



Working Paper Series  
Department of Economics  
University of Verona

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WP Number: 25

September 2012

ISSN: 2036-2919 (paper), 2036-4679 (online)

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This version: September 11, 2012

## **Abstract**

The following paper reports the main objective and the expected outcomes of an ambitious project that aims to develop a model for the analysis of both inter-household and intra-household distribution in a life-cycle perspective. In reporting such research objectives, this analysis focuses in particular on the different methods and events that will be taken into consideration as starting point for the general project.

Keywords: demographic events, lifecycle decision, interpersonal-intrapersonal redistribution, tax spending programs.

## **1 Introduction and goals of the project**

In all countries public intervention affects income distribution and provides insurance against some negative shocks which characterize individual life. It is widely recognised (see, for example, Sandmo 1999, Bucciol and Beetsma 2010) that public policies cause both interpersonal and intrapersonal redistribution. The first type of redistribution is mainly aimed at achieving equity targets by transferring resources from rich to poor people. The second one, justified by efficiency targets or by the existence of merit goods, is aimed at smoothing consumption over time and over different states of the world. A correct assessment of redistribution requires sufficiently detailed information to allow estimation of the impact of all tax and spending programs on different individuals, according to their age and family status (Sommacal 2006,

Bucciol 2011). As such information is rarely available, the economic literature has developed tools for indirectly assessing the redistributive impact of public policies: tax-benefit micro-simulation models (see Bourguignon and Spadaro, 2006) and generational accounting (Auerbach et al., 1991) are two examples. However, the analyses carried out so far show some limitations. Most of the micro-simulation models do not assess the overall redistributive effect of the entire public budget. Moreover, they typically focus on single periods. As such, they cannot assess the intertemporal dimension of redistribution, which plays a key role when major social or economic changes are taking place (Bovenberg, 2008). On the other hand, generational accounting studies the effects of public policies in a life cycle perspective but it is unable to model individual behavioural responses to changes in policy scenarios. A further limitation of this approach is that individuals are only characterized according to age and gender.

The research project which involves a team of researcher from Verona University (Alessandro Bucciol, Laura Cavalli, Igor Fedotenkov, Paolo Perile, Veronica Polin, Nicola Sartor and Alessandro Sommacal) proposes a new approach that allows to jointly consider all tax and spending programs, including in kind transfers and the supply of public services. Moreover, in order to evaluate intrapersonal redistribution and the net fiscal position of different family types, a lifetime perspective is adopted. Starting from the framework and results of the generational accounting model proposed by Polin and Sartor in 2009 and in line with recent studies that highlight the efficiency of intrapersonal redistribution as the result of public intervention (i.e. Gomes et al., 2008), we study the effect of different policies on Italian heterogeneous individuals' life-course decisions, by means of structural behavioral models. In other words, thanks to the use of the dynamic microsimulation technique, we provide an estimate of the net balance of transfers (both cash and in kind) received and payments made to the public sector and we investigate the impact of specific tools for public intervention, paying particular attention to the family dimension. After this first stage of analysis focused on Italy, we will evaluate the implications in terms of interpersonal and intrapersonal redistribution of several policy tools on familiar choices (e.g. fertility, employment status) of at least two different Countries. This will provide the international scientific community a new instrument for the analysis of the behavior of families in several phases of their life-cycle, based on a standardized methodology, which is comprehensive enough to take all public programs into account.

