Micro-determinants of childlessness in Europe: a cross-gender and cross-country study

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Abstract:
Literature suggests that the factors influencing childlessness are somewhat different from those affecting low fertility in general, but it is not clear how childlessness is associated with individual characteristics and how it spreads across social classes. This study is the first one analysing micro level determinants of childlessness in a plurality of countries (Eastern, Northern, Central and Southern Europe), characterised by diverse socioeconomic and value background, different welfare regimes and varying prevalence of childlessness. The originality of this paper lays in the approach: studying the determinants of childlessness in a gender and a life course perspective (at ages 30-39 and 40-49). Moreover, we seek to identify the factors associated with persistency regarding the decision to remain childless. Our results show commonalities in the determinants of women's and men's childlessness, as are the factors behind postponement and definitive childlessness. Also country-specific effects are analysed.

Keywords: Childlessness, Childlessness micro-level determinants, Low Fertility, European Countries, Multinomial Models

Acknowledgement: The research leading to these results has received funding from the European Union's Seventh Framework Programme (FP7/2007-2013) under grant agreement no. 320116 for the research project FamiliesAndSocieties.

Contents

1. Introduction

Europe's fertility decline has been determined by a decrease in the number of large(r) families, and by a sharp rise of childlessness (Balbo et al. 2013). At first glance one might expect that higher fertility rates correspond to lower levels of childlessness and lower fertility rates to higher levels of childlessness but in fact the story is much more complicated: higher- and lower-fertility countries do not differ systematically in their childlessness levels (Sobotka 2013). For example, Hungary is characterized by low levels of fertility and at the same time by low levels of childlessness (with a "lowest low" TFR of 1.34 and a rate of 7.8% childless women at age 40 born in 1960). Countries with similar levels of completed fertility can be characterized by different proportions of childless women (e.g. Austria and Spain) (OECD 2011). The patterns suggest that the factors influencing childlessness are somewhat different from those concerned with low fertility as a whole, but a comprehensive theory of childlessness is not well-developed yet and it is not clear how childlessness is now associated with individual characteristics and how it spreads across social classes. Only in the Anglo-Saxon countries there is a long tradition in this field, while in Southern and Eastern Europe studies are few and fragmentary and they are usually focused only on women's characteristics and behavior.

The trends in the prevalence of definite childlessness are remarkably similar across European countries: a peak in childlessness rates for the 1880-1910 birth cohorts, a more or less continuous drop across the 1910-1945 birth cohorts, and a steady rise across the cohorts born after the Second World War (Rowland 2007). The lowest proportion of childless women indeed are observed among the cohorts of women born after the war (1945-49) in most Countries, while higher levels are usually registered both among the older and the younger cohort.

Permanent childlessness levels have recently increased across generations in most European countries, with the exceptions of Denmark, Sweden, Latvia, Russia and Slovenia (Sobotka 2009; Miettinen et al. 2015). Childlessness levels at ages 40-44 remains low ($\leq$ 10%) in most Eastern European Countries - as Bulgaria, the Czech Republic, Estonia, Hungary, Lithuania, Poland, Portugal, Romania and Russia - moderate (11-15%) in France, Belgium, Georgia, Germany, Norway, Slovak Republic, Slovenia, Sweden, and the US, and high (around 20%) in Austria, Italy, Finland, the Netherlands and the UK. Male lifetime childlessness is increasing, even more: we observe the highest rates (above 23% among men aged 45-49) in Finland, Italy, Germany, the UK and the Czech Republic.

In the last decade, most European Countries have experienced also a remarkable rise in "temporary" childlessness levels at the age of Thirty almost everywhere (Miettinen et al. 2015): with a regional variability from 10% - again in most Eastern European Countries - to over 40% (as in Portugal, Ireland, Italy, The Netherlands, Finland And Austria). High levels are observed surprisingly also in Hungary (around 35%) that differs enormously from the rest of Eastern Countries (Miettinen et al. 2015).

In the last decades, the spread of the phenomenon is accompanied by attitudes and values change as in many countries not having a child is now acceptable and even considered the best option (Salles et al. 2010; Rossier et al. 2011, Sobotka and Testa. 2008). However, the choice of remaining childless mostly is not a decision for or against parenthood, but rather a process in which ambiguity plays a role. Voluntary childlessness seems less important than expected in Europe: the New Eurobarometer data show that the proportion of women aged 18-40 who do not have children, do not want to have children in the future, whose personal ideal number of children is zero are remarkably small: 3% on average (Miettinen and Szelma 2014). Once again there is a certain degree of cross-country variability, but only in the two German-speaking countries the proportion is around 6%. Among men voluntary childlessness seems slightly more spread on average (4%), but with a higher degree of variability (between 1% of Lithuania, up to close 16% of the Netherlands).

The negative association between cohort completed fertility and permanent childlessness has become stronger over cohorts, suggesting that as fertility drops, the relative impact of childlessness on cohort increases (Miettinen et al. 2015). If childlessness has become a growing component of fertility decline, it is worth while studying its individual-level determinants in Europe. This paper focuses on the micro-level or individual determinants of childlessness among women and men across selected European Countries. In this Deliverable, we are interested to investigate the association between some individual characteristics (as marital and socioeconomic status) and the probability of being childless in a plurality of European Countries, comparing men's and women's, in order to envisage possible different diffusion mechanism by gender.

The first part of this Report is aimed at pointing out common determinants of childlessness in a selection of European Countries, belonging to Northern, Central, Southern and Eastern Europe, having both relatively low and high level of childlessness, having diverse socioeconomic background and belonging to different welfare regimes. Previous findings seems to be strongly country-dependent and therefore it is useful to identify commonalities.

As far as we know a similar cross-country comparison on childlessness has never been conducted before.

The second aim of this paper is to delineate the profiles of childless women (and men), distinguishing between those who intend to have a children in the future and those who seem to be determined to remain childless permanently, and to contrast them to fathers (and mothers), used as a control group. It seems sensible to hypothesize that some variables are associated to childlessness similarly for both men and women (e.g. number of siblings), while other can affect the probability of being childless in a different way by sex (e.g level of education). Moreover, in some countries, we investigate the main reasons leading to childlessness by focusing on how voluntary childlessness can be associated with differences in value orientation (e.g. in terms of religiosity, or traditionalism).

2. Background

2.1. Previous findings

2.1.1 Determinants of childlessness and voluntary childlessness among women

Childlessness is a phenomenon characterised basically by a non-event. Therefore it is necessary to study it at a cohort level with a specific reference to a certain age. Childlessness may include a variety of situations, with different implications for the understanding of reproductive strategies (De Rose, 1996; Houseknecht, 1983). A first basic distinction must be drawn between women (and men) who voluntarily refuse parenthood and those who are unable to have children (Bloom & Pebley, 1982). In practice, however, the distinction is much more complicated. Many people delay parenthood to the point when it becomes unlikely, or impossible, in which case voluntary postponement transforms into involuntary childlessness (Rowland 1998).

This brings to the fore the importance of the temporal dimension in this type of study and the useful distinction between *temporary* and *permanent* childlessness (Bloom & Pebley, 1982). The different biological physiology between men and women however makes more difficult to determine the reproductive age limit for men than for women, since the former ones usually have a longer reproductive life. In addition, the boundary between choice and constraint may also be indistinct in many cases. For instance, failure to form a union may depend on personal choices (individuals may have lower preferences towards family life) or on circumstances (inability to find a suitable partner), or a combination of both.

It is not easy to identify the individual determinants of this behavior: on the one hand data specifically collected to assess when remaining childless is a voluntary choice are rare and fragmentary (usually qualitative studies), on the other hand predictors on childlessness in general seem to depend on the context and time, and results are not always consistent. Further research is necessary to understand whether in European societies childless women (and men) are still strongly characterized by a different socioeconomic background, or – as in a typical diffusion process – individuals are less and less select as childlessness spreads.

Hakim (2002) finds that the European voluntary childless are distinctive group in terms of attitudes and values, but far less so in terms of social and economic characteristics (Hakim 2002). In other studies, however, education, social class and employment status seem to be important determinants for childlessness, irrespective of the partnership status. Usually childlessness is associated with higher levels of female education (Bachu 1999; Biddlecom and Martin 2006; Keizer, Dykstra et al. 2008; Kneale and Joshi 2008), but some recent studies give controversial results (OECD 2011). For instance in Norway and Denmark in the early cohorts highly educated women remained childless most frequently; in later cohorts, women with low education are those who are more likely to remain childless (OECD 2011). Two studies from Hoem et al. (2006) and Neyer and Hoem (2008), cast doubt on the assumption that higher education per se must result in higher childlessness: several factors – such as the field of education and the institutional context – may influence the relationship between education and childlessness. In the book Demographic challenges for the 21st Century, Neyer and Hoem (2008) compared women's childlessness by both educational level and occupational field, showing that the latter is often more important for explaining childlessness. Women in the arts and humanities for instance are more likely to remain childless while women employed in care work are least likely to remain childless. This may partly be due to a selection effect e.g., stemming from personality types, which are known to affect fertility behaviour (Jokela & Hintsa, 2010). However these associations also vary by country: the differences between occupational fields were much higher in Austria compared to Sweden (Neyer & Hoem 2008).

The role of household income, too, is ambiguous: in certain studies it seems to have a markedly positive effect on voluntary childlessness (Abma & Peterson, 1995; Bloom & Pebley, 1982), whereas in others its impact is modest (Heaton & Jacobson 1999, Hakim 2005). According to Gonzáles and Jurado-Guerrero "a woman is more likely to exit childlessness, if she lives in a male-breadwinner couple (i.e. he employed, she economically inactive) as compared to a dual-earner couples, regardless of the women's personal income.

However, women with a high income are also more likely to become mothers. In addition, if the couple owns their home, women are also more likely to have a first child" (2006:336) and "a number of socio-economic conditions have to be fulfilled in order to have a first child: to be out of school and to be in a partnership" (2006:341).

With regards to values childless women are usually found to have greater gender equity within marriages, to be less traditional and non-religious (Heaton et al. 1992; 1999, Hakim 2005, Mencarini and Tanturri 2008). With regard to personality traits they seem to be less conscientious but more neurotic (Jokela et al. 2011).

Early life-course experiences are found to have also a role among the micro-factors affecting childlessness: indeed being an only child, remaining single or marrying late or having experienced marital disruption are among the significant factors enhancing the odds of remaining childless (Kiernan 1989, Bloom & Pebley 1982, Abma & Peterson, 1995; Abma & Martinez, 2002, Murphy and Wang 2001, Mencarini and Tanturri 2006).

It is also very interesting to distinguish possible pathways leading to childlessness: few studies show that the same outcome (childlessness) can be the result of variegated life courses and multifaceted experiences (see for instance Tanturri 2006, Mynarska et al. 2013, Keizer, Dykstra & Jansen 2008).

A growing interests in literature is devoted to study socioeconomic determinants of childlessness in other European Countries (Begall and Mills 2013) as well as among couples and men (Waren & Pals 2013, Parr 2010), but an organic study studies on micro-determinants of both permanent and temporary childlessness and on both voluntary and involuntary childlessness in a plurality of context is lacking.

2.1.1 Determinants of childlessness and voluntary childlessness among men

Men's circumstances and attitudes are likely to form an important part of the explanation for childlessness among women (Parr 2007), but only limited studies have been dedicated to investigate the profiles of childless men and sometimes only incidentally (Perr 2007, Weston & Qu, 2001 on Australia; Kiernan 1989, McAllister and Clark, 1999 on Britain, Tanturri 2010 in Italy). As far as we know, no other comparative studies on men determinants of childlessness have been conducted.

Voluntary childlessness is generally higher among men than among women, in all countries (Hakim 2005, Miettinen and Szalma 2014). Despite the fact that childbearing generally has a greater impact on women's lives, women seem to be more keen on having children. However, women's aspirations to become mothers might be frustrated by men's attitudes, whilst in

other cases other women's attitudes to having children tend to follow those of the reluctant men in their lives (Cannold 2004). For instance, in Italy it has been found that differences of opinion between partners are a significant reason for forgoing parenthood intentionally (Tanturri and Mencarini 2008), even if a more recent longitudinal study (Testa, Rosina and Cavalli 2011) shows that the inhibiting effect of partners' disagreements on couple's pregnancy is relevant only among couples who have already two or more children.

Studies carried out on men show that childlessness determinants partly differ between men and women, but also across countries. Family disruption or celibacy is a common cause for not having and not willing to have children for both men and women, as well as secularisation and anti-traditionalist attitudes. It seems particularly interesting to identify which features voluntary childless men and women have in common, and if it is true in any macro context. For instance: union formation and occupational variables are strong later life predictors of whether a man is childless, but the direction of the association is country dependent. In Britain the most educated men and those in professional occupations were more likely to be childless (Kiernan 1989, Hakim 2005), while in Australia and in Italy the opposite is true (Parr 2010, Tanturri 2010). In the US, higher education (and more generally other variables reflecting economic status) is not a significant predictor of childlessness among men, while it increases the probability to be childless among women (Waren & Pals 2013). Similarly in Italy, voluntary childlessness among men seems to be linked mainly to poor education, poor health and worse social status, while among women the opposite is true (Tanturri 2010). Similar results have been found from several other countries (Barthold, Myrskylä, & Jones, 2012; Nettle & Pollet, 2008).

Father's and mother's occupations, the type of schooling and birthplace are important early life-course variables predictors of whether a man is childless in later life, in Australia (Parr 2007).

In a study of pathways into childlessness by Keizer, Dykstra, & Jansen, (2008), large cross-sectional survey data (response rate 45%) from the Netherlands Kinship Panel Study (NKPS) was analysed. The results showed that highly educated women but not men were more likely to remain childless. Women who had no breaks in their employment were less likely, whereas men were more likely to enter parenthood. Remaining without a partner for a longer period increased childlessness in women and even more so in men. The study concludes that "men's childlessness seems to be shaped primarily by the circumstances of their marital career" and that union formation should be taken into account when analysing reasons for childlessness.

