u	Wage: variance of error term	0.16	0.04
γ_0	Privacy cost: constant term	5,250	1,132
γ_1	Privacy cost: change from aging	4,741	8,521
γ_2	Privacy cost: change from being married	2,358	2,606
σ_η	Privacy cost: variance of error term	3,629	9,199
ϕ_1	Parental transfers if $s_t = 1$ and $e_t = 1$	0.34	0.85
ϕ_2	Parental non-monetary transfers if $s_t = 1$ and $e_t = 1$	0.02	0.02
ϕ_3	Parental transfers if $s_t = 1$ and $e_t = 0$	0.51	0.52
ϕ_4	Parental non-monetary transfers if $s_t = 1$ and $e_t = 0$	0.07	0.13
ϕ_5	Parental monetary transfer if $s_t = 0$	0.12	0.13
ρ_0	Utility from marriage: constant term	-5,012	-9,347
ρ_1	Utility from marriage: change from aging	2,546	4,862
ρ_2	Utility from marriage: social norm effect	-6,873	-20,135
σ_ε	Utility from marriage: variance of error term	14,518	21,016
v_1	Bellman's equation: continuation value from employment	12,627	2,626
v_2	Bellman's equation: continuation value from marriage	7,193	8,193
π_1	Job arrival probability in $t = 1$	0.65	0.30
π_2	Job arrival probability in $t = 2$	1.0	0.83
π_3	Job arrival probability in $t = 3$	1.0	1.0
π_4	Job arrival probability in $t = 4$	0.97	0.94
$fire_1$	Probability of loosing a good-quality job	0.04	0.05
$fire_2$	Probability of loosing a bad-quality job	0.16	0.91

Table 6: Counterfactual experiments: effect on the home leaving choice

- North -				
	Age class			
	20-24	25-29	30-34	35-39
Simulated patterns:	*83.3*	*51.6*	*24.1*	*6.5*
Changes in labor market conditions:				
Full UB coverage	-0.0	-3.6	-0.6	-0.0
Lower wages	+0.8	+0.4	+0.8	+0.1
Higher job arrival probability	-6.7	+2.1	-0.3	-0.1
Changes in parental resources:				
Income -20%	-6.5	-11.4	-8.5	-1.8
Income +20%	+5.6	+11.6	+12.1	+4.0
Wealth -10%	-2.2	-3.8	-2.6	-0.6
Wealth +10%	+2.5	+3.8	+2.8	+0.9
Changes in housing market:				
Housing cost -20%	-4.8	-9.4	-7.8	-1.7
Housing cost to youngest (30%)	-7.1	-0.0	-0.1	-0.0
Changes in social interaction:				
No peer effect ($\rho_2 = 0$)	-4.8	-9.8	-4.0	-0,6

- South -				
	Age class			
	20-24	25-29	30-34	35-39
Simulated patterns:	*92.1*	*64.6*	*38.5*	*11.8*
Changes in labor market conditions:				
Full UB coverage	-0.0	-4.6	-5.1	-1.1
Lower wages	+0.0	+0.0	-0.0	+0.0
Higher job arrival probability	-12.6	-7.2	-5.0	-1.1
Changes in parental resources:				
Income -20%	-3.3	-9.8	-11.3	-5.6
Income +20%	+2.3	+9.3	+13.1	+8.5
Wealth -10%	-1.5	-2.3	-2.5	-1.1
Wealth +10%	+1.0	+2.1	+2.6	+1.0
Changes in housing market:				
Housing cost -20%	-0.7	-2.2	-3.1	-1.7
Housing cost to youngest (30%)	-1.2	-0.0	-0.0	-0.0
Changes in social interaction:				
No peer effect ($\rho_2 = 0$)	-1.6	-6.4	-4.0	-0.9

Note: Differences in percentage points with respect to the simulated patterns.

Sign in front of zero variations refers to decimals of higher order.