## 1.1 Timeline of the research project

The development of the project will consist of two stages. The first one will mainly have a theoretical content. The objective is the development of a methodology that enables a description of the main events occurring in a family (formation process and main demographic and economic changes that occur until its extinction). The first choice to be made is whether the family or the household is taken as the base unit to investigate. In case the family is chosen, the process of formation through extinction has to be described paying attention to the relevant financial and natural occurrences (financial independence of individuals, death of family members, etc.). If the household is the base unit, one can either model the process of formation and extinction as in the previous case, or assume that a household keeps living even after the death of all its family members. In developing the methodology, the best compromise will be sought between a comprehensive description of reality and the possibility to come to measurable results. In this regard, we will start the empirical analysis employing micro data from the EU-SILC, the Community Statistics on Income and Living Conditions. The survey collects information relating to a broad range of issues in relation to income and living conditions and it is conducted by the Statistics Offices of the European countries involved in the project on an annual basis. Two different types of questions are asked in the household survey and both are useful to our goal: household questions, which cover details of accommodation and facilities together with regular household expenses (housing condition, mortgage repayments, etc.). This information is supplied by the Head of the Household; personal questions, which cover details of items such as education, work and health, are obtained from every household member aged 16 or more. Once the main events that shape a family are modelled, the determinants of its financial relationships with the public sector must be comprehensively described. These include, among others, the education received by the family members, employment status, consumption patterns as well as characteristics that concur to determine the family size (fertility). These characteristics will be first carefully described and then appropriately measured.

In the second part of the research, the methodology previously developed will be applied to Italy and to other Countries. First it will be possible to obtain empirical measures of the public intervention towards families in a number of countries and its composition: interpersonal vis à vis intrapersonal redistribution; protection against negative events, either deterministic (aging) or uncertain (disease, unemployment, etc.). In an international framework, the correct measurement of the economic and financial impact

of the diverse policy tools will provide in the future, not only the current research group, but the whole international scientific community with a new approach for the comparative evaluation of the effectiveness of a number of policy tools in achieving the pursued objective. As an example, one might be able to compare the effectiveness of different instruments aimed at increasing fertility rates, or at protecting families against the economic consequences of adverse events such as disease and unemployment. Besides improving the ability to evaluate alternative policies, the proposed methodology could also improve the description of the main economic and financial phenomena, thanks to its ability to incorporate institutional details of each system and to the comprehensiveness ensured by the adoption of the life-cycle perspective.

In this paper we focus on the first stage of the research, and in particular on the demographic events that are going to be considered for the simulation.

The remaining part of the paper is arranged as following: while Section 2 discusses the literature relevant for the project, Section 3 describes the model of interest and Section 4 presents the literature on each considered demographic event listing potential issues; finally, Section 5 concludes informing on the next steps of the project.

## 2 Literature on the Topic

Two strands of literature are relevant to the present research project. The first concerns the description of the process of formation and dissolution of a new family. The second includes the development of a number of approaches to the evaluation of the effects of public policies. Within the first strand, the starting point will be the sociological contribution of Ermisch and Overton (1985). The appropriateness of the concept of minimal household unit (minimum group of people within a household with demographic relevance) developed by Ermisch and Overton for the purposes of our research will be carefully assessed. To be more exhaustive, in this first part all the main aspects met from an individual since the beginning of the family to its end, will be considered according to the main events. As to the literature on the evaluation of the effects of public policies, this is mainly based on two alternatives. The first is the development of the generational accounting literature following the seminal paper by Auerbach, Gokhale and Kotlikoff (1991). Applications of the methodology to Italy have been provided in Cardarelli and Sartor (2000). As it is well known, generational accounting enables to calculate the net balance of transfers received and taxes paid during the entire life-cycle of an individual. This methodology does not allow to investigate behavioural responses. On the other hand, it allows a detailed computation