Voluntary childlessness in Southern and Eastern Europe, represents a relatively new behaviour. If so childless men could be considered cultural 'forerunners' in a context characterized by relatively high values of family life and children, low levels of gender equality within the family and also by inadequate opportunities for combining childrearing and work career. It is therefore important to understand who these men are. Do they differ in terms of background variables? Or rather in terms of entry into unions? Do these men manifest less traditional value orientations? The study carried out by Tanturri (2010), on the Italian variant of the GGS, resulted from the prospective and retrospective survey conducted by the Italian National Statistical Office (ISTAT), called Family and Social Actors. Results show that the determinants of childlessness among men and women partly differ. In particular, voluntary childlessness among men seemed to be linked mainly to poor education, poor health and worse social status (e.g. the unemployed). Conversely, women with a university degree and a managerial position were more likely to be voluntary childless. Therefore, voluntary childlessness could spread in a different way across social classes: it might become more and more common among both "power women" and "unsuccessful men". The implications for couples' fertility would vary according to the type of assortative mating. Moreover, not surprisingly, couples' fragility and permanent celibacy are still important factors associated to childlessness regardless gender, as well as secularization and anti-traditionalist attitudes (Tanturri, 2010).

A Finnish survey on fertility intentions was the Social Relationships and Well-being Survey, conducted in 2008 among 25-44-year-old childless or one-child men and women (response rate 42%). Miettinen (2010) used regression analyses to study childless respondents (N=1,244) finding two types of intentional childlessness. Voluntarily childless people who do not intend to have children and prefer life without children, and relinquished parents who would have liked to have children but no longer intend to have any. Childhood characteristics predicted voluntary childlessness more, while socioeconomic circumstances and lack of a suitable partner better explained relinquished parenthood intentions.

A key question is whether the same characteristics may distinguish childless men and women respectively from fathers and mothers. Characteristics distinguishing childless men (and the different categories among them) from fathers can only partly be hypothesized from past studies, therefore it is interesting to focus on men and compare their profiles with those of childless women, in a plurality of contexts, with a common approach. According to the previous findings, it seems that the spread of childlessness among men has its own

determinants and peculiarities, therefore integrating men in the analysis on childlessness is necessary to forecast the spread of the phenomenon across social classes.

2.2. The context

In this section we present some characteristics of the context we are going to analyse: fertility patterns and basic socioeconomic characteristics will be sketched.

2.2.1. Bulgaria

The transition to democracy and to the market economy, together with the cancellation of the universal State social support system legacy of the communist period, had deep and long effects on the society, including on fertility behavior.

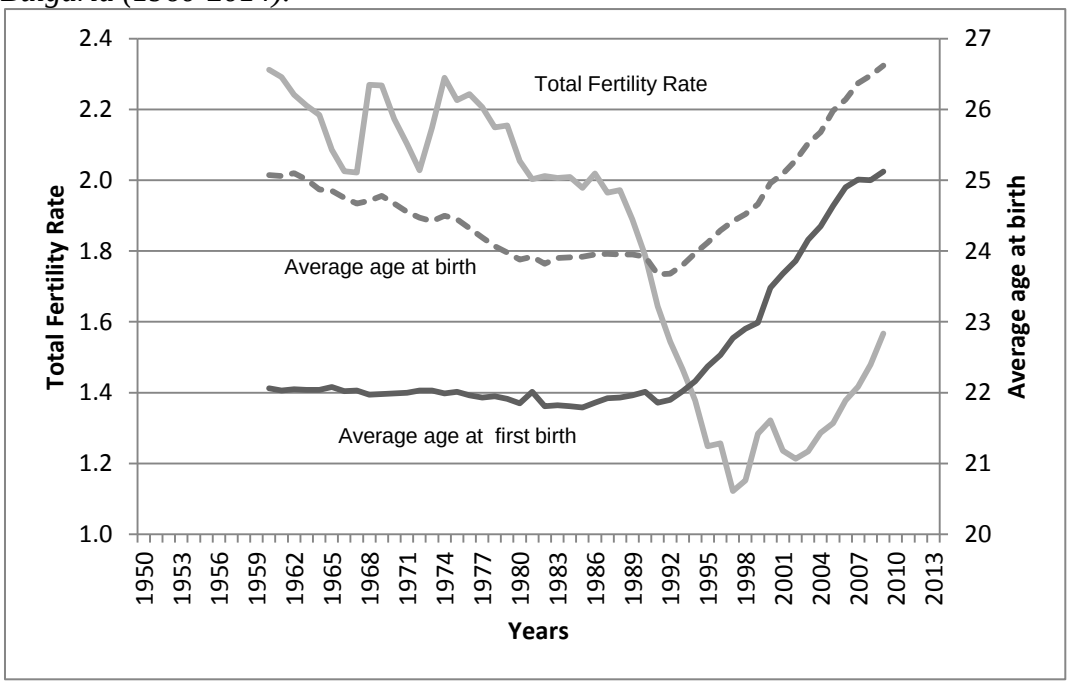
Before the fall of communism, fertility trends in Bulgaria were stable and characterized by a nearly universal entry into parenthood, dominance of a two-child family model, an early start and early end of childbearing, stable mean ages at entry into childbearing and marriage, and low percentages of non-marital births. During the 1990s and in the first years of the new century, we observe a marked, rapid decline of fertility rate (Fig. 1). In Bulgaria, as in other Eastern European countries, the age at first marriage and at first birth began to rise, although these indicators are still lower than in Western Europe. The age at first birth among Bulgarian women increased with 2.6 years between 1970 and 2005, from 22.1 to 24.7 years. In the same time period, an even more pronounced increase of 4.4 years occurred in the mean age at first marriage, from 21.4 to 25.8 years. The number of children born in couples declined steeply up to 1.1. children per woman in 1997. Then TFR started again to grow and now is about 1.6 (Burkimsher, PAA, UNECE) (Fig. 1).

This evolution shows that in 1970, in average, women became mothers after 0.7 years from marriage, whereas after 35 years, there is a 1.1 years of time lag between the first birth and first marriage (Sobotka and Toulemon, 2008).

Bulgaria is the country with the largest proportion of married women. For the cohort born in 1965, the estimated proportion of ever married by the age of 50 is above 90%, whereas in countries like France and Sweden, it did not reach the level of 75%. The phenomenon of cohabitation became visible in the second half of the 1990s, after some years of transition to a new political regime. The average family size among the cohorts who completed their fertility career around the year 2000, ranges from one and a half to two children, with considerable variations across the European regions. Bulgaria is the country with the highest weight of

two-child families, with numerous one-child families, but few large families and few childless women (Frejka, 2008).

Figure 1: Total fertility rate and average age at birth (all births), and at first birth in Bulgaria (1960-2014).



Source: Human Fertility database

Women's employment rate is higher compared to the OECD average, as the maternal employment on the whole (Tab. 1). This is typical in Former-Communist countries where women had started to be massively part of the labour work force before than in Western Europe, thanks also to a large and free provision of childcare. However we notice that maternal employment is low (and remarkably lower than the OECD average) for mothers with children under three, and for those having three children. This of course reveal a picture of general difficulties in work-life balance.

Table 1: Female employment (25-54) and maternal employment rates by number of children under 15 and by the age of the youngest, Bulgaria. 2011

	Female employment rate (25-54 age cohort)	Maternal employment rate - child under 15	Age of youngest child			Number of children		
			< 3 years	3-5 years	6-14 years	1 child	2 children	≥3 children
Bulgaria	73.98	66.57	28.99	67.37	76.93	69.50	63.49	33.45
OECD average	70.67	65.23	52.16	65.65	72.58	69.16	65.63	50.52

Source: OECD - Family Database (around 2011)

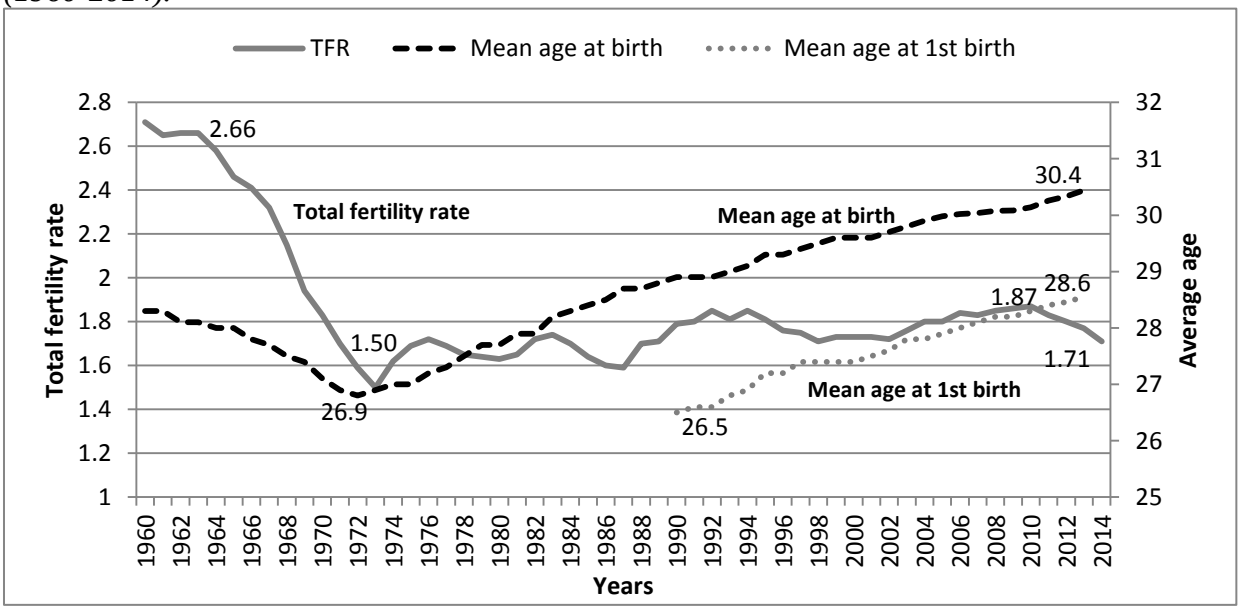
2.2.2. Finland

Compared to many other countries in Europe, fertility in Finland as well as in the other Nordic countries has remained rather stable on a relatively high level. After the WWII and a short baby-boom period, fertility decline was rather steep, reaching the lowest level of 1.5 in 1973. Since that, fertility rose again, and stabilized at around 1.7-1.8 for over three decades. In 2010, fertility reached its highest level since the beginning of 1970s, being 1.87. Apparently, due to the economic crisis in 2008-09 and increasing unemployment and economic instability in the first half of 2010s, fertility has fallen and was 1.71 in 2014 (Statistics Finland 2015a).

The postponement of parenthood has been a prominent trend, and the age at first birth has risen from around 26 in the beginning of 1980s to 28.6 years in 2013. Among the highly educated women the age at first birth is even higher, around 30 years. During the past ten years the increase in age at first birth has been slowing down, however. Increasing age at first birth has meant that a considerable proportion of first births are to women aged 35 years or more. In 1985, less than 5 percent of first-time mothers were aged 35 or more, and the share of first-time mothers who were 40 or older was 0.5 percent. In 2013, 35 mothers aged more than 35 years constituted 11.7 percent of all first-time mothers, and the share of more than 40-year old first-time mothers was 2 percent. Of all births in 2013, 33.2 percent occurred to women who were 30-34-years old, 16.6 percent to women aged 35-39 years, and 3.6 percent to women aged 40 or more (Statistics Finland 2014).

Although the Nordic countries were forerunners in the spreading of unmarried cohabitation, the proportion of children born to unmarried couples started to increase in Finland only after the beginning of 1970s, from around 5 percent in 1970 to well-above 30 percent in 1990s. Since the turn of the new century, the proportion of children born to an unmarried mother has stabilized at a little over 40 percent – considerably lower level than in the other Nordic countries (in which their proportion exceeds 50 percent; Eurostat 2015). The share of out-of-wedlock births is higher among first births, above 55 percent (Statistics Finland 2014).

Figure 2: Total fertility rate and average age at birth (all births), and at first birth in Finland (1960-2014).



Source: Statistics Finland

The spreading of cohabitation has resulted in that a clear majority, nine out of ten unions in Finland start today as a consensual union. Although cohabiting unions occur typically among the young adults, the proportion of persons living in a cohabiting union rather than in marriage has increased also among older persons. In 1990, 20 percent of 20-34-year-olds were living in a cohabiting union (and 35 percent in marriage), among 50-64-year-olds, the proportion of persons living in a cohabiting union was 4 percent (and 68 percent were married). In 2013, almost 30 percent of 20-34-year-olds were cohabiting (and 22 percent were married); among 50-64-year olds, 11 percent lived in a consensual union, and 56 percent in marriage (Statistics Finland 2015c and 1992).

Although the proportion of children born to unmarried couples has increased, many marry after the birth of the first child, and most children live in a family with two married parents. Of all children (children below 18 years), 65.5 percent live in a family with married parents, 17 percent in a family with cohabiting parents and 17.6 in a single-parent family (15.4 percent with single mother, and 2 percent with single father) (Statistics Finland 2015b).

Divorce is relatively common, and after a new legislation on marriage (and divorce) came into force in 1988, the number of divorces increased considerably. Total divorce rate rose to 0.50 and has remained around at that level – surpassing thus many other countries in Europe (Statistics Finland 2015).

Since mid-1970s, the labour force participation rate among Finnish women in age group 20-44-years has fluctuated around 80 percent. The employment patterns of men and women are

very similar: women also tend to work full-time (with only slightly fewer hours per week than men do), and to stay in the labour force continuously until retirement age, just taking family leave when they have young children (Rissanen 2001). Maternal employment is on a higher level than European averages, although after the introduction of the Child Care Leave scheme at the beginning of 1990s (parent can stay at home to take care of a below-three-year-old child), maternal employment among women with less than 3-years-old children decreased. Maternal employment is also on a lower level in families with three or more children, yet still considerably above the OECD average. After parental leave period, majority of the Finnish women return to full-time work. Part-time work is still relatively rare, and only in 10 percent of families with children aged 3-14 years the mother is working part-time (OECD 2013a). Families usually are dual breadwinner households, in which partners are expected to share the provider and caretaker roles.

Table 2: Female employment (25-54) and maternal employment rates by number of children under 15 and by the age of the youngest, 2011.

	Female employment rate (25-54 age cohort)	Maternal employment rate - child under 15	age of youngest child			number of children		
			< 3 years	3-5 years	6-14 years	1 child	2 children	≥3 children
Finland	80.37	77.16	51.80	76.00	76.04	76.65	82.28	68.97
OECD average	70.67	65.23	52.16	65.65	72.58	69.16	65.63	50.52

Source: OECD - Family Database (around 2011)

As in the other Nordic welfare states, the public spending on families in Finland is considerable. In 2011, the government expenditure on families reached 3.2 percent of GDP (OECD-average 2.6%). A higher proportion is spent on services than on cash benefits. Tax breaks towards families have only a marginal role in the Finnish family benefits system (OECD 2013b). Children's day care and preschool education, child protection and institutional care constitute a lion's share of the expenditure on services. Most important cash benefits in terms of total expenditure are child benefit, parental leave allowances, and benefits paid to single parents.