Table 7: Counterfactual experiments: effect on the employment choice

- North -				
	Age class			
	20-24	25-29	30-34	35-39
Simulated patterns:	*68.8*	*90.8*	*95.3*	*96.1*
Changes in labor market conditions:				
Full UB coverage	-0.0	+6.5	+0.7	+0.0
Lower wages	-17.7	-10.9	-3.9	-0.2
Higher job arrival probability	+27.9	-3.9	+0.3	+0.1

- South -				
	Age class			
	20-24	25-29	30-34	35-39
Simulated patterns:	*26.4*	*68.6*	*78.3*	*87.6*
Changes in labor market conditions:				
Full UB coverage	-0.0	+17.2	+17.2	+7.6
Lower wages	+0.0	+0.0	-0.0	+0.0
Higher job arrival probability	+72.5	+26.3	+16.7	+7.5

Note: Differences in percentage points with respect to the simulated patterns.

Sign in front of zero variations refers to decimals of higher order.

Table 8: Counterfactual experiments: effect on the marriage choice

- North -				
	Age class			
	20-24	25-29	30-34	35-39
Simulated patterns:	*6.2*	*20.0*	*42.4*	*74.2*
Changes in labor market conditions:				
Full UB coverage	-0.0	+0.2	+0.1	+0.0
Lower wages	-0.0	-0.1	-0.1	+0.0
Higher job arrival probability	+0.2	+0.0	+0.0	+0.0
Changes in parental resources:				
Income -20%	+0.3	+0.7	+0.8	+0.0
Income +20%	-0.2	-0.8	-1.1	-0.1
Wealth -10%	+0.1	+0.3	+0.2	+0.0
Wealth +10%	-0.1	-0.3	-0.4	-0.0
Changes in housing market:				
Housing cost -20%	+0.2	+0.6	+0.7	+0.1
Housing cost to youngest (30%)	+0.3	+0.1	+0.1	+0.0
Changes in social interaction:				
No peer effect ($\rho_2 = 0$)	+27.1	+21.2	+7.0	+5.1

- South -				
	Age class			
	20-24	25-29	30-34	35-39
Simulated patterns:	*4.1*	*16.2*	*40.2*	*63.5*
Changes in labor market conditions:				
Full UB coverage	-0.0	+0.1	+0.2	+0.0
Lower wages	-0.0	-0.0	-0.0	+0.0
Higher job arrival probability	+0.0	+0.0	+0.0	+0.0
Changes in parental resources:				
Income -20%	+0.1	+0.3	+0.4	+0.1
Income +20%	-0.1	-0.3	-0.7	-0.2
Wealth -10%	+0.0	+0.1	+0.0	+0.0
Wealth +10%	+0.0	-0.1	-0.1	+0.0
Changes in housing market:				
Housing cost -20%	+0.0	+0.1	+0.1	+0.0
Housing cost to youngest (30%)	+0.0	+0.0	+0.0	+0.0
Changes in social interaction:				
No peer effect ($\rho_2 = 0$)	+35.8	+29.1	+11.6	+5.9

Note: Differences in percentage points with respect to the simulated patterns.

Sign in front of zero variations refers to decimals of higher order.