for all of the public interventions that play a role in determining the net balance for each individual. In other words, generational accounting seems to fit better the analysis of *income effects* than *substitution effects*. Complexity is much greater than in traditional accounting. Besides determining the amount of resources withdrawn or given out for each programme (e.g. labour income taxes, indirect taxes, health care expenditures, pensions etc.) the average per-capita balance for each of these programs, and for each type of individual (defined according to age and gender) must be estimated. The estimate is subject to the constraint that, for each of the different tax and spending programs, the sum of the amounts given/received by each type across the population equals the aggregate value reported in the general government appropriation account. This information is not available from traditional accounting or statistics. Hence, it must be obtained starting from the legal entitlements and exploiting the information coming from other sources, such as surveys and administrative data. The output of generational accounting is an estimate for each type of individual characterized by age and sex, of the present value of the sums (or of the monetary value of in kind services) obtained (in the case of public spending) or paid (in the case of taxation) to the public sector during the rest of his/her life. Of course, key variables for the determination of the result are the discount rate and life expectancy at each age. The algebraic sum of the present value of all expenditures and taxation programs provides the key indicator of the present value of net taxes(transfers, in case they are negative). The second strand of literature includes micro-simulation models, which were developed following the seminal contributions by Orcutt (Orcutt, 1957), and have by now become a key instrument for the evaluation of the incidence of public policies. Simulations are used to reproduce, given a number of assumptions, the impact of public programs involving both tax and expenditure programs on a representative sample of the population. The data typically come either from administrative data or surveys. This approach provides both a description of the net fiscal position of the base unit (individual or family) and the opportunity to simulate the effect of changes in the current tax-benefit system. A key property of these models is the ability to take into account a large number of individual characteristics and -in some cases- agents' behavioural responses. On the other hand, alternative models working on representative individuals/households (see OECD, 2005) have the advantage of simplicity but they fail to account for the complexity of real life situations and for the role of behavioural responses. A number of different micro-simulation models have been proposed. These differences have an impact on the information one can obtain on redistributive effects. The first relevant dimension is the time horizon, which introduces a distinction between static and dynamic models.

The former aim at the analysis of the current tax-benefit system or of the effect of specific reforms, at a given time. It is assumed that the number of units in the sample and their characteristics are fixed (see for example Mahler e Jesuit, 2006). Dynamic models are employed when the objective is the long-term analysis of redistribution. The level of complexity is greater for these models, which enable the analysis of the evolution through the time of the socio-economic characteristics of the population. These models, where either the cohort or the population may be dynamic, can be used to obtain an estimate of the interpersonal or intrapersonal redistributive impact of policies with long-term effects (Zaidi and Rake, 2001; Ando and Nicoletti Altimari, 2004). The model can account for behavioural responses. If this is the case, the ability to take into account substitution effects enables to perform analyses of policies (reforms) based on their impact on some measure of welfare (changes) (Immervoll et al., 2007). A limitation of the literature is its tendency to investigate only a simple programme or its reform. Until now, far greater attention has been paid to the analysis of direct taxation and monetary transfers, whereas direct taxation and in kind services have been somewhat neglected. Furthermore, micro-simulation models often raise problems of consistency between the simulation results and data coming from other sources (in particular national accounts). This is due to sample and non-sample (non-reporting and under-reporting) errors. This is a major limitation that generation accounting, by construction, allows to avoid.

### **3 Reasoning about the Model**

Considering all these relevant aspects, in order to answer our research questions, we decided to use a micro-simulation approach: precisely, the model that will be adopted is a behavioural dynamic cohort micro-simulation one and it will simulate life course events starting from a population of individuals aged 19. Moreover, the model will consider the gender specific dimension in order to be able to capture elements that are also relevant from a policy perspective (such as the gender wage gap). Given that one central innovation of the research project is following not only the individual but the whole household, another key element to be defined is the household and its duration. Actually, its definition is crucial when we want to model the interpersonal and intrapersonal redistribution. In our particular case, it starts when the individual turns 19 (so when he/she is potentially economically independent), while it ends when the individual dies (if the household is made by one single unit) or when both members of the couples die. In case of divorce another household will be generated, while in case only one of the