In Finland, the state promotes women's employment and provides family leaves, services and benefits to alleviate the double burden of parents. After the child birth, parents can stay on a paid parental leave until the child is about 11 months old. Large part of the leave can be shared between the parents as they wish although mothers tend to use most of the leave. After parental leave period, parents can stay at home to take care of their child until he/she is three years old (Child Care Leave), and receive a flat-rate (low) compensation for this time. After

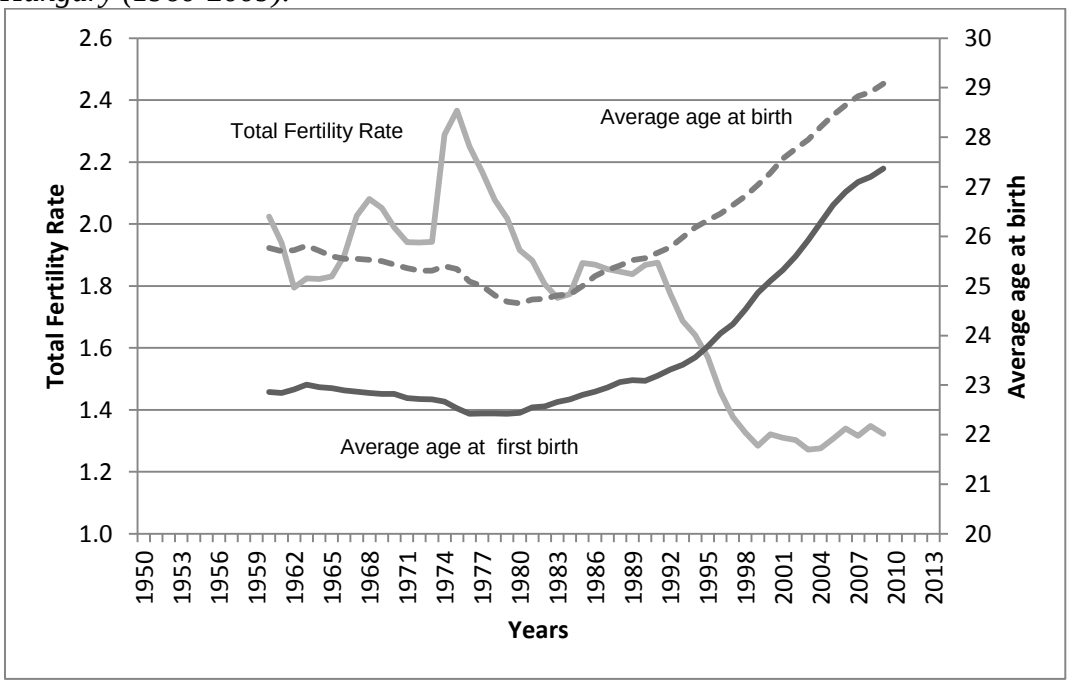
the leave, a parent has a right to return to the previous job. Many parents (mostly mothers) stay at home until the child is about 1.5-2 years old (Lammi-Taskula & Salmi 2013). After the parental leave, or if the family takes (part or all of) child care leave, families have a right to a (full-time) day care place for their child, and to pre-school education for 6-year old children. Day care fees are heavily subsidized, and pre-school education is free. Currently, municipal day care supply meets almost completely the demand. Due to the child care leave, the enrolment rate of 0-3-years-old children in public day care in Finland is less than 30 percent, clearly on a lower level than in the other Nordic countries, or EU27 average. Among 3-5-year-old children 75 percent are enrolled in public day care (OECD 2013).

Despite of the marked similarity of the educational and employment patterns among men and women, the division of unpaid work remains gendered in Finland: a larger share of the housework still falls on women (more than 60%, according to a recent Time Use Survey, Miettinen & Rotkirch 2012). Fathers' participation in child care has increased gradually although the majority of the parental leaves are still taken by the mother. During the past decade, however, the state has actively promoted fathers' uptake of leaves.

2.2.3. Hungary

In the period following the second world war, Hungary was the first country in Europe where total fertility rate sank below replacement level (in 1962), and today (2013) it is still among the lowest in Europe; but the period defined by the two dates is characterized by both decreasing and fluctuating trends (Szpeder forthcoming) (Fig. 3). Hungary, is a very low fertility rate country, that is below 1.5 births per woman from the mid-1990s onwards. Hungary is characterized by low levels of fertility and at the same time by low levels of childlessness (with a "lowest low" TFR of 1.34 and a rate of 7.8% childless 40 years old women born in 1960). The postponement of childbearing transition is also in force: the increase of age at first birth is steep since the 80s (Fig. 3). The interpretational framework for understanding fertility trends is provided by the profound structural changes and social policy interventions. The lowest points of fertility change are obviously connected to the two changes of regime (the transition from capitalism to communism and back to modern capitalism), or more precisely, the immanent mechanisms of newly introduced systems (Szpeder fortcoming).

Figure 3: Total fertility rate and average age at birth (all births), and at first birth in Hungary (1960-2009).



Such a low level of fertility seems to be a reflection of constrained individual agency and weak capabilities for having and caring for children, linked to economic uncertainties and incoherence of public versus private sphere gender equity (Hobson et al. 2014). If women employment is close to the OECD average, the level of maternal employment is markedly lower (Tab. 3). What is impressively lower than the average is the level of employment of mothers having at least a child under three. Moreover, women's employment decline sharply with the number of children (Tab. 3). In Hungary the work and life balance is clearly arduous.

Table 3: Female employment (25-54) and maternal employment rates by number of children under 15 and by the age of the youngest, Hungary. 2011

	Female employment rate (25-54 age cohort)	Maternal employment rate - child under 15	Age of youngest child			Number of children		
			< 3 years	3-5 years	6-14 years	1 child	2 children	≥3 children
Hungary	66.62	51.67	5.97	61.99	71.39	58.60	49.45	20.59
OECD average	70.67	65.23	52.16	65.65	72.58	69.16	65.63	50.52

Source: OECD - Family Database (around 2011)

2.2.4. Italy

The Italian case has been amply studied in demographic literature, as a combination of very low and late fertility. After 1964, fertility started to decline and since mid-Seventies period total fertility rates have fallen below replacement level. Italy was one of the first country in

the world to reach "lowest-low" levels (TFR=1.19) in the mid-nineties (Kohler et al., 2002). Since 2000, a slight recovery has brought the Italian TFR close to 1.46 children for woman. The scholars described it as a new spring for the Italian population (Billari and Dalla Zuanna 2008). However the economic recession after 2009 called a halt to this positive trend and fertility stalled around 1.4 children per woman in the last years, with a marked decrease in the number of births (Istat 2014a).

The postponement transition seems to be unstoppable and spread all over the country: the age at first birth is 32.1 among the Italian women (excluding the foreigners) and it has increased of 3 years in the last decade). The percentage of birth by over-30-year-old mothers, among the Italians, are close to 70% and among them 8.7% are born after the age of forty, percentage that duplicated in one decade.

In the last decade some signs of novelty in families structures have been also mirrored in the reproductive fields. The proportion of out-of-wedlock births has grown dramatically in the last decades, in parallel with the diffusion of cohabitation *more uxorio*. In 1995 less than one birth out of ten was from unmarried parents (8%), while in 2013 the proportion have triplicated, as more than one birth out of four is out-of wedlock. In the North the proportion is close to one third, even higher in big cities. The proportion of births born at least by a foreign[1] parent raised from 6% in 1999 up to 20% in 2012, of whom 15% born by both foreign parents. The young age structure of the migrants makes their contribution to the natural dynamic more important than their total prevalence (less than 7%), and in some Northern Provinces their contribution to births counts for more than 30%.

The socio-economic context

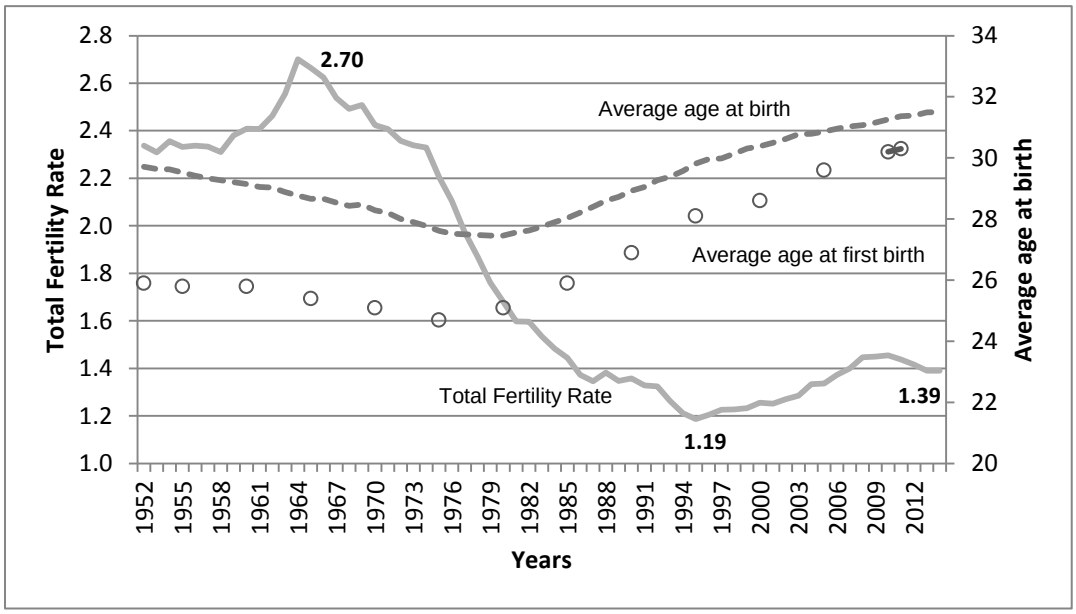
In Italy, low fertility interplays – to some extent paradoxically – with strong family ties and values (Reher 1998, Livi Bacci 2001), with familism and high parental investments in child quality (Dalla Zuanna 2001; Dalla Zuanna and Micheli 2004), and with women's scarce labour market participation (Del Boca 2003).

The family as an institution seems to hold on the whole, differently from many other Western countries. Divorce rates – despite their increase in the last decade – are still among the lowest in Europe. Husband-wife constellations remain the predominant family forms and most of children under age 5 today are living with both parents (more than 94%). While 5.3% of them live with their mother either in a solo mother family or with other family members, solo father families are still very rare (less than 0.5%) (Ruspini and Tanturri 2015). Family structures

[1] The definition of resident *foreign people* in Italy is linked to the citizenship criterion and not to the place of birth. At the last Census (2011), the foreign community counts for about 7% of the total population of the Country.

have not changed significantly in the last decade, but marriage rates have been decreasing sharply and now are in line with those observed in close countries as France and Spain. Cohabitation and LAT are increasing their importance in the last decades.

Figure 4: Total Fertility rate and average age at birth in Italy (1962-2014)



Sources: ISTAT, Fertility database

In Italy, public support for families is very limited: in 2009 the State spent only 1.58% of GDP on family benefits, as compared to the OECD average of 2.61 (OECD 2014). In Italy, as well as in other southern countries, families are expected to support their own members (family responsibilities and obligations extend beyond the nuclear family) with only limited help from the state. The familistic character of the Italian welfare regime does not help to reduce child costs in terms of time for parents in general and for mothers in particular (Tanturri forthcoming). Accordingly, family policies are scarcely developed, in comparison with other European countries.

Women's employment levels in Italy are among the lowest in the OECD countries (58.9% among women aged 20-54, see Tab. 4) and they are growing very slowly, compared to the rest of Europe. Most of working women have a full-time contract (67%), but on average women work fewer hours than men (33 hours per week). Maternal employment is even slightly lower than the average level (55.3%) for Italy and significantly lower than the OECD average (OECD Family database), but it does not change according to the age of the youngest child appreciably (Tab. 4). Conversely, it significantly decreases with the number of children: among mothers with three children the employment rate is 38.6%, about 20 percentage points less than among mother of an only-child, and well below the average for the OECD countries.

It is still common for working women (1 out of five) to exit the labour market after having given birth (Istat 2014), and this proportion has even increased in recent years. Therefore, the labour market penalties for the Italian working mothers are still remarkable (Del Boca et al. 2005; Pacelli et al. 2013).

Table 4: Female employment (25-54) and maternal employment rates by number of children under 15 and by the age of the youngest, Italy. 2011

z	Female employment rate (25-54 age cohort)	Maternal employment rate - child under 15	Age of youngest child			Number of children		
			< 3 years	3-5 years	6-14 years	1 child	2 children	≥3 children
Italy	58.91	55.27	53.40	50.56	56.60	58.39	52.69	38.56
OECD average	70.67	65.23	52.16	65.65	72.58	69.16	65.63	50.52

Source: OECD - Family Database (around 2011)

Balancing childrearing and market work is really difficult in Italy due to the limited supply of public childcare for children younger than three, both in terms of availability and of the number of hours supplied on a day-to-day basis. The institutionalised care for children from ages three months to three years is mainly provided by *asili nido* (crèche) that are not part of the public educational system. Among 0-2 year old children only 24.2% go to crèche (child care centres), while most of those aged 3 to 5 (95.7%) attend kindergarten (OECD 2014). Only less than 12 per cent attend a public child care centre and this percentage increased since 2004 only slightly (9%). The regional differences are huge, showing that less than 5% of children go to a public child care centre in the South of Italy.

Women' employment and values reflect that gender roles are still shaped in a traditional ways in Italy (Anxo et al. 2011). In particular, women dedicate more time to household unpaid work and they carry a higher share of the burden (Mills et al. 2008, Mencarini and Tanturri 2004). This situation is reinforced by strong family ties (Reher 1998) and by familism (Livi Bacci 2001, Dalla Zuanna and Micheli 2004), which is the strategy of protecting and transmitting the well-being of the family by having fewer children – in most instances only one – upon whom social expectations and family investment are concentrated.