Figures

Figure 1: Transition to adulthood in Italy and the US

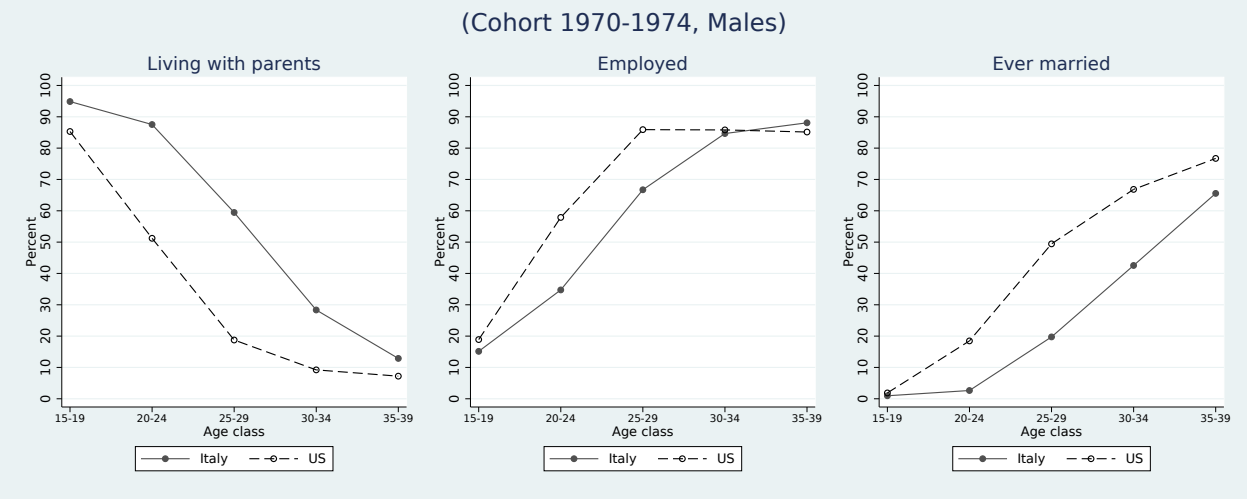


Figure 2: Fitting: Transition to adulthood