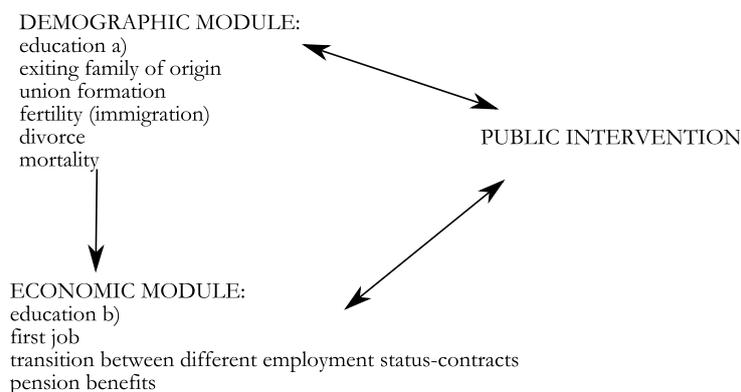


Figure 1: The sequencing of life course events

two partners dies, the other one will remain in the same household.

For what concerns the characteristics of individual life course, the model consists of a series of events, crossed in sequence by each agent in all years of his life. The events belong to two different modules, the demographic and the economic ones; moreover, a third element and its crucial relations with the features of the other two modules will be introduced: the Public Intervention. In the demographic module the following events are been included: Education, Leaving the family of origin, Union Formation, Fertility, Divorce and Mortality<sup>1</sup>; the economic module will be inclusive of Labour Supply and Transition between different employment status, but they are not considered in the present review. Note that the sequence of such events is considered as rigid in this literature. Especially for Italian young adults, similarly to other South Mediterranean countries, has been found the existence of a rigid sequencing of events -both because of social norms and because the society does not consider choices as getting married or becoming parents while studying-. For example, ending education in Italy is in the majority of the case an important and necessary prerequisite to leave parental home. Such a traditional sequence, in other words the transition to adulthood, can be schematized as follows: a) completion of education, b) start of first job, c) exit from the family of origin at the time of marriage, d) birth of first child. Figure 1 summarizes the sequencing of the mentioned life course events.

The following section is devoted to the review the literature about the determinants of the main demographic events that will be introduced in the simulation: note that the purpose of the section is providing a whole picture

<sup>1</sup>Immigration in Italy is a quite recent phenomenon and data on the second generations of immigrants -that could be assimilated with the Italian population- are not yet available: for that reason we decided not to include immigration among the events.

of life events and their characteristics: in a future step, for sake of simplicity, a selection of covariates for each single event will be proposed, together with the economic module and the econometric strategies followed in order to get the model inputs needed.

## 4 About the Determinants of Demographic Events

In this Section we present the determinants of the main events we will consider in our simulation; precisely, the focus will be on the *demographic module* composed by the following events Education, Leaving family of origin, Union formation, Fertility and Union dissolution <sup>2</sup>.

The event *education* appears both in the demographic and in the economic module: actually, as it will be shown below, depending on the way it is treated it could highlight different aspects related more to one or to the other module.

### *Education*

Concerning the event education, two are the possible questions that can be answered: connected with the demographic sphere, 1) the probability of achieving increasing levels of education (highest level of educational attainment), or more connected with the economic module, 2) the probability of remaining in education (versus the probability of entering the labour market). Given the interest in the demographic module, this section focuses on the first aspect. In addition to gender, geographical location and the level of urbanization of the area of residence (quality-environment of the living area), the importance of the educational background of parents has been considered in the analysis of education: Ermisch and Francesconi (2001) found the importance of level of education of the mother in shaping the probability of reaching higher levels of educational attainment. The level of economic well-being of the family of origin (as well as the presence of property house) has been found to be relevant only in absence of direct measures of human capital concerning the family of origin (Checchi, 2003). More recently, Sorvillo and Ungaro (2005), using parents' highest level of educational attainment as proxy for the socio-cultural level of the family of origin, were able to strongly characterize the educational choices of children. Moreover, in addition to the educational level of parents, some other studies (including the one of Ermisch and Francesconi, 2001) showed how having a mother employed in the labour

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<sup>2</sup>Note that in this setting we will not consider immigration for reasons connected with the data we will use during our simulation procedure. Regarding the event *mortality*, we will refer directly to (ISTAT) National Statistics Office mortality tables, distinguishing by age groups and gender.

market (in principle with less free time to devote to childcare) affects the likelihood of reaching further level of education.