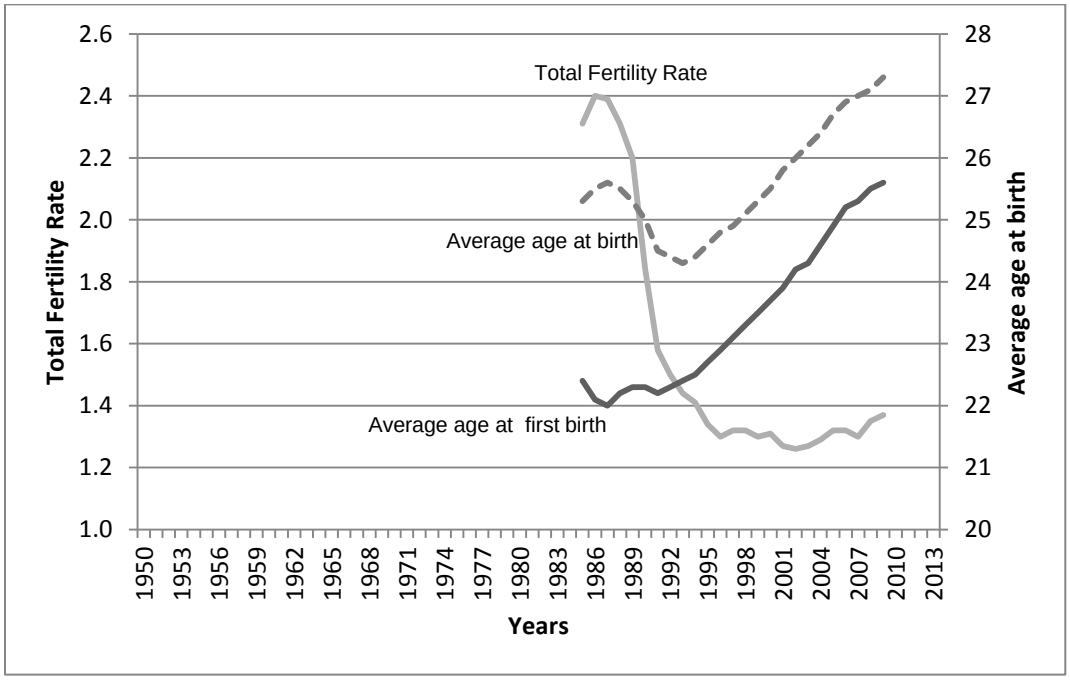
2.2.5. Romania

Romania is a particular case among the countries belonging to the former Eastern European block, characterized by pronatalistic regimes during the communist period. The more drastic and periodically reinforced pronatalist policies imposed by communist president Nicolae Ceaușescu, produced in a short and long run, a deeper and more rapid opposite effect on fertility rates than in other neighbor countries. On the eve of the XXI century, Romania was

situated among the European countries with the lowest level of fertility, with a population in decline already for two decades (Marcu, 2009, in Rotariu et al., 2012)

Within a decade, the total fertility rate decreased with one unit, from 2.3 in 1985 to 1.3 in 1995, remaining at stable levels within the last two decades. With this value of TFR, Romania is placed at the bottom of the scale, in Europe as well as in the world, and it belongs to a cluster of countries from central, eastern and southern Europe known for the lowest low levels of fertility, with a TFR of about 1.3-1.4 children (naming Germany, Austria, Italy, Hungary, etc.) (Fig. 5).

Figure 5: Total Fertility rate and average age at birth and at first birth in Romania (1985-2009)



In Romania, the real decline of fertility started in 1985, in a time when a decrease in the mean age at birth of women occurred (from 25.3 years in 1985 to 24.3 years in 1993), followed by a stabilization in the context of a births' postponement trend, which could lead to a slight fertility recovery, but hidden by this process of postponement. After 1993, the mean age at birth increased with 0.2 years, reaching 27.3 years in 2009. Still, Romania has the lowest age at birth in Europe. Romania and Bulgaria are the only two countries from EU which record an age at birth under 28 years, with an obvious potential of increasing trend towards the levels of the countries with the oldest mothers (Ireland, Italy and Spain, where the mean exceeds 31 years) (Rotariu et al., 2012).

The behavior of Romanian people related to family follows a similar pattern compared with the pattern remarked few decades ago across the western European populations: the age at

marriage is increasing and the alternative living arrangements to marriage become more prevalent. However, the Romanian model of partnership is still dominated by a rather precocious transition to marriage, by a high rate of persons who choose to marry and by low levels of definite celibacy. The crude rate of marriage registered during 2004-2009 (about 6,5‰) placed Romania among the leading countries in Europe, near Poland and Cyprus. Despite some fluctuations of this rate during the last years, the intensity of the phenomenon in the last two decades indicates that marriage remains an attractive institution for Romanian people, compared with other European countries (Rotariu et al., 2012). Regarding the calendar, a clear tendency to postpone the age at first marriage was observed during the last decades. Starting from the change of the political regime, the mean age at first marriage among Romanian women increased with about 3.5 years, going from 22 years in the period 1985-1989 to 25.4 years in 2006-2009. In 2006-2009, the mean age at first marriage among men was 28.3 years (with a general age-difference at first marriage between Romanian women and men of about 3 years), and with 80.7% of the couples composed of spouses at their first marriage. Romania is among the European countries with the highest rates of first marriage, near Italy and Poland, where the rates of divorce are the lowest (Rotariu et al., 2012).

Based on GGS data applied in 2005, Mureșan (2008a) showed that the diffusion of alternative living arrangements to marriage are gaining more and more place in Romania, especially cohabitation. More and more persons begin their first partnership by moving together, even if, afterwards, a part of these cohabitations turn to marriages. Before the age of 40, 30% of men and 35% of women were living in cohabitation with the first partner in the period 1996-2005, compared with 18% of men and 20% of women during the period 1980-1989. Emergence of cohabitation goes hand in hand with its instability, as fewer partnerships started in the form of cohabitation are converted later into marriages (with 36% less in 2000-2005 than in 1980-1989). On the contrary, cohabitations which resist in time and are subsequently converted into marriages subsist relatively more than in other periods, as the couples need more time to decide for marriage (Rotariu et al., 2012).

During the last decades, the divorce rate was slightly higher than in Greece or Italy, it is at a similar level as in Bulgaria and Poland, and is lower than in the other European countries, where values exceed 2‰, reaching even 3‰ in Belgium. In a 20 years period during 1990-2010, it appears that one in 4-5 marriages end up in divorce (Rotariu et al., 2012).

In conclusion, Romanian family seems more resistant when compared with that from the majority of western societies (in terms of intensity and stability of the phenomenon).

However, the explanation of this pattern should not invoke solely "the propensity of Romanian people for the institution of marriage". Besides the transmission of traditions and cultural pattern of marriage, there exist a complexity of conditions. Among them, the legal issues, meaning the way the state facilitate and stimulate marriages or other forms of partnerships, cannot be ignored.

Women's employment is a little lower than the OECD average, conversely maternal employment is slightly higher, regardless the age of the youngest child or the number of children (Tab. 5).

Table 5: Female employment (25-54) and maternal employment rates by number of children under 15 and by the age of the youngest, Romania. 2011

	Female employment rate (25-54 age cohort)	Maternal employment rate - child under 15	Age of youngest child			Number of children		
			< 3 years	3-5 years	6-14 years	1 child	2 children	≥3 children
Romania	67.91	67.02	58.14	69.78	68.79	69.63	64.23	47.81
OECD average	70.67	65.23	52.16	65.65	72.58	69.16	65.63	50.52

Source: OECD - Family Database (around 2011)

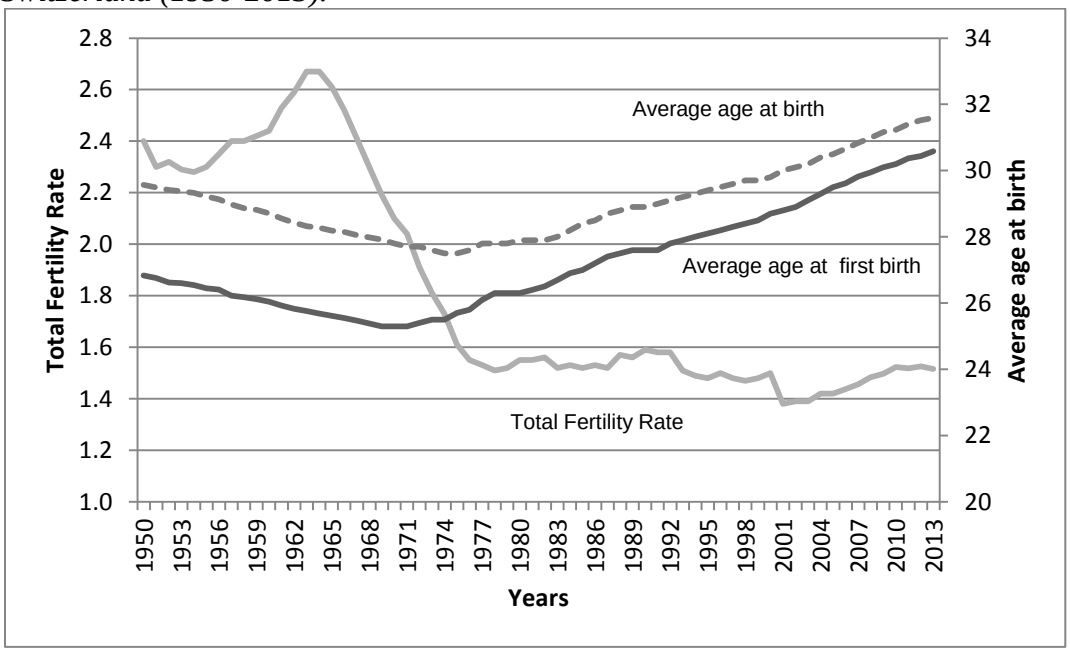
2.2.6. Switzerland

Switzerland has a long history of low fertility that distinguishes it from other European countries: period Total Fertility rate has been under the replacement level threshold since 1971. At the same time the process of postponement has started decades ago and now the entry into motherhood is one of the most delayed in Europe: 30.6 in 2013, while it was 28.7 in 2000.

Cohort fertility rate is one of the lowest cohort fertility globally (Sobotka 2011): in 2011, TFR in Switzerland was 1.52 ranking below the EU-27 average (EU 2010). Low fertility in Switzerland is largely related to its childlessness rate of above 20% among mainly higher educated women, which is one of the highest rates in Europe.

Switzerland is one of the richest countries in Europe with a low unemployment rate and widespread part-time jobs. Facing high opportunity costs for childbearing makes it difficult to balance occupational careers with domestic and care work. Caldwell described Switzerland (together with Austria and Germany) as a "third fertility compromise" where a "hardly bearable compromise" between work and family has produced remarkably stable low fertility rates (Caldwell 2008, Sobotka 2011).

Figure 6: Total fertility rate and average age at birth (all births), and at first birth in Switzerland (1950-2013).



One factor for this phenomenon is the 'liberal' Swiss labor market that provides low employment protection grouping it together with the U.S., well below the OECD average (for detail, see: OECD Employment Protection Database, 2013 update). Switzerland is an unfavorable context for childbearing, given that disproportionately more women than men entered into less stable, lower-paying jobs. Incompatibility between work and family resulted in maternal part-time work being the preferred mode to re-conciliate competing roles (73% of women participate in the labor force) (FSO, 2013). For many women the arrival of a second child is incompatible with employment, thus affecting employment trajectories in the long run. This is explained by the weak welfare provision for families (Charles, Buchmann, Halebsky, Powers, & Smith, 2001; Monnier, 2006). First, the Swiss system of public child care was found to operate as a disincentive of labor force participation, because if middle-income families increase their occupation rate of the 'second earner', they generate a higher household income that increases the public child care tariffs more than those families actually gaining from additional income (Bütler & Ruesch, 2009). Second, Switzerland has not yet introduced parental leave policies. Maternity leave regulations grant mothers the right to take time off from work to care for children for 98 days following birth. The replacement rate amounts 80% of previous earnings and is rendered in the form of daily allowances. The maternity insurance, introduced in 2005, grants mothers 14 weeks (98 days respectively), with additional protection rights for the weeks 15 and 16 such as staying at home without receiving

pay. Because benefits are related to previous earnings, they represent a strong incentive to have labor market attachment before becoming mother, and to postpone motherhood. As there is no paternity leave for fathers, mothers and fathers are differentially engaged parents. Moreover, primary school schedules and rigid public office opening hours cause organizational hurdles for dual-earner families and single parents (Charles, et al., 2001).

Table 6: Female employment (25-54) and maternal employment rates by number of children under 15 and by the age of the youngest, Switzerland. 2011

	Female employment rate (25-54 age cohort)	Maternal employment rate - child under 15	Age of youngest child			Number of children		
			< 3 years	3-5 years	6-14 years	1 child	2 children	≥3 children
Switzerland	77.56	69.70	58.33	61.66	76.96	69.49	65.40	57.98
OECD average	70.67	65.23	52.16	65.65	72.58	69.16	65.63	50.52

Source: OECD - Family Database (around 2011)

3. Childlessness patterns and descriptive findings

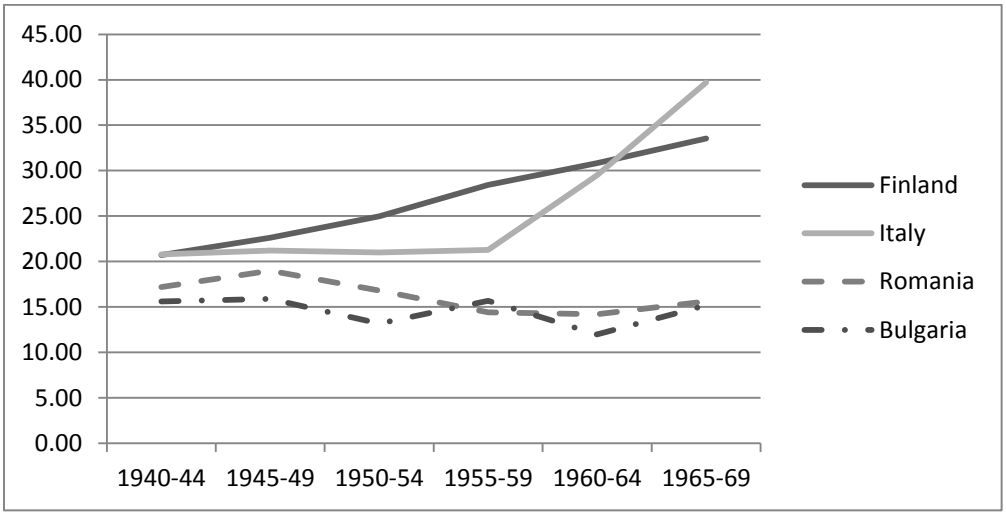
In this section we take into account the patterns of childlessness in a plurality of contexts. First we show the trends of childlessness prevalence across cohorts in each of the selected countries. Then we show how prevalence changes according to the level of education across cohorts in selected countries, namely Finland and Italy. We focus both on childlessness at 30s and at 40s.