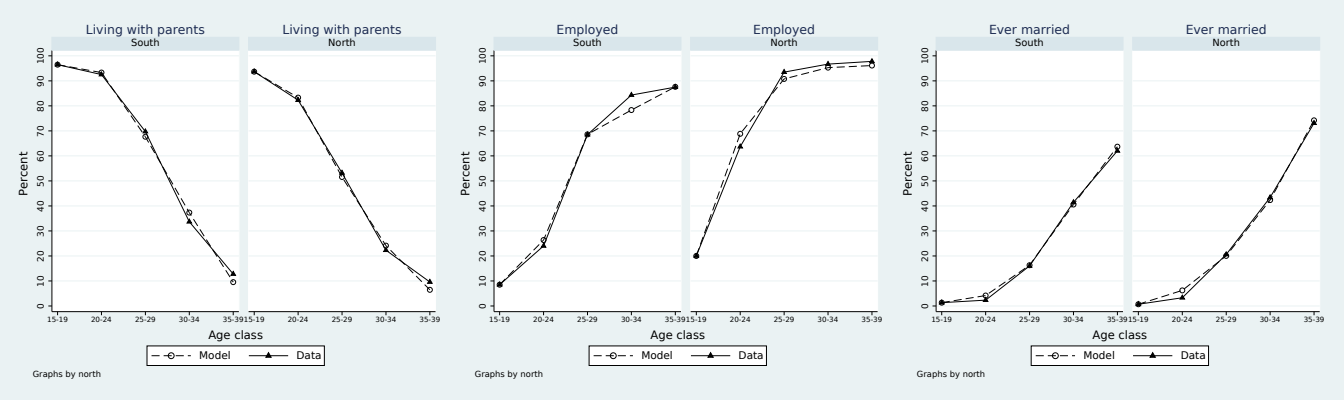


Figure 3: Fitting: Selected choice combinations

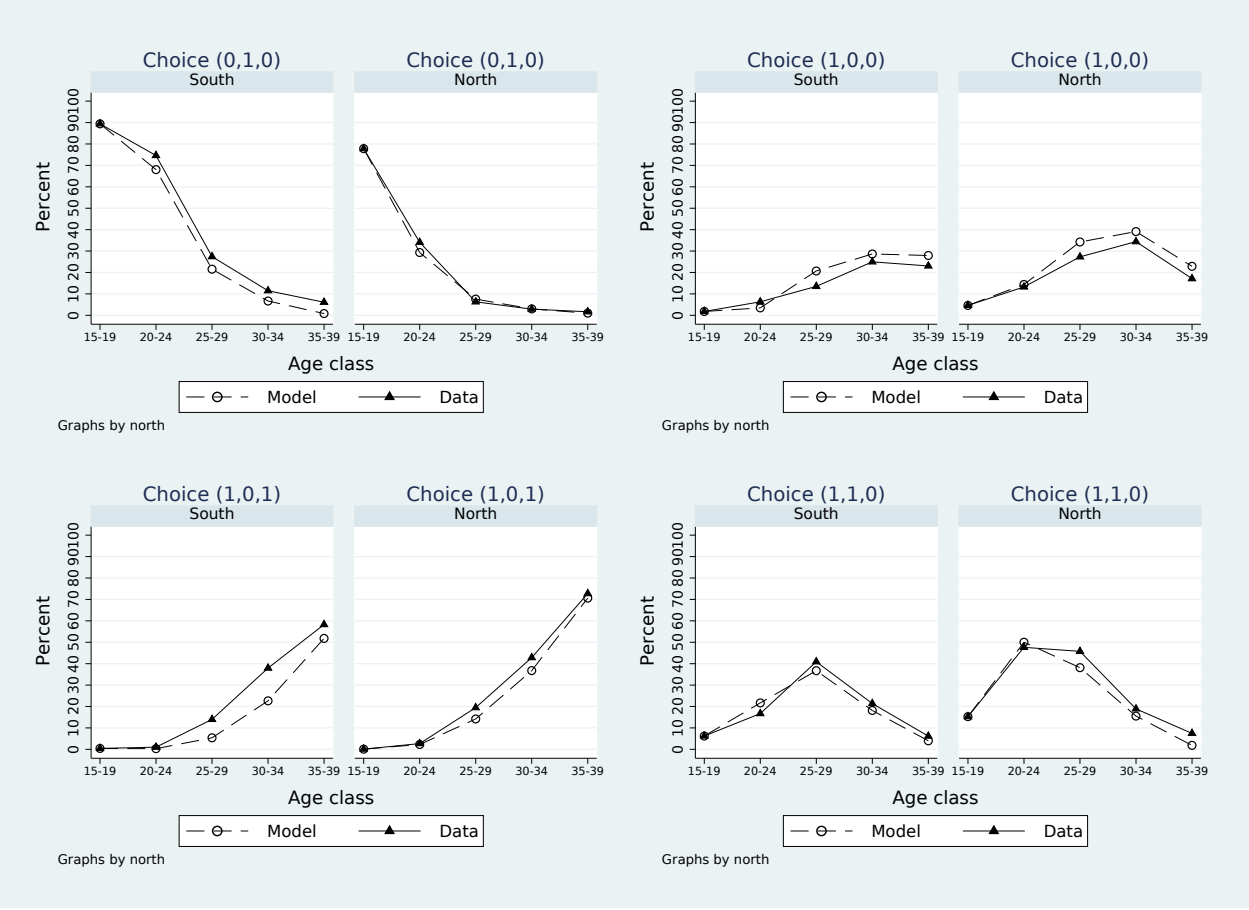
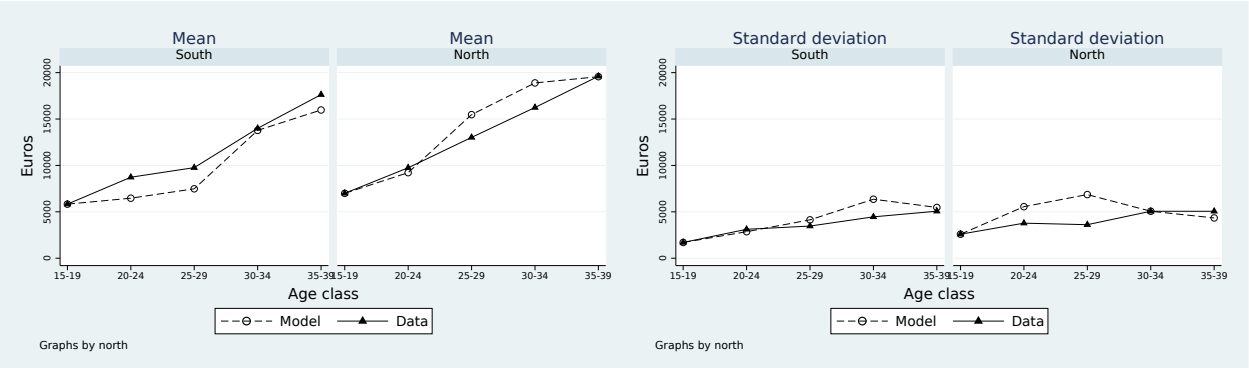