Even macro variables may affect such likelihood: empirical analyses show that some authors, like Bozick (2009), used the local unemployment rate and the percentage of employees that require a bachelor's degree to obtain an occupation as covariates (see also Raitano et al., 2010). Despite these *innovations*, family income, parental education, maternal age, the age at last child, the fact that the individual has only one parent (in particular only the mother, Biblarz et al., 1999), the presence of step families, father involvement in every-day tasks were found to have an impact on the decisions concerning educational attainment. In addition, the number of family members, the number of siblings, the order of birth of the individual in a quantity - quality of children perspective la Becker (Booth et al., 2006, Behrman et al., 1986, Birdsall, 1991, Hanushek 1992), the owned number of books or computer (and internet access) were used as proxy for family educational level (Booth et al., 2006; Raitano and Vona, 2010). Finally and specifically for Italy, other variables related to the characteristics-quality of schools and to the presence of peer effects have been used to assess the highest level of education attained: school resources and a wide range of institutional variables capturing the degree of school autonomy, accountability, practices and variables affect the student choice, as well as the degree of autonomy in managing resources at the school level (Raitano and Vona, 2010). It has also to be considered that the probability of being parent or being in union have per se an influence on educational levels.

#### *Leaving the family of origin*

The following section -starting from studies referred to Italy- reports the determinants used in literature to analyze the event *exiting the family of origin*. The demographic characteristics usually found as determinants are age, gender (see Polin et al., 2006, Chiuri and Del Boca, 2010) and the geographic area of residence. Specifically, with regard to individual who decides whether or not to remain in the family of origin, numerous are the characteristics that have been found significant in explaining such event. Among the others, the most common are: the number of family components, the number of brothers (Aasvee et al., 2001a, Coda Moscarola et al., 2010, Chiuri and Del Boca, 2010), the presence of grandparents within the household (Chiuri and Del Boca, 2010), the fact of being still in education (Billari et al., 2001, Aasvee et al., 2001a, Manacorda and Moretti, 2005, Ward et al., 2006, Di Stefano, 2008) and the degree of self-confidence (Billari and Tabellini, 2010), the fact of having reached a high level of education (Polin et al., 2006, Billari and Liefbroer, 2007, Belloc, 2009, Jaffè and Terraz, 2009, Moscarola et al., 2010, Chiuri and Del Boca, 2010), the employment status (especially if the

individual is employed or not and -in the second case- if he/she receives any unemployment benefits (Aasvee et al., 2001a, 2001b, Di Stefano, 2008)) and the characteristics of the performed job (Polin et al., 2006). Related to the sphere of labour market, the age at first job (Billari and Tabellini, 2010), the nature of the contract for man and the working strategy for woman, so if working full-time or part-time, Aasvee et al., 2001a) have been found to have an impact on such event. Other determinants observed in the empirical investigations are income per capita (Belloc, 2009), labour income (Aasvee et al., 2001a, Polin et al., 2006), the level of wages, and - more specifically for women - the fact of finding a husband in the marriage market (seen as a substitute of men's fixed-term job) (Aasvee et al., 2001a, Moretti and Manacorda, 2005, Chiuri and Del Boca, 2010). Referring to the relevant characteristics of the family of origin, covariates of interest are the age of the parents (Manacorda and Moretti, 2005), their health status (Polin et al., 2006, Coda Moscarola et al., 2010), the fact that the house they live in is a property house, the total economic wealth of the parents (Avery et al., 1991, Haurin et al., 1993, Aasvee et al., 2001a, Ward et al., 2006, Polin et al., 2006, Belloc, 2009) also used as a proxy of resources that can be transferred directly to the sons to purchase or rent another house, the kind of job performed by the father (Aasvee et al., 2001a, Billari and Liefbroer, 2007, Belloc, 2009), the level of parental education (Coda Moscarola et al., 2010) and the (real or potential) distance between the parental home and the new one (Reher, 1998, Coda Moscarola et al., 2010). Note that the literature distinguishes between two types of material resources that families can leave to their children: transferable resources (money, housing, or various properties) and non-transferable (such as carrying out household tasks) and these last resources are lost once the individual exits the family of origin (de Jong et al., 1991, Aasvee et al., 2001a, Manacorda and Moretti, 2005, Di Stefano, 2008). A vast literature has also focused on cultural factors (Belloc, 2009, Billari and Tabellini, 2010), religion (Billari et al., 2001 while linking this event with the union formation one), social norms (Billari et al., 2001b, Billari et al., 2005, Aasve et al., 2006, Billari and Liefbroer, 2007) and individual preferences (Manacorda and Moretti, 2005): using the words of Alesina and Giuliano (2007) and Billari and Tabellini (2010), what is also important to study this event are the "family ties", the networks of kin relations that shape parents' and children's preferences. There are also external elements that can affect this transition: the most used in literature are the trends of real estates and the trend of the price of houses, seen as housing constraints (Ermish, 1999, Aasvee et al., 2001a, Giannelli and Monfardini, 2003, Ward et al., 2006, Di Stefano, 2008), but the cost of the mortgage-credit access (Aasvee et al., 2001a, Giannelli and Monfardini, 2003, Di Stefano, 2008, Chi-