3.1. An overview

When analysing childless patterns through a birth cohort perspective, it clearly and immediately emerges that cohort childlessness has increased throughout Europe, with regional differences that cannot be neglected. Childlessness prevalence among birth cohort from 1940-45 to 1960-64 are taken into account, both for women and men, aged 30-39 and 40-49 years.

As far as regional differences are concerned, the Eastern European countries included in the analysis show the lowest levels of childlessness and the slowest childlessness growth rates, both among men and women, irrespective of the considered age group (30-39, 40-49). Specifically, as far as younger women are concerned (Fig. 7), a flat trend emerge, with both Romania and Bulgaria showing slight changes, respectively swinging around 15% and 13%; probably those countries are still not experiencing to a significant extent the phenomenon of parenthood postponement. In Western countries, instead, strong increases are registered, even steeper in Italy, above all starting from the 1955 birth cohort; childlessness among 30-39 years old Italian and Finnish belonging to the most recent birth cohort exceed 30% (reaching, in Italy, 40%).

Figure 7: Prevalence of childlessness in Europe by birth cohort. Women, 30-34 years old.



Data on the prevalence of childlessness among 30-34 years old women in Hungary are not disposable.

As far as Switzerland is concerned, only data on childlessness in the 1965-69 birth cohort is available (33.58 %).

This is indicative of postponement of parenthood and not necessarily implies lifetime childlessness, but it is also important to remember that the early 30s remain the primetime for childbearing among most European women, and a higher proportion of childlessness at that age can be assumed to predict higher overall lifetime childlessness and lower fertility overall in this age group.

When 40-49 years old women are analysed (Fig. 8), lower percentage with respect to 30-39 years old are registered. Eastern countries show an u-shaped behaviour, with childlessness percentages increasing again (after the fall characterizing cohorts from 1944 to 1960), starting from the 1960 birth cohort. Even if the percentages of childlessness among the youngest cohorts of Bulgarian and Romanian women do not reach yet the level registered by the oldest cohorts, we might expect, also by looking at the Hungary growing trend, that the phenomenon will increase sharply and irreversibly in the next cohorts, mainly due to a shift in the determinants of childlessness, from an involuntary to a rather voluntary pathway to childlessness.

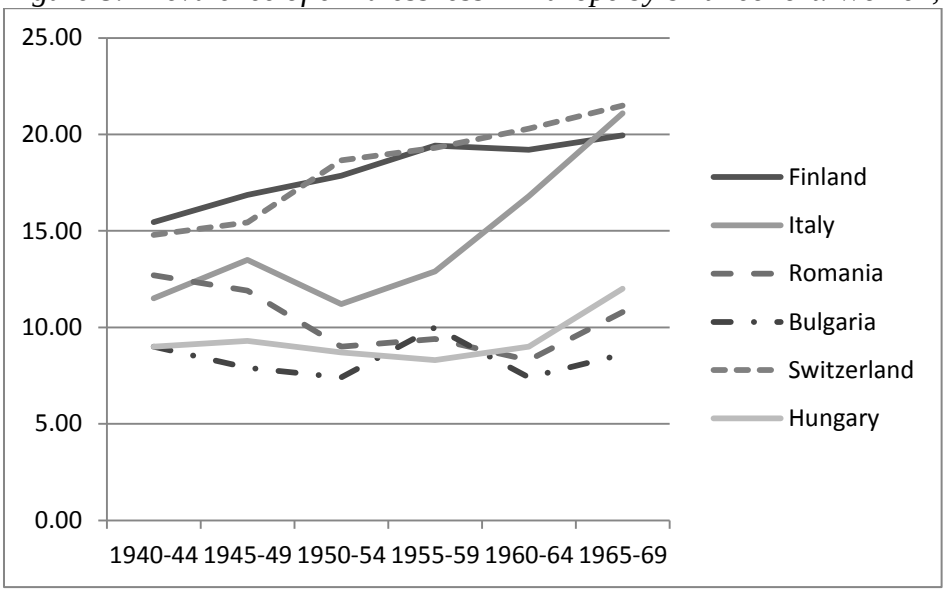
Among Northern and Western countries, the highest prevalence of childlessness is displayed (Fig. 8): Swiss and Finnish 40-49 years old childless women increase by birth cohorts, almost linearly, from 15% to 20%. Italy show the sharpest increase, converging toward the other high-childless country, from about 12% to 20%. As far as men are concerned, they show higher levels of childlessness in both the considered age groups with respect to women, in all the countries under analysis.

Eastern Europe countries show the lowest childlessness levels, and the slightest trends toward childlessness increase also among men. This is true for the two age groups considered: the most recent birth cohorts register weak growths in childlessness, but without reaching the highest levels characterizing the oldest birth cohorts (with the exception of 40-49 years old Hungarian men).

Men aged 30-39 years show significantly higher childlessness levels than the 40-49 years counterpart only in the western and northern Europe countries (Fig. 9 and Fig. 10).

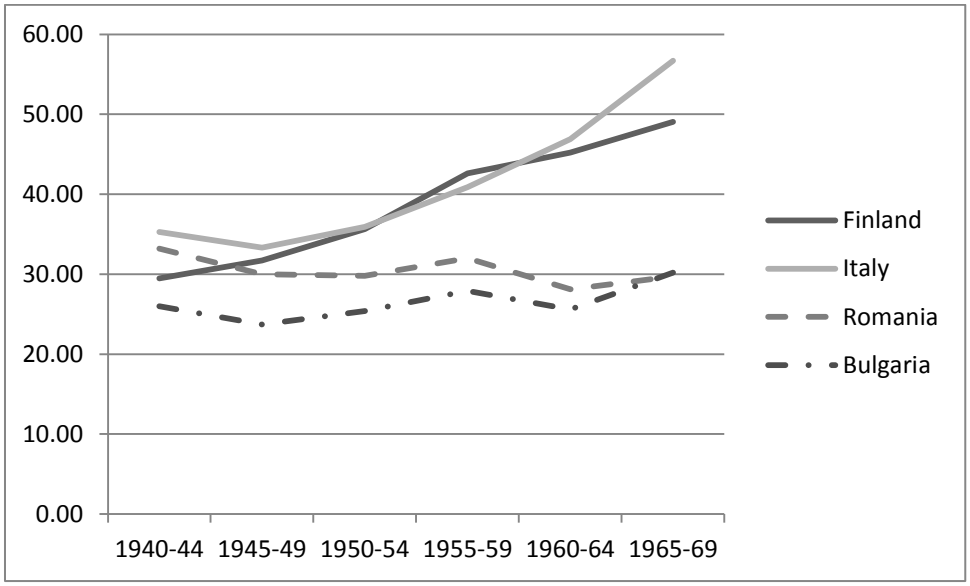
It would be interesting to know if men are exhibiting more of a postponement behavior or whether these countries are experiencing a cohort change so that significantly more men will end up childless compared to older cohorts.

Figure 8: Prevalence of childlessness in Europe by birth cohort. Women, 40-44 years old.



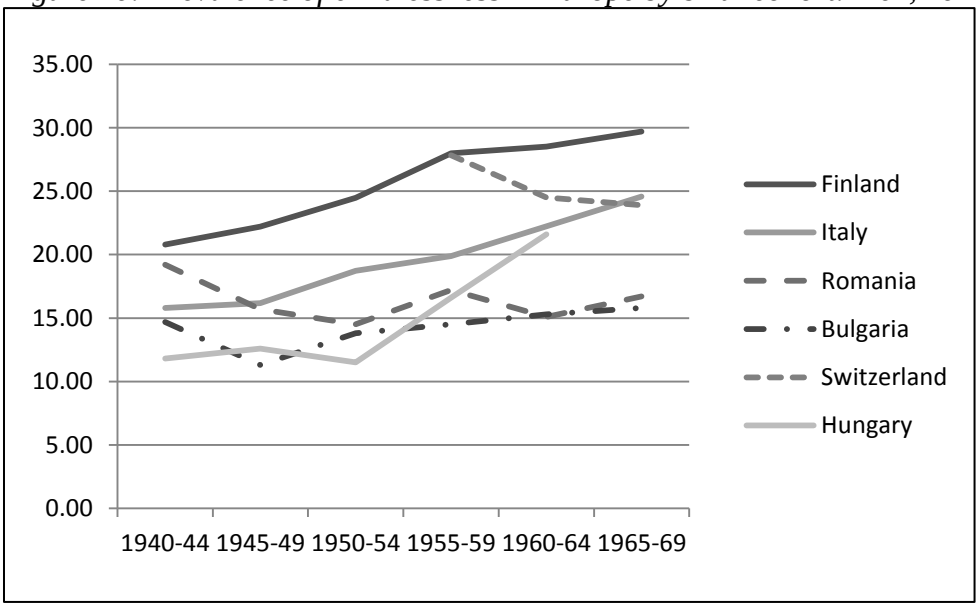
In the next section, we will go more in depth with the analysis of the demographic and socio-economic context characterizing the countries showing the greatest percentages of childlessness over birth cohort (Italy and Finland), in order to try to depict in a purely descriptive way which could be the macro and micro-levels elements bringing to childlessness.

Figure 9: Prevalence of childlessness in Europe by birth cohort. Men, 30-34 years old.



Note: Data on the prevalence of childlessness among 30-34 years old men in Hungary are not disposable.
As far as Switzerland is concerned, only data on childlessness in the 1965-69 birth cohort is available (53.25 %).

Figure 10: Prevalence of childlessness in Europe by birth cohort. Men, 40-44 years old.



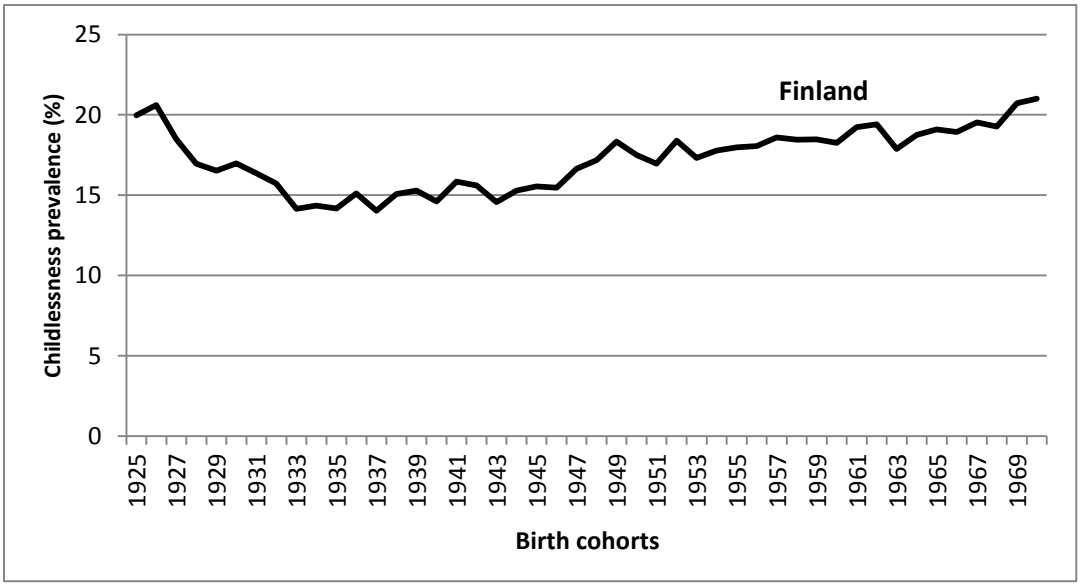
Note: Swiss data are available only starting from the 1944-59 birth cohort.
No data on childlessness prevalence in the youngest birth cohort (1965-69).

3.2. Finland

Historically, childlessness is not a new phenomenon in Finland. In fact, it was rather common among women born in the beginning of the 20th century among who almost a fifth remained childless. In the cohorts born before and during the WWII the proportion of women who

never had children was at its lowest, or at around 14-15 percent. These women reached their adulthood and lived most of their fertile years in 1950s and 1960s when the economy was rapidly growing and women started to enter higher education and paid employment. Childlessness started to increase already in the baby-boom cohorts born after the WWII, showing an upward trend since that. In the most recent cohorts, among women born around 1970, who have not yet finished their reproductive ages, 21 percent was still childless at age 40. Finland also stands out from the other Nordic countries in that childlessness is more common. Up until now, however, higher rates of childlessness have been combined with relatively high completed cohort fertility, which has even increased in cohorts born in the early 1960s (cohort fertility 1.95) as compared to cohorts born in 1950s (cohort fertility 1.85).

Figure 11: Prevalence of childlessness in Finland across birth cohorts (1925-1970).



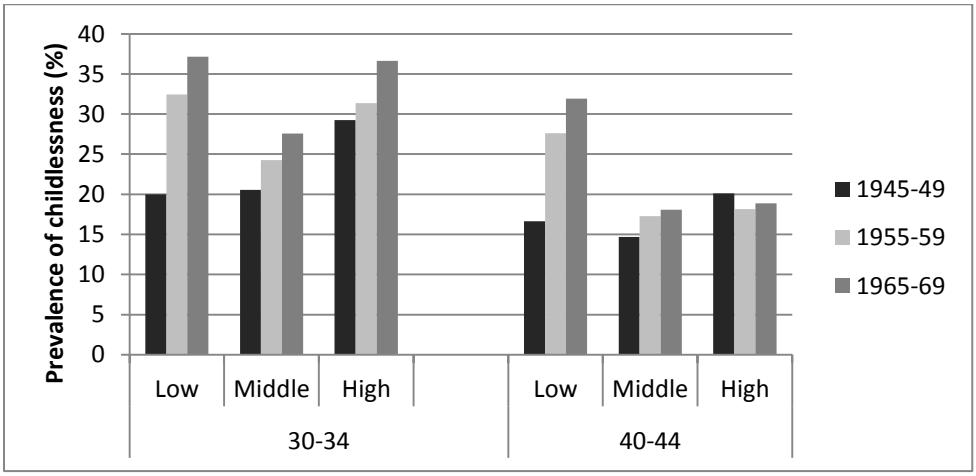
Source: Population Research Institute and Statistics Finland.