Figure 4: Fitting: wage mean and standard deviation



Appendices

A Existence of an equilibrium

Since the mean age at marriage $\bar{t}^e$ is bounded in $[0, T]$, an equilibrium exists as long as $\bar{t}^e$ is continuous in t^e. Given t^e, the average age at marriage is given by

$$\bar{t}^e = \int_{\mathfrak{E}} t(t^e, \bar{\varepsilon}) dP(\bar{\varepsilon}) \quad (*)$$

where $\bar{\varepsilon}$ is a particular realization of shocks in $\mathbb{R}^{3\times 5}$ and $\mathfrak{E}$ is the appropriate sigma algebra[16]. A sufficient condition for the continuity of $\bar{t}^e$ is that $t(t^e, \varepsilon)$ is continuous a.s. To show that $t(t^e, \varepsilon)$ is continuous a.s. in t^e, consider the problem of an individual at time t. The history of the shocks realized up to time $t-1$ fully describes her state. Let call this history $\bar{\varepsilon}_{t-1} \in \mathbb{R}^{3\times t-1}$. Whatever her choices on co-residence and employment, the choice of marrying or not problem pins down to the comparison of two values both depending on t^e and on the realization of the shocks up to period t:

$$\begin{cases} V_t^{do} = V_t(t^e, \bar{\varepsilon}_t) + \text{utility from marrying, if agent marries} \\ V_t^{dont} = V_t(t^e, \bar{\varepsilon}_t) + \text{utility from not marrying, otherwise} \end{cases}$$

Since both value functions are linear, it is easy to show that those with $V_t^{do} > V_t^{dont}$ or $V_t^{do} < V_t^{dont}$ would not change their choices for small variations in t^e. This is not true for those who are indifferent indifferent between the two alternatives, but since their measure is zero, then $(*)$ can be written as the sum of continuous functions and of zeros and $\bar{t}^e$ is therefore continuous in t^e.

B Data appendix

The analysis uses two databases: the *Survey of Households' Income and Wealth* (SHIW) for Italy, and the *Integrated Public Use Microdata Series of the Current Population Survey* (IPUMS-CPS) for the United States. The former is provided by the Bank of Italy and contains information on income, savings, wealth and other socioeconomic indicators of Italian families; the historical database is updated every two years[17] and currently goes from 1977 to 2014 with data on about 8,000 households and 24,000 individuals. The IPUMS-CPS is an integrated set of data from 53 years (1962-2015) of the *March Current Population Survey* (CPS) produced by the Minnesota Population Center. Both the SHIW and the IPUMS-CPS are stratified samples and weights are used to avoid biased estimates.

I use SHIW and IPUMS-CPS data for the period 1989-2014 and focus on the cohort 1970-1974. The choice is made because this is the cohort youngest fully observable in

[16] One way to build the sigma algebra is to divide $\mathbb{R}^{3\times 5}$ in six disjoint sets : $O_1 = \{\Omega_1 \times \mathbb{R}^{3\times 4}\}$, $O_2 = \{\Omega_2 \times \mathbb{R}^{3\times 3}\}$, $O_3 = \{\Omega_3 \times \mathbb{R}^{3\times 2}\}$, $O_4 = \{\Omega_4 \times \mathbb{R}^{3\times 1}\}$, $O_5 = \{\Omega_5\}$, and $O_0 = \mathbb{R}^{3\times 5} \backslash \{\cup O_t\}$. where Ω_t is the set of all shocks up to period t for which the individual marries exactly in t, and O_0 is the set of individuals that never marry.

[17] Except for the waves 1995 and 1998 which are three years apart.

the data collection (those born in 1974 turned 40 in 2014). For both countries, the fact that I consider individuals born in a certain time interval implies that the same age is observed in more than one sample year, except for the youngest individuals which is therefore under-represented. In the SHIW the problem is more severe. It provides observations in the years: 1989, 1991, 1993, 1995, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012 and 2014. Therefore, the ages 15 and 16 are observed only in one wave. This issue has been partially overcome by grouping ages into five age classes: 15 to 19 years old, 20 to 24, 25 to 29, 30 to 34, and 35 to 39. The first age class remains under-represented in both samples, but since individuals of that age tend to behave very similarly, the reduced variation compensates for the under-representation. Observations are uniquely identified by the triple: year of the interview, household identity number, and person identity number. The use of two data sources creates issues in terms of comparability and consistent variable construction. The IPUMS-CPS database is richer than the SHIW both in terms of number of observations and in terms of frequency (annual instead of biannual). For this reason, I first selected the variables of interest from the Italian database and then built the correspondent variables for the United States. Consistency and comparability issues will be discussed below for each variable.