uri and Del Boca, 2010) or rent (Aasvee et al., 2001a, Di Stefano, 2008), the uncertainty of the labor market and the limited opportunities in accessing the labour market the first time (Giannelli and Monfardini, 2003, Manacorda and Moretti, 2005, Becker et al., 2004), the rate of (un)employment (Aasvee et al., 2001a, Belloc, 2009, Jaffe and Terraza, 2009 for long-term unemployment, Chiuri and Del Boca, 2010), and the level wages both at national level (Di Stefano, 2008) and in the area of residence (Billari and Tabellini, 2010) are also referred to. Note that the event under investigation is closely connected with the event union formation especially in Italy (Billari et al., 2001b) and the two have often been studied together in order to provide a substantial gain in terms of knowledge of the phenomena (Goldscheider and Goldscheider 1993). For that reason we report in the following section some review strictly connected with union formation.

#### *Union Formation*

Despite it is well known in literature that cohabitation is a recent phenomenon that is spreading rapidly also in Southern European Countries and it is recognized that we are experiencing a strong postponement in first marriages, the following review considers marriage and cohabitation without treating the events as two different ones: actually, we assume that the drivers of the two are not very different, and what really makes the difference is the dependent variable while performing the econometric analysis, especially for the different consequences of marriage and cohabitation in case of dissolution. To add value to this last point, Gonzalez et al. in 2006, citing the work of other colleagues, suggested that cohabiting couples are more likely to separate in the short-term (Murphy, 2000), to remain without children (Raley, 2001) and rent a home rather than buy it (Rindfuss et al., 1990, Murphy, 2000 and Raley, 2001) with respect to married couples.

Several studies have tried to understand the determinants of the Mediterranean increasingly postponed marriages. In particular, the one of Dominguez et al. (2003) lists different perspectives from which the phenomenon has been analyzed: first, what matters other than gender, educational level or time spent in education and age are the economic barriers -such as youth unemployment (Ahn and Mira, 2001)- and the increasingly precarious job positions (Simó et al., 2005) that have been found to decrease the likelihood of unions. Furthermore, the time spent in searching the first job, the spell of unemployment (particularly for men, Ahn and Mira, 2001), the presence of temporary job, the rigidity of the real estate market (Holdsworth and Irazoqui, 2002) and the level of wealth of the family of origin (Holdsworth and Irazoqui, 2002) as well as the need of economic aids from the parents to buy a house and to provide daily needs (Tomassini et al., 2003) have been found crucial in characterizing the probability of entering a union. Another