Postponement of parenthood has meant that the proportion of (still) childless adults is growing in each age group. For example, among 35-year-old Finnish women, the proportion of childless persons has increased from 20 percent in 1990 to 27 percent in 2013, and for men, from 32 percent to 41 percent. Although childlessness may be temporary, and many of them will still have children in the future, delaying of the parenthood can depress fertility in the long run, and increase the prevalence of life time childlessness in the young male and female cohorts.

Recent studies have showed that the prevalence of childlessness varies considerably between social classes and educational level in Finland (Nisén et al. 2014; Miettinen et al. 2015). While among men, the educational and social class gradient in childlessness appears to be

negative (e.g. childlessness rates are lower among men in higher socio-economic groups), for women childlessness has until now been more common among the highly educated women. However, evidence from more recent cohorts points to changing fertility patterns in female educational groups, as women with only basic level education show the highest rates of childlessness (in 2010, prevalence of childlessness was greater than 30% among 40-44-year-old women with basic level education), and women with tertiary level education do not markedly differ from women with medium level education (19% and 18%) (Miettinen et al. 2015). Decreasing levels of childlessness among highly educated women suggest that policies which have promoted reconciliation of work and family appear to have been able to diminish the barriers to parenthood and childbearing among most women. However, socio-economic gradient in childbearing is still visible in Finland, and seems to have become even steeper with regard of whether to have children at all.

Figure 12: Prevalence of childlessness at age 30-34 and at age 40-44 by education level and birth cohort. Women.



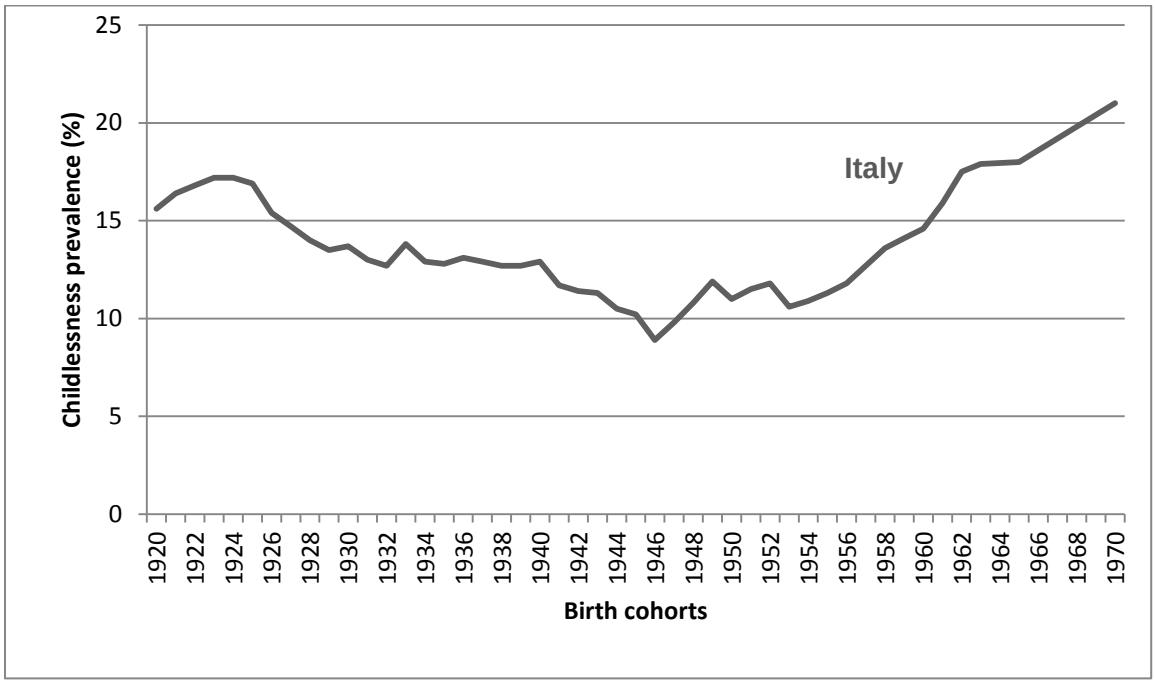
Source: Population Research Institute, Statistics Finland.

3.3 Italy

The parenthood delay process in Italy is associated, among other things, to a change in fertility pathways across generations: the proportion of high parity women in the cohorts born since the 1940s has fallen considerably, and the "norm" has gradually shifted from having “at least two children” to “no more than two” (Santini, 1995). The higher parities have been declining considerably since the cohort born in the Thirties, while the two-children model – although still prevailing – has been decreasing its importance since the cohort born in the Sixties. Among women born since 1950 around one woman out of four has only one child,

while the prevalence of permanent childlessness is steeply increasing: from 13.4% for the cohort born in 1960 to 21% among women born in 1970 (ISTAT 2014b) (Fig. 13).

Figure 13: Prevalence of childlessness in Italy across birth cohort (1920-1970).

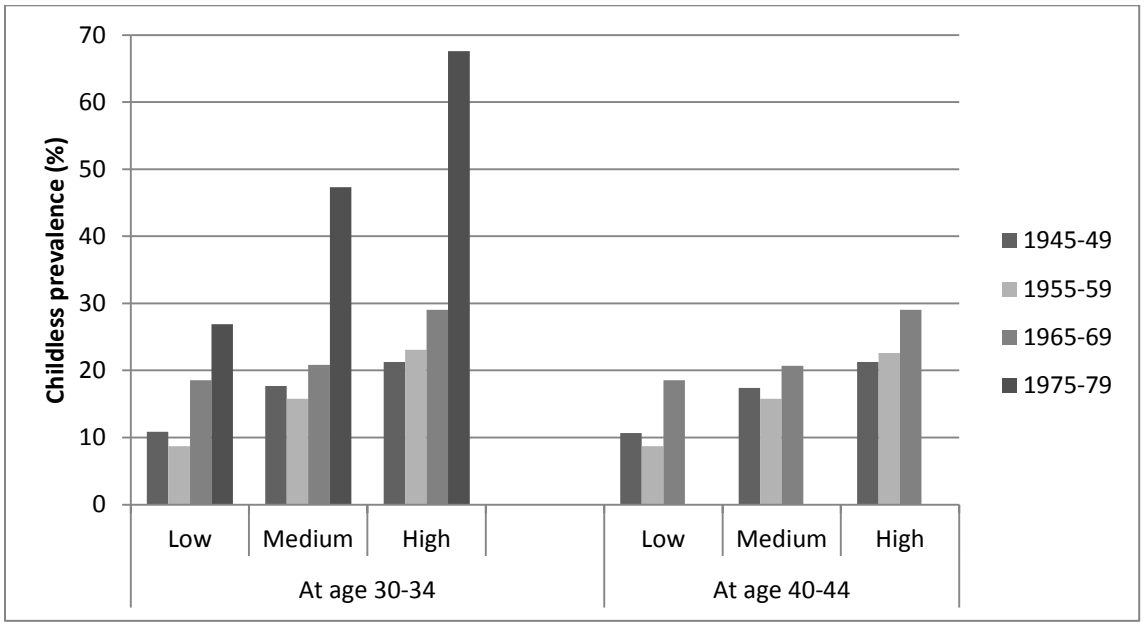


Source: ISTAT

The dramatic increase in the prevalence of childlessness, both temporary and permanent, has become a peculiar facet of the Italian low fertility regime, differently for instance from other Mediterranean Countries, like Spain where the childless prevalence is almost stable across cohorts (Miettinen et al. 2015). A pioneer survey carried out in Italy - although limited to selected Italian urban areas - reveals that as many as a third of the women interviewees in their forties, who live with a partner and do not suffer from any particular physical impediment, are voluntary childless (Tanturri and Mencarini 2008). The same research evidences that in several other cases, childlessness is the unintended outcome of delayed decision to have a child or the result of adverse external circumstances, particularly fragility of partnership. If one assumes that the proportion of childless women is the same as observed in the five cities examined in that study and it is the same of the cohort of 1960, it is conceivable that around 8% of the cohorts born around 1965 would deliberately reject motherhood. This is in stark contrast to the percentage of 1.5% characterizing the generations born just one or two decades before (Bonarini et al., 1999).

Recent studies shows that the prevalence of childlessness in Italy has increased either among men and women, and across social classes (Fig. 14). Although the prevalence of childlessness at 40-44 years old is still much more important among the most educated women, and still increasing (up to about 30% for high educated women born in 1965-69), a remarkable spread of the phenomenon has been observed also among women only with primary education or less (18% for less educated women born in 1965-69) (Fig. 14). We can therefore argue that childlessness in Italy it is not only a matter of prolonged education or women's career aspiration, but other difficulties seems to arise for all women.

Figure 14: Prevalence of childlessness at age 30-34 and at age 40-44 by education level and birth cohort.



3. Data and methods

3.1. Data

Studying childlessness micro-level determinants and features in a cross-country perspective, necessarily means to deal with data harmonization issues. Unfortunately, the research interests toward the study of a demographic phenomenon through a comparative perspective, collide with the availability of comparable data sources. Few surveys indeed contains the information on ever-born children, both for men and women. Only household and family surveys usually contain this crucial question, but sometime the sample of childless is small, questions are asked only to women, or other important information are lacking (e.g. personal income, detailed information on socioeconomic status, detailed information on education field, ...). In

general no information allowing to distinguish between voluntary and involuntary childlessness are provided.

In the following work we focus our attention on six Countries: Finland, Italy, Switzerland, Romania, Hungary and Bulgaria. As described in the previous sections, they have different socio-economic and demographic characteristics, resulting in different childlessness levels and varying childlessness patterns over time. They moreover differ with respect to the structure of the available data sources for the study of reproductive behaviours. The first step made in order to analyse childlessness determinants, in a cross-country approach has been the harmonization process of data, in order to guarantee for their comparability.

In our analysis on Bulgaria, we used only the first wave of Generations and Gender Survey (GGS), which has been implemented between 2004-2005. The data collection comprised 12,858 persons from private households (7,007 women and 5,851 men), aged 18-85 years.

For Romania, we used the first wave of GGS – the only one available for the time being – conducted by the National Institute of Statistics and supported by United Nations Population Fund (UNFPA) Romania and Max Plank Institute for Demographic Research (MPDIR), Germany. Data were collected in 2005, on a national sample of 11986 persons living in private dwellings (6009 women and 5977 men), aged 18-79 years.

For Finland, data by cohorts (1940-1969) for descriptive analysis was drawn from population registers by Statistics Finland. Data set is a 10-percent sample of the total resident population in Finland: 133,502 men and 127,910 women. Conversely, data for multinomial analyses and fertility intentions come from Finnish Late Fertility Survey 2015, collected by TNS Gallup & Population Research Institute in February 2015 on 1,051 men and 2,122 women aged 20-50 years, childless or with one, two or three children.

For Hungary, we used the first and third waves of the panel study Turning Points of the Life Course ("Életünk fordulópontjai") conducted by the Demographics Research Institute of the Central Statistical Office of Hungary (KSH Népességtudományi Kutatóintézete) within the Generations and Gender Survey. The first wave of tracked demographic data was collected in 2001-2002, the second in 2004-2005 and the third wave of data collection occurred in 2008-2009. The data collection wave of 2001-2002 encompassed more than 16,000 persons representative of the Hungarian population aged between 18 and 75 years, living in private households. The sample of the third wave comprised a total of 10,641 people, with the reduction being due to respondents dying, refusing answers and other causes of attrition.

For Italy data from the 2009 Multipurpose Italian survey, Family and Social Subjects, have been analysed. It is a retrospective survey carried out by the National Institute of Statistics

(ISTAT) in 2009 on a sample of 17,788 households, for a total of 43,850 individuals. The sampling strategy is at two steps. Information on individual background, family of origin, union history, fertility, fertility intentions have been collected, but unfortunately neither information on values and attitudes, nor on religion have been gathered in 2009.

For Switzerland, the Swiss Household Panel (SHP) has been used. It is a longitudinal survey conducted by the Swiss Foundation for Research in Social Sciences (FORS) and funded by the Swiss National Science Foundation. The principal aim of this survey is to observe social change, in particular the dynamics of changing living conditions and representations in the population of Switzerland. It is a yearly panel study following a random sample of households in Switzerland over time, interviewing all household members. Data collection started in 1999 with a sample of 5,074 households containing 12,931 household members. In 2004 a second sample of 2,538 households with a total of 6,569 household members was added. The SHP database currently includes the years from 1999 to 2013 (www.swisspanel.ch).

These data allow to investigate the determinants of childlessness and reproductive intentions of childless individuals, by taking into account a series of individual level characteristics, hypothesized to be fundamental in determining reproductive behaviour.

3.2. Methods

For the first analysis we harmonised the information of the data sets, we plot the data sets of different countries, and we run logistic regression models in order to estimate the probability of being childlessness women (or men) - versus being mothers (or fathers) at 30-39 and at 40-49 years old. We control for individuals' country of residence, in order to understand whether, *ceteris paribus*, individuals living in different countries show different risks of being childless. We specifically estimate four models, separately estimating childlessness risks among men and women, respectively aged 30-39 and 40-49 years, with the aim to understand if different factors affect in different way the chance to be temporary or definitive childlessness, and to envisage a possible different diffusion mechanism by gender.

The second aim of this paper is to delineate the profiles of childless women (and men) distinguishing between those who intend to have a children in the future and those who seem to be determined to remain childless permanently, and contrast them to mothers (and fathers), as a control group. In the second part of the analysis, thus, we divide the sample into three categories: 1) mothers (or fathers); 2) "*Persistent childless* women (or men)", defined as those having no children at the interview and declaring that they do not want to have children in the

future; 3) "*Unconvinced childless* women" (or men) are those having no children at the interview, but willing to have in the future.

We assume that the *unconvinced childless* may be more similar to the parents group, for some characteristics, but they postpone childbearing for some constraints (e.g., they did not find a suitable partner, they wait to have a job, ...). Conversely, it seems reasonable to hypothesise that *persistent childless* are selected for some characteristics – e.g. education level, union status, attitudes and values – that make them more reluctant to have a standard family life, therefore they should have a more differentiated profile from parents. Unfortunately we did not find suitable information to distinguish between voluntary and involuntary childlessness according to the standard definition given in section 2. We also hypothesize that some variables associated to childlessness act similarly among both men and women, while other can affect the probability of being persistent and unconvinced childless in a different way by sex.