Residential arrangement. An individual is considered to live with his/her parents if the following conditions are met: (i) he/she is defined as the son/daughter of the head of the household, and (ii) he/she is not the main income earner. To verify the first condition in SHIW, I use the variable *parent* which locates the (unique) head of the household (HH) and characterizes the other members as partner, son or daughter, parent, other relative, or other members not related to the HH. This classification creates problems for relating parents and own children. In fact, it is not clear how individuals classify their step-children who could be either registered as 'son or daughter', 'other relatives' or 'other members not related to the HH'. Since these categories represent only 3 percent of the sample and group very heterogeneous types, I interpreted the first condition strictly by included only those defined as 'son or daughter'. In IPUMS-CPS, an analogous construction is made with the variable *relate* which distinguish children and step-children. The condition of not being the main source of income in the family has been imposed in order to control for those cases in which the children are actually independent but rejoined their parents to take care of them. The main income earner is defined as the household member with the highest net personal income. This variable (*cfred*) is provided by the SHIW for all individuals. Instead, it is not provided directly in IPUMS-CPS, but I constructed it by defining as main income earner the household member with the highest total income (*inctot*). It should be noticed that this income condition implies that similar cases might be treated very differently: a child earning 100 euros less than the father would result as independent while his brother who earn 100 more, would be registered as living with the parents. In fact, such cases are very rare in the data.

Employment status. The employment status is obtained from the SHIW variable that describes the professional status of the individual at the time of the interview (*apqual*). In IPUMS-CPS the correspondent information is taken from *empstat*.

Marital status. The information on the marital status comes from the variables

staciv, in SHIW, and *marstat* in IPUMS-CPS. Data on the marital status are provided for all individuals and appear consistent with the age profiles (no one is reported as married before the age of 18).

Educational attainment. I distinguish between three educational levels:

1. Less than high school, if *studio* is up to 'professional high school diploma';
2. High school graduate, if *studio* is at least 'high school diploma';
3. University graduate, if *studio* is at least 'bachelor's degree'

I also built a dummy variable to locate those defined as 'student' in *apqual* (*student*), but it should be pointed out that the options 'student' and 'worker' are alternatives in *apqual*. This implies that since I cannot locate students who work part time and workers who study part time, the employment rates of younger individuals might be biased downward.

Disposable income and wages. The SHIW questionnaire provides after-tax amounts of personal income from employment, self-employment and other sources. I focus on the income from employment (YL) and self-employment (YM). YL is always positive while YM can be also negative because it includes (possibly negative) profits from business activities. I use the aggregate YL because I am interested in the choice of entering the labor market rather than in the choice between employment and self-employment. YL is the most important income source for individuals between 15 and 39 years old (about 8 out of 10 individuals are reported as *employed*).

Housing costs. The SHIW contains information on: rent, mortgage payments, utilities, extraordinary maintenance, furniture, household appliances at household level. The variable *rent* is given by the amount of rent paid (*tfitto*) and, if not available (possibly because the family is the owner), by an estimate of the rent at which the place could be rented (*tfitimp*). Utilities are instead measured as the difference between the monthly average spending in all consumption (*cons*) and the monthly average spending in consumption only (*jconsal*). Data on the above four variables are available for all households with no missing observations.

Parental resources. Two types of parental resources are used: the after-tax total income (Y) and the net wealth (W). While the latter is always non negative, income can be negative as it is computed indirectly from the aggregation of several income sources and some of those, such as business profits, can be negative. To overcome this problem, I took the average values of both income and wealth for the selected households, distinguished by the geographic area of residence to be consistent with the assigned level of housing costs.

Geographic areas. The SHIW questionnaire provides the region of residency and groups them in three macro areas (*area3*): North, Center, and South and islands. I re-define the areas into two macro regions: North and South. The regions in "North" are those recorded as either "North" or "Center" in *area3*.