important element is related to the opportunity cost of women, who have to face the problem of the gender division of domestic tasks in the new household: in addition, the more educated a woman is, the higher the opportunity cost of staying at home playing the roles traditionally entrusted to women is (Batalova and Cohen, 2002). Another fundamental determinant for union formation comes from a study of dynamic optimization of Montgomery and Trussell (1986) and it is the importance of finding a suitable partner (and the costs related to this search). Important -especially for cohabitation- is also the existence of social norms incorporated in the Mediterranean culture (Reher 1998; Dalla Zuanna, 2000), the existence of traditional values and mass attendance (Surkyn and Lesthaeghe, 2004). Furthermore, studies that analyze in particular the probability of starting a cohabitation in Italy among the major explanatory variables found father's and mother's educational levels (Schroeder, 2005, and -in particular for women- Rosina and Fraboni, 2004) and the (negative) experience of parents in case of divorce. In addition, the size of the place of residence has been used to assess the probability of cohabitation before marriage.

#### *Fertility*

In the following part, the studies and the most common determinants reported in the literature related to the fertility event are reported. Note that this event can be analyzed considering the different parities: actually, studying the probability of experiencing the first birth is different from studying the determinants of higher order births.

The most common variables used in literature to study the probability of becoming parent are woman's age and its square in order to capture the lower fertility rates observed at the lower and upper ends of the age spectrum because of biological constraints to pregnancy, marital status (especially for Italy it is well known that a married couple has a higher probability of having children with respect cohabitants or couples that are LAT (Living Apart Together)) and the length of marriage, the presence of siblings, the fact of being religious (Adsera, 2004, Frejka and Westoff, 2006, Philipov and Berghammer, 2007), partner's educational levels and her/his working conditions, labour income (used in order to control the existence of fertility differences among different social classes) and the background of the family of origin. In particular, for what concerns female's fertility, the employment status of women and the level of education are both found to be indicators of foregone opportunities (*the growth in the earning power of women during the last years in the developed countries is a major cause of both increase in labour force participation of married women and the large decline in fertility*, Becker, 1981) and as proxies for the ability of producing income in the long run (Kreyenfeld, 2004, Robert and Bukodi, 2005, Rosina, 2004, Mills et al.,

2008). More specifically, women's working strategies (part-time vs. full-time, Del Boca, 2003), the characteristics of the male partner (Bratti, 2003 and Cavalli, 2010), the quality of the couple (Cavalli and Rosina, 2011, Cavalli, 2010), the availability of childcare services (Del Boca and Vuri, 2007) and the proximity to mother's house have been found to be crucial in explaining the fertility levels. In Countries like Italy, the macro-region of residence (Billari et al., 2001a, 2001b) and the characteristics of the area (precisely, if the individual lives in an urban or in a rural area (Hogberg et al., 1992)) are also relevant.

In case of an analysis of the probability of reaching higher order births, in addition to the features described above, the number of children already born and their age have been considered (see in particular Brewster and Rinfuss, 2000, who underlined how the lack of services experienced with the first child has a negative influence on the likelihood of achieving higher parities).

#### *Union Dissolution*

The phenomenon of union dissolution have been studied from different perspectives; starting from a recent review on the topic (Lyngstad and Jalovaara, 2010), this part reports its main determinants in order to provide a general comprehension of the event. Spouses' ages, the length of the union, since when the partners moved in together or got married are considered the basic time dimensions of union dissolution; particularly, age at marriage is consistently found to have a strong impact on the propensity to separate or divorce, with lower ages at marriage being associated with higher risks of marital disruption (Teachman, 2002). The research suggested that the association can be partly explained by other confounding factors, such as parental divorce and low educational attainment (Kiernan, 1986). The rates of dissolution have also been explained considering the kind of union -if marriage or cohabitation- and results state that the probability of dissolution is generally higher for cohabitants than for married couples, and this is true even if the partners have common children (Andersson, 2002, Andersson and Philipov, 2002, Heuveline et al., 2003, Manning et al., 2004, Wu and Musick, 2008). Other researches studied union dissolution taking into consideration the existence of pre-marital cohabitations (Hoem and Hoem, 1992, Hall and Zhao, 1995). Concerning every-day life, the level of satisfaction for every-day life (Polin et al., 2008) and relation has been found relevant (especially considering the domestic division of tasks (Presser, 2000) or the division of duties related to childcare activities; in other words father's involvement (Katzev et al., 1994)). Regarding the characteristics of the partners, educational attainment of the two and the potential interaction effect between the two as well as the employment status (taking especially into consideration gender differences) and (Polin et al., 2008) income affect the probability of