We use multinomial logistic models, modelling the probability of being persistent or unconvinced childless men and women, by using fathers and mothers as control category. The analysis is run separately on each of the six selected country, as when pooling together data the number of disposable common, comparable variables drastically decreases, thus making the information content of the analysis scarcely interesting.

3.2.1.1.Common determinants of childlessness

In order to try to model differences in childlessness determinants among the six country included in the study, we run a logistic analysis by using a dummy variable indicating whether or not the individual is childless (1=childless, 0=parent) as depend variable.

We select from disposable pooled data, common and comparable variables. Specifically, we take into account the following individual aspects:

- *union status*, classified in four categories: never married, currently not in couple; married; separated/divorced; never married, currently in couple (cohabiting). We use such a classification, by splitting the group of single individuals in those who are not in couple, and those who live in couple, in order to better understand which is the role cohabiting experiences have in determining the risk to be childless, and whether and to what extent they differ from 'institutionalized' couples;
- *education level* is classified, in low, medium, and high educational level, by basing on the ISCED classification. We want to test the hypothesis that education (perceived as an attribute shaping an individual's human, economic, and cultural capital) contribute

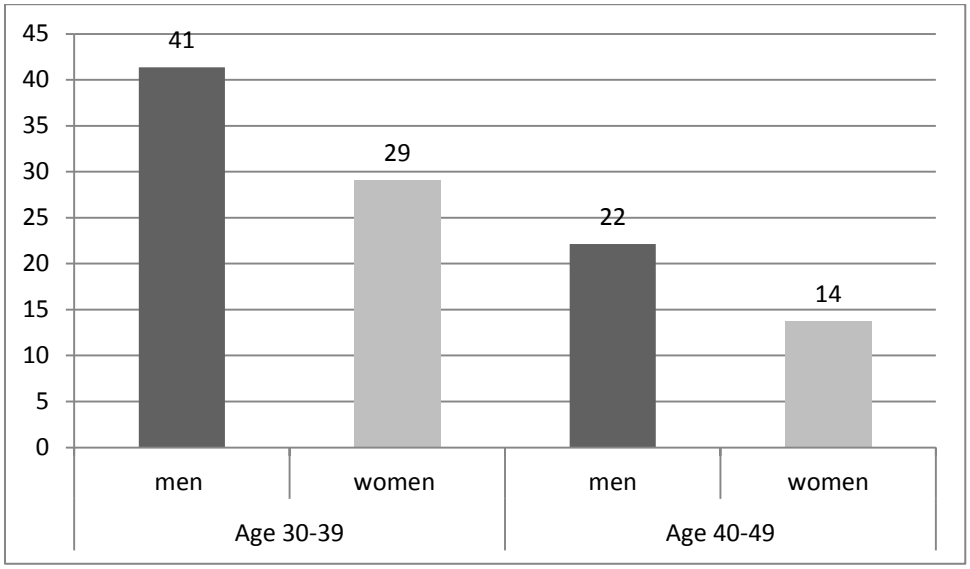
in determining individuals' likelihood to be childless. Education attainment is expected to differently act on male and female fertility behaviours. High educated women are expected to be more childless than the low educated ones as they face higher opportunity costs of childbearing, above all in those countries in which gender equity is not guaranteed, both at couple and at labor market level; moreover cultural issues offer explanations for fertility diversities among women with different educational attainment: education leads to a greater range of possible life styles and choices and hence, reduces preference for children. We expect education to differently act on male childlessness: higher educated men are expected to be less childless than higher educated women as, above all in those countries in which the male breadwinner model is still strongly rooted, men's socio-economic status is fundamental in determining the chances to be in couple, and therefore, to have children;

- *sibling size* is classified by a dummy variable indicating whether the individual is only child, or if he/she has any sibling, for testing the hypothesis of intergenerational transmission of reproductive choices, that is, individuals coming from numerous families are less likely to be childless than those who have no sibling, as they inherit fertility behaviours from their own parents (as a result of early life socialization processes);
- *health status* is measured by a dummy variable indicating whether the individual has or not chronical diseases that could affect the probability to postpone or even renounce to have children;
- *Country effect* dummy variables for each Country included in the analysis for understanding if individuals coming from different Countries show different risks to be childless, net to the control variables.

The analysis is conducted separately on women and men, respectively aged 30-39 and 40-49 years, in order to point out whether the factors behind fertility postponement (in the 30s) and permanent childlessness (in the 40s) are the same or not. It is possible indeed that a continuous postponement may lead to permanent childlessness.

The final samples used for this first analysis are composed of 7,335 men from 30 to 39 years old, and from 7,610 men aged 40-49 years. Female samples are composed of 8,548 women aged 30-39 years, and 8,631 women from 40 to 49 years old. Percentages of childless individuals in each sample are displayed in Fig. 15.

Figure 15: Childlessness prevalence in the analyzed sample, by age class and sex.



As expected, the prevalence of childlessness decreases with age. Childlessness is slightly more common among men in both age groups and gender differences are wider in the 30-39 years old group in absolute terms.

3.2.1.2.Variables used in multinomial logistic regression models.

Individual factors affecting childlessness may differ among people which express a conscious decision not to have children while still being biologically able to have them, and those who do not exclude the possibility to become parent. Fertility intentions can change over time, as influenced by changing life circumstances; but they can be also the result of a well-defined and constant preference for childfree lifestyles. The decision to have no children can be the consequence of considering the current life situation unsuitable for, or incompatible with having children – such as not living in a union, or living with a same-sex partner, or due to health reasons – or can be determined by the deep believe that parenting would conflict with other goals in life or life styles and values.

We want to understand which are the element, if existing, that differentiate individuals who are childless and that are intentioned in remaining childless after the age of thirty, from those who, in spite of being currently childless, declare to be opened to the chance to be parent. We will take into account a series of individual factors, likely to affect childlessness, by starting from the hypothesis that they could play different roles in explaining childless individuals' fertility intentions; specifically we will consider demographic background variables, variables linked to early life experiences and to early socialization processes, elements related to

individual's values and attitudes, as well as education and work-related factors. In this study fertility intentions are presumed to reflect actual reproductive behavior, taking into account both individual desires and perceived opportunities and constraints (Hagewen & Morgan 2005; Schoen et al. 1999; Rindfuss, Morgan & Swicegood 1988).

Childlessness individuals are split in two groups: "unconvinced childless" who declare to want to have children in the future, and "persistent childless" who do not intend to have children in the future. The dependent variable in the multinomial logit model is coded as follows: 0 for fathers/mothers (reference category), 1 for "persistent childless" men and women, 2 for "unconvinced childless" individuals. We therefore use the information on fertility intentions in the future registered at the interview among childlessness to assess whether and to what extent "*unconvinced childless*" and "*persistent childless*", differ from fathers (and mothers), controlling for a number of covariate. We thus model childlessness intentions by trying to understand which is the impact of different individual characteristics, taking into account several aspects (present and past) of an individual's life.

Specifically, we take into account *individual background characteristics*:

- age, two age classes are considered (30-39 and 40-49 years), to try to highlights the effects of parenthood postponement on childlessness;
- marital status, which previous research has frequently shown to strongly affect fertility behavior and attitudes. It is classified in three categories: never married individuals, currently not in couple; ever married individuals (married, separated, divorced); never married people living with the partner (currently cohabiting);
- health status, coded through a dummy variable indicating if the individual is affected by chronical diseases, which could influence fertility preferences.

Individual socio-economic indicators include:

- educational attainment (low= ISCED 0–2; middle-level=ISCED 3–4; high=ISCED 5–6);
- occupational status, a five categories variable (high skilled white collars, low skilled white collars, high skilled blue collars, low skilled blue collars, unemployed) included in the model for understanding if it acts in a different way on persistent and unconvinced childlessness, and if it has a different impact on male and female childlessness intentions.
- proportion of working life spent without working , for assessing, if existing, the effect of uncertainty of employment situations.

We moreover take into account *early life course variables*, with the hypothesis that both the socio-economic status of the family of origin, and it's cultural level (shaped by the level of

education of an individual's parents) can influence childlessness preference. We measure early life course characteristics (when the individuals were 14 years old) by using:

- Level of education of the individual's parents (low= ISCED 0-2; middle-level=ISCED 3-4; high=ISCED 5-6);
- Occupational status of the individual's father (high skilled white collars, low skilled white collars, high skilled blue collars, low skilled blue collars, unemployed);
- Working status of the individual's mother, coded as a dummy variable indicating if the mother was employed or not;

In order to take into account also the possibility of familial transmission of reproductive behaviors we use the number of siblings in three categories (no siblings, one sibling, two or more siblings). We also include in the model a variable indicating if the individual (till the age of fourteen) lived with both parents, for understanding if the family instability (in terms of both economic and emotional weakness) can affect intentions toward childlessness.

By starting from the hypothesis that individual's values and attitudes may affect fertility intentions (above all persistent childlessness), we measure them by taking into account individuals opinions with respect to three sentences: "people is trustworthy", "women need children to be fulfilled", "marriage is an out fashioned institution". Our idea is that the acceptance of secularized and less conservative values and lifestyles can bring to fertility attitudes and desires which diverge from the general norm, manifested in higher levels of voluntary childlessness.

In spite of being available in GGS data sets, some variables have not been included in the models because of high percentages of missing values (level of education of the mother, in the Romanian and in the Bulgarian data sets; level of education of the father, in the Bulgarian data set). Moreover, as far as Romania and Bulgaria are concerned, in spite of the presence, in both the datasets, of a variable on the ISCO code of mother occupation, it has not been possible to construct the variable on the occupational status of the individuals' mothers (dummy variable indicating if the mother worked when the individuals were fourteen years old) as no information on not working mothers was available.

In the Swiss data set the information on individual's siblings is coded as a dummy variable indicating if the individual has or not any sibling (differently from the other countries, where the same variable is classified in three categories).

The variable named 'family dissolution' indicates, for Italy and for Finland, if the individual's parents experienced a marital disruption event (when individual were fourteen years old);

while it indicate, for Romania, Bulgaria and Switzerland, whether the individual lived with both parents, until the age of fourteen.

For each country, all the disposable variables have been used in the estimation phase of the multinomial logistics models, but those that resulted to be not significant for all countries (mother's education, father's education, father's occupation) have not been included in the results tables.

Table 7: Covariates availability by country's data source.

Covariates	Romania	Bulgaria	Hungary	Italy	Switzerland	Finland
Marital status	X	X	X	X	X	X
Health status	X	X	X	X	X	X
Education	X	X	X	X	X	X
Current occupational status	X	X	X	X	X	X
Proportion of life not in work				X		
Mother's education	X	X	X	X	X	
Father's education	X	X	X	X	X	
Father's occupation	X	X		X	X	
Mother's occupational status				X	X	
Siblings	X	X	X	X	X	X
Family of origin disruption	X	X		X	X	X
Women need children to be fullfilled	X	X	X			
Marriage old-fashioned institution	X	X	X			
People is trustworthy	X	X	X			
Religiosity						X

X= variable is available

5. Results

5.1 Individual determinant of childlessness

Results obtained through the logistic regression modelling the probability to be childless are resumed in Tab. 8. As expected, the variable most strongly determining the risk to be childless is the individual's union status. This is true both for women and men, and for both the considered age classes. Specifically, never married individuals who are not in couple are the most likely to be childless, with men showing greater odds than women; moreover the risk of being without children for men in this category increases with age. Also individuals experiencing marital disruption are more likely to be childless (with respect to married

people), but the odds are significantly lower than for the single never married. It is interesting to note that the risk of being childless markedly decrease for never married individuals in cohabitation: living with a partner (even if in not institutionalized couple forms) makes the likelihood to be childless decrease strongly with respect to single individuals. However it must be highlighted that cohabiters have between 6 up to 9 time higher risk of childlessness than the married.

Table 8: Results of logistic regression analysis for characteristics explaining micro-level childlessness. Reference category (fathers and mothers).

			Men 30-39	Women 30-39	Men 40-49	Women 40-49
Variables			Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
Intercept			0.41**	0.24**	0.24**	0.15**
Union status (Ref. Married)	Never married not in couple		152.56**	58.98**	198.83**	52.80**
	Divorced separated		2.61**	2.57**	3.16**	2.09**
	Never married in couple		5.67**	8.71**	5.46**	8.02**
Education (Ref. Medium)	Low		0.74**	0.54**	0.93	0.81
	High		1.17	1.67**	1.45**	1.47**
Health (Ref. No)	Chronical disease		0.91	1.36**	1.19	1.04
Siblings (Ref. No)	Yes		0.76**	0.73**	0.52**	0.56**
Country (Ref. Italy)	Finland		0.26**	0.45**	0.64	1.33
	Switzerland		1.15	0.79	0.67**	0.86
	Bulgaria		0.18**	0.10**	0.20**	0.24**
	Hungaria		0.35**	0.27**	0.23**	0.11**
	Romania		0.33**	0.35**	0.41**	0.26**
Education*Country (Ref. Medium-Italy)	Low	FI	0.96	3.16	1.94	0.41*
	Low	CH	0.79	1.02	1.16	0.94
	Low	BG	0.46**	1.20	0.34**	0.32**
	Low	HU	0.70	0.78	0.91	0.71
	Low	RO	0.70	0.69	0.92	1.10
	High	FI	1.46	1.60*	1.03	0.64
	High	CH	0.77	1.10	1.21	1.10
	High	BG	1.89**	1.78**	0.58	0.81
	High	HU	1.27	1.26	0.57	0.94
	High	RO	1.76**	1.65*	1.21	1.82

* = p<=.10; ** = p<=.05.

As far as education is concerned, its impact on childlessness acts in the same way (in terms of relationships signs) among men and women, differently from our starting hypotheses and previous findings. Low education makes the likelihood to be childless decreasing, both for women and for men; the effect is significant only for the youngest ages and in terms of magnitude the effect is stronger for women. Less educated individuals postpone less, as they are usually more likely to start the family formation process at younger ages, thus increasing the likelihood to have children also when they are younger. This effect disappear at the oldest

ages, when differences among low and medium educated individuals are not significant any longer. Individuals with high education are instead more likely to be childless in their forties (with respect to those with medium levels of education) and the odds is very similar among men and women. It is possible that the highly educated individuals tend to delay the decision to have children for the desire to pursue career or to reach better socio-economic status. However if the postponement is extreme (after 40s), it limits the possibility to conceive because of the biological limits. According to this mechanism the most educated are more likely to transform a voluntary postponement in "involuntary" childlessness. It is also possible that some others decide not to have children in order to avoid both opportunity and direct or indirect costs of parenthood. Moreover, the education process, let them develop life-styles and values less oriented to family formation. The effect is significant also among women aged 30-39 years.