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ZINNA G., *Price pressures on UK real rates: an empirical investigation,* Review of Finance,v. 20, 4, pp. 1587-1630, **TD No. 968 (July 2014).**

2017

ADAMOPOULOU A. and G.M. TANZI, *Academic dropout and the great recession,* Journal of Human Capital, V. 11, 1, pp. 35–71, **TD No. 970 (October 2014).**

ALBERTAZZI U., M. BOTTERO and G. SENE, *Information externalities in the credit market and the spell of credit rationing,* Journal of Financial Intermediation, v. 30, pp. 61–70, **TD No. 980 (November 2014).**

ALESSANDRI P. and H. MUMTAZ, *Financial indicators and density forecasts for US output and inflation,* Review of Economic Dynamics, v. 24, pp. 66-78, **TD No. 977 (November 2014).**

BARBIERI G., C. ROSSETTI and P. SESTITO, *Teacher motivation and student learning,* Politica economica/Journal of Economic Policy, v. 33, 1, pp.59-72, **TD No. 761 (June 2010).**

BENTIVOGLI C. and M. LITTERIO, *Foreign ownership and performance: evidence from a panel of Italian firms,* International Journal of the Economics of Business, v. 24, 3, pp. 251-273, **TD No. 1085 (October 2016).**

BRONZINI R. and A. D'IGNAZIO, *Bank internationalisation and firm exports: evidence from matched firm-bank data,* Review of International Economics, v. 25, 3, pp. 476-499 **TD No. 1055 (March 2016).**

BRUCHE M. and A. SEGURA, *Debt maturity and the liquidity of secondary debt markets,* Journal of Financial Economics, v. 124, 3, pp. 599-613, **TD No. 1049 (January 2016).**

BURLON L., *Public expenditure distribution, voting, and growth,* Journal of Public Economic Theory,, v. 19, 4, pp. 789–810, **TD No. 961 (April 2014).**

BURLON L., A. GERALI, A. NOTARPIETRO and M. PISANI, *Macroeconomic effectiveness of non-standard monetary policy and early exit. a model-based evaluation,* International Finance, v. 20, 2, pp.155-173, **TD No. 1074 (July 2016).**

BUSETTI F., *Quantile aggregation of density forecasts,* Oxford Bulletin of Economics and Statistics, v. 79, 4, pp. 495-512, **TD No. 979 (November 2014).**

CESARONI T. and S. IEZZI, *The predictive content of business survey indicators: evidence from SIGE,* Journal of Business Cycle Research, v.13, 1, pp 75–104, **TD No. 1031 (October 2015).**

CONTI P., D. MARELLA and A. NERI, *Statistical matching and uncertainty analysis in combining household income and expenditure data,* Statistical Methods & Applications, v. 26, 3, pp 485–505, **TD No. 1018 (July 2015).**

D'AMURI F. and J. MARCUCCI, *The predictive power of google searches in forecasting unemployment,* International Journal of Forecasting, v. 33, 4, pp. 801-816, **TD No. 891 (November 2012).**

DE BLASIO G. and S. POY, *The impact of local minimum wages on employment: evidence from Italy in the 1950s,* Journal of Regional Science, v. 57, 1, pp. 48-74, **TD No. 953 (March 2014).**

DEL GIOVANE P., A. NOBILI and F. M. SIGNORETTI, *Assessing the sources of credit supply tightening: was the sovereign debt crisis different from Lehman?,* International Journal of Central Banking, v. 13, 2, pp. 197-234, **TD No. 942 (November 2013).**

DELLE MONACHE D. and I. PETRELLA, *Adaptive models and heavy tails with an application to inflation forecasting,* International Journal of Forecasting, v. 33, 2, pp. 482-501, **TD No. 1052 (March 2016).**

DEL PRETE S., M. PAGNINI, P. ROSSI and V. VACCA, *Lending organization and credit supply during the 2008–2009 crisis,* Economic Notes, v. 46, 2, pp. 207–236, **TD No. 1108 (April 2017).**

LOBERTO M. and C. PERRICONE, *Does trend inflation make a difference?,* Economic Modelling, v. 61, pp. 351–375, **TD No. 1033 (October 2015).**

MANCINI A.L., C. MONFARDINI and S. PASQUA, *Is a good example the best sermon? Children's imitation of parental reading,* Review of Economics of the Household, v. 15, 3, pp 965–993, **D No. 958 (April 2014).**

MEEKS R., B. NELSON and P. ALESSANDRI, *Shadow banks and macroeconomic instability,* Journal of Money, Credit and Banking, v. 49, 7, pp. 1483–1516, **TD No. 939 (November 2013).**