union dissolution (see for example Becker et al., 1977, Bukodi and Robert, 2003, Chan and Halpin, 2002, Henz and Jonsson, 2003). Children are also considered an important determinant of (non) union dissolution: earlier contributions usually found that having common children decreases the risk of divorce, at least when their number is limited to the usual low parities (Andersson, 1997). Despite this element, the effects of children on the probability of ending a union are different depending on the considered Country: referring to results reported for the United States, it seems that couples with only one child have a lower risk of divorcing, whereas having more than one child has the opposite effect (Lillard and Waite, 1993). Other studies, using similar methods have concluded that second or later births reduce the risk of divorce in Italy and Spain, while in Denmark, any birth increases the risk of divorce (Coppola and Di Cesare, 2008, Svarer and Verner, 2006). The gender of children has found to have effect on such probability as well: a famous study from the United States reported that the divorce rate also depends on the gender composition of couple's children: the risk of divorce was found to be lower for couples who had only male children than for couples who had only girls (Morgan et al., 1988). Finally, values and religiosity have been considered as relevant in explaining union dissolution: religious views on marriage and divorce may deter individuals from dissolving their unions directly, but there may also be more indirect pathways of influence involving social and ideological factors (Lehrer, 2004, Brown et al., 2008).

Table 1 reports the most widely used econometric strategies and covariates for the study of the demographic events of interest.

<b>Event</b>	<b>Proposed Econometric Strategy; Kind of dataset</b>	<b>Most used Covariates</b>
Education	Econometric Estimates; Cross-Sectional Data	gender, area of residence, presence of only one parent, parents' level of education, family income, number of siblings, internet access
Leaving family of origin	Econometric Estimates; Panel data	age, gender, area of residence, number of family members, family income, father's employment status, employment status, labour income
Union formation	Econometric Estimates; Cross-Sectional Data	age, gender, area of residence, family income, parents' level of education, highest level of educational attainment, employment status, labour income
Union Dissolution	Econometric Estimates; Cross-Sectional Data	age, gender, presence and number of children, highest level of educational attainment, employment status, labour income
Fertility	Econometric Estimates; Cross-Sectional Data	age, gender, area of residence, highest level of educational attainment, employment status, labour income, partnership status, parity
Mortality	Transition Matrices; National Statistic Data	(specific rates for gender and area of residence)

## 4.1 Next Steps of the Project

Given that the main aim of the project is the development of a model for the analysis of both inter-household and intra-household distribution in a life-cycle perspective, once the transition probabilities of the different demographic and economic events will be computed and the technical simulation will be completed, the assessment should be as comprehensive as possible with respect to the number of tax-benefit programs involved, by allowing in the mean time for heterogeneity across households. For that reason, note that the tax-benefit relationship with the public sector will be central in our research: an analysis that uses directly information taken from the surveys (e.g. income taxes paid) would prevent the investigation of the impact of policy reforms on these variables, so at least some tax-benefit programs should (and they will) also be micro-simulated.

Within this general objective, further steps of the study should also include: 1) behavioural responses by the household, possibly related to labour supply and fertility decisions; 2) the assessment of the effectiveness of public sector intervention in protecting against specific risks and the investigation of how this is related to the characteristics of the household; and 3) international comparisons (comparing Italy with at least two other European Countries).

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