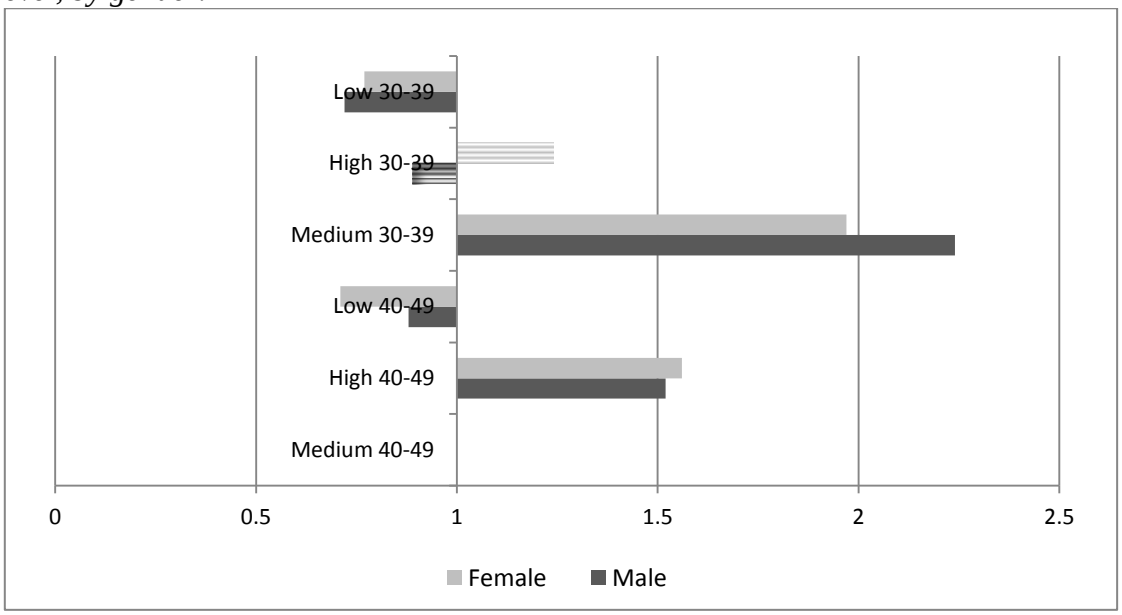
Once we introduce the interaction between education and countries of residence, we notice that with respect to the Italian averagely educated individuals, the low educated are less likely to remain childlessness only in Bulgaria, and in Finland (but only among women 40-49). For the other countries the interactions are not significant (Tab. 8). Other things being equal, the most educated are remarkably more likely to be childless, than the averagely educated Italian, if they live in Bulgaria, Romania and Finland but the effect is significant only among the individual aged 30-39, and for Finland only among women.

In order to investigate the effect of education on childlessness by age and class more in depth, we pool together women (and men) belonging to two age classes (30-30 and 40-49) in order to estimate a new logistic model (principal effect not shown in a table) with an interaction term between education and age. Education level is confirmed to have the same effect by gender (Fig. 16 and Fig. 17): the low educated, regardless sex, are less likely to be childless then the averagely educated, at any age. High education level instead increases the risk of being childless, for both men and women, but only for the older age class (40-49). The odds ratio both for high educated men and women aged 30-39 years, showing opposite effect by sex, are not statistically significant.

Having chronical diseases increase the risk of being childless significantly only for women, aged 30-39 years (Tab. 8). This is sensible, given the fact that women probably prefer to face pregnancy and deliveries when they are fully healthy. It is interesting that the effect disappears at older age. Probably close to the end of reproductive life, women willing to have children accept to enter motherhood even with a chronical disease. For men the effect is not

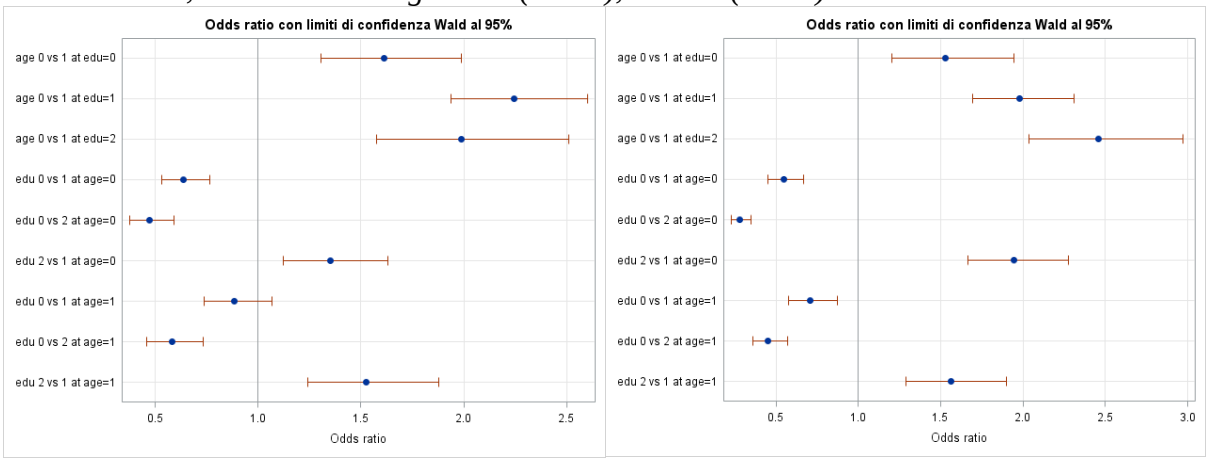
statistically significant, as they probably are less concerned about physical impediments to decide to enter fatherhood.

Figure 16: Odds ratios of being childless for the interaction between age and education level, by gender.



Dotted bars identify not significant odds ratios.

Figure 17. Odd ratios (and confidence intervals) of being childless. Interaction between age and education, education and age. Men (39-40), women (39-40).



Age 0=30-39, age 1=40-49
Edu 0= low; edu 1= medium; edu 2=high

The variable indicating whether or not an individual is an only child is significant for men and women. Having siblings lowers the probability of being childless, regardless of the age class; the hypothesis of intergenerational transmission of fertility behavior is thus confirmed by these results (Tab. 8).

Living in one of the Eastern Europe Countries make the probability of being childless decreasing at any ages, both among men and women (with respect to Italy, chosen as reference Country) (Tab. 8). As far as Finland is concerned, differences with Italy are significant (lower likelihood to be childless) only among younger men and women. This is probably due the greater parenthood postponement characterizing Italian younger generations. Differences between Switzerland and Italy are not significant, with the exception of 40-49 years old men, who show lower risks of being childless, with respect to Italian men belonging to the same age class (Tab. 8).

5.2 Micro-determinants of childlessness and future intentions to remain childlessness

In this paragraph we analyze the results of the multinomial logit comparing those childless intending to have children in the future (*unconvinced childless*), those who conversely want to remain childless (*persistent childless*), and fathers or mothers.

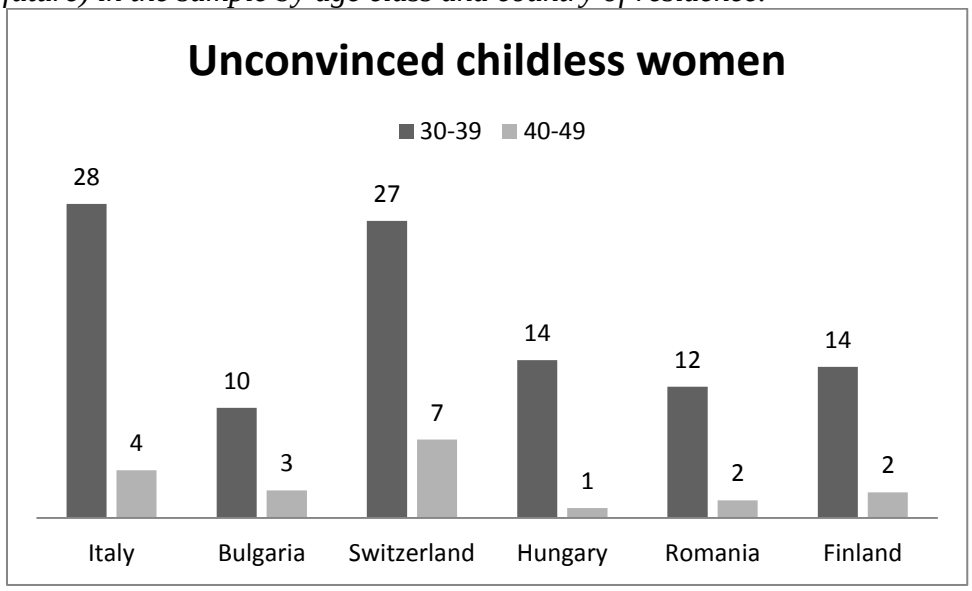
5.2.1. The distribution of dependent variables

The response variable is distributed as in Fig. 18 and 19 respectively among women and men, by age and by country. Not surprisingly, the proportion of childless individuals willing to have children is higher among the youngest (aged 30-39) (no less than 14% for men and no less than 10% for women), regardless the sex, but shrinks remarkably among in the oldest group (no more than 7% for women and no more than 12% for men). Unconvinced childless category is always more represented among men. The Swiss and the Italians childless in their Forties – no matter the sex – seem those more eager to enter parenthood than those living in other countries. Therefore it is possible that in Switzerland and Italy the high level of childlessness at 30-39 is just a part of a strategy of postponement rather than a choice to live childfree forever. It is interesting to notice that in these two countries also at age 40-49 the proportions of unconvinced are relatively higher compared to the other countries, for both men and women. It is plausible that some of the 40-49-years-old childless that declare they will plan to have children in the future could be depicted as "*permanent postponers*".

Those who persist in the idea of remaining childless are only slightly more frequent among the oldest group, but the differences are quite small. This result suggest that there is a group of people that since the age of thirties seems to opt for a childfree life, excluding to have children in the future. An interesting case in this respect is represented by Finland where persistent childless men and women are even more frequent among the youngest group.

Finland is outstanding also for the high frequency of persistency in the decision to remain childlessness among women (close to 30%). This is the only country where the proportion of persistent childless women are higher than those of men (around 20%), while in all the other countries women seem less eager to have a childfree life. Persistent childless are quite small in the three Eastern countries, while Italy and Switzerland are in between.

Figure 18. Proportion of unconvinced (childless women willing to have children in the future) and persistent childless women (childless women who do not want to have children in the future) in the sample by age class and country of residence.



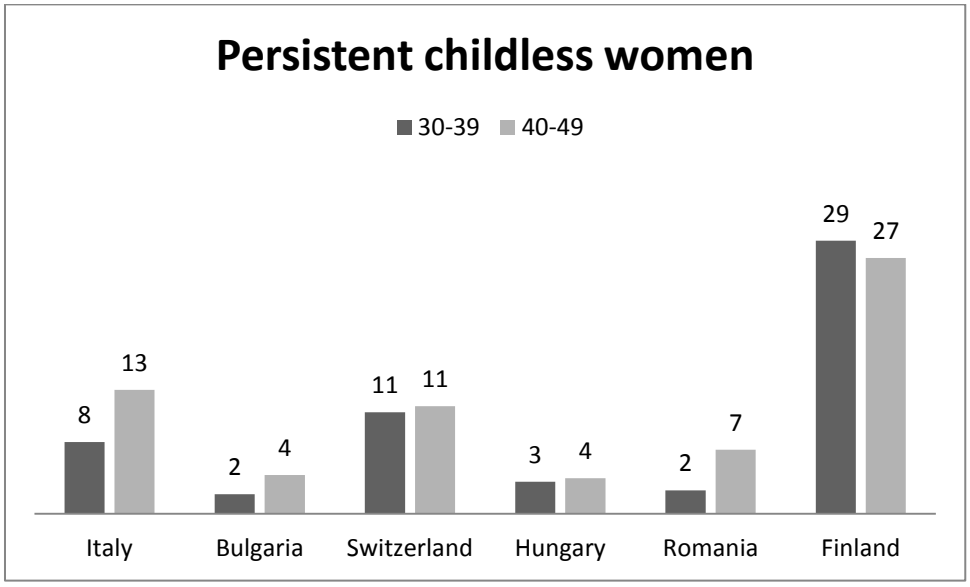
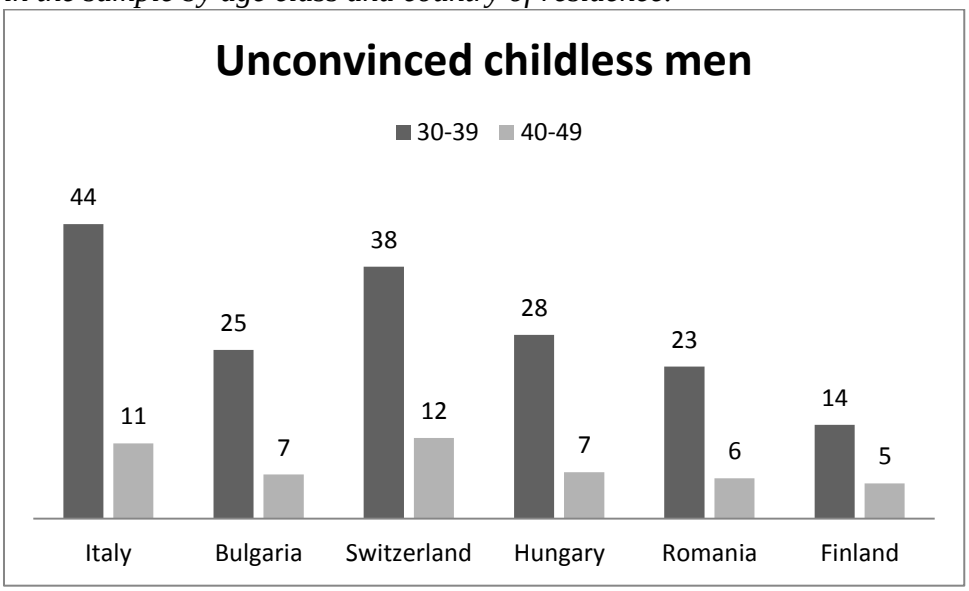