MICUCCI G. and P. ROSSI, *Debt restructuring and the role of banks' organizational structure and lending technologies,* Journal of Financial Services Research, v. 51, 3, pp 339–361, **TD No. 763 (June 2010).**

MOCETTI S., M. PAGNINI and E. SETTE, *Information technology and banking organization,* Journal of Journal of Financial Services Research, v. 51, pp. 313-338, **TD No. 752 (March 2010).**

MOCETTI S. and E. VIVIANO, *Looking behind mortgage delinquencies,* Journal of Banking & Finance, v. 75, pp. 53-63, **TD No. 999 (January 2015).**

NOBILI A. and F. ZOLLINO, *A structural model for the housing and credit market in Italy,* Journal of Housing Economics, v. 36, pp. 73-87, **TD No. 887 (October 2012).**

PALAZZO F., *Search costs and the severity of adverse selection,* Research in Economics, v. 71, 1, pp. 171-197, **TD No. 1073 (July 2016).**

PATACCHINI E. and E. RAINONE, *Social ties and the demand for financial services,* Journal of Financial Services Research, v. 52, 1–2, pp 35–88, **TD No. 1115 (June 2017).**

PATACCHINI E., E. RAINONE and Y. ZENOU, *Heterogeneous peer effects in education,* Journal of Economic Behavior & Organization, v. 134, pp. 190–227, **TD No. 1048 (January 2016).**

SBRANA G., A. SILVESTRINI and F. VENDITTI, *Short-term inflation forecasting: the M.E.T.A. approach,* International Journal of Forecasting, v. 33, 4, pp. 1065-1081, **TD No. 1016 (June 2015).**

SEGURA A. and J. SUAREZ, *How excessive is banks' maturity transformation?,* Review of Financial Studies, v. 30, 10, pp. 3538–3580, **TD No. 1065 (April 2016).**

VACCA V., *An unexpected crisis? Looking at pricing effectiveness of heterogeneous banks,* Economic Notes, v. 46, 2, pp. 171–206, **TD No. 814 (July 2011).**

VERGARA CAFFARELI F., *One-way flow networks with decreasing returns to linking,* Dynamic Games and Applications, v. 7, 2, pp. 323-345, **TD No. 734 (November 2009).**

ZAGHINI A., *A Tale of fragmentation: corporate funding in the euro-area bond market,* International Review of Financial Analysis, v. 49, pp. 59-68, **TD No. 1104 (February 2017).**

FORTHCOMING

ADAMOPOULOU A. and E. KAYA, *Young Adults living with their parents and the influence of peers,* Oxford Bulletin of Economics and Statistics, **TD No. 1038 (November 2015).**

ALBANESE G., G. DE BLASIO and P. SESTITO, *Trust, risk and time preferences: evidence from survey data,* International Review of Economics, **TD No. 911 (April 2013).**

BOFONDI M., L. CARPINELLI and E. SETTE, *Credit supply during a sovereign debt crisis,* Journal of the European Economic Association, **TD No. 909 (April 2013).**

CASIRAGHI M., E. GAIOTTI, L. RODANO and A. SECCHI, *A "Reverse Robin Hood"? The distributional implications of non-standard monetary policy for Italian households,* Journal of International Money and Finance, **TD No. 1077 (July 2016).**

D'AMURI F., *Monitoring and disincentives in containing paid sick leave,* Labour Economics, **TD No. 787 (January 2011).**

FEDERICO S. and E. TOSTI, *Exporters and importers of services: firm-level evidence on Italy,* The World Economy, **TD No. 877 (September 2012).**

GIACOMELLI S. and C. MENON, *Does weak contract enforcement affect firm size? Evidence from the neighbour's court,* Journal of Economic Geography, **TD No. 898 (January 2013).**

NATOLI F. and L. SIGALOTTI, *Tail co-movement in inflation expectations as an indicator of anchoring,* International Journal of Central Banking, **TD No. 1025 (July 2015).**

RIGGI M., *Capital destruction, jobless recoveries, and the discipline device role of unemployment,* Macroeconomic Dynamics, **TD No. 871 (July 2012).**

SEGURA A., *Why did sponsor banks rescue their SIVs?,* Review of Finance, **TD No. 1100 (February 2017).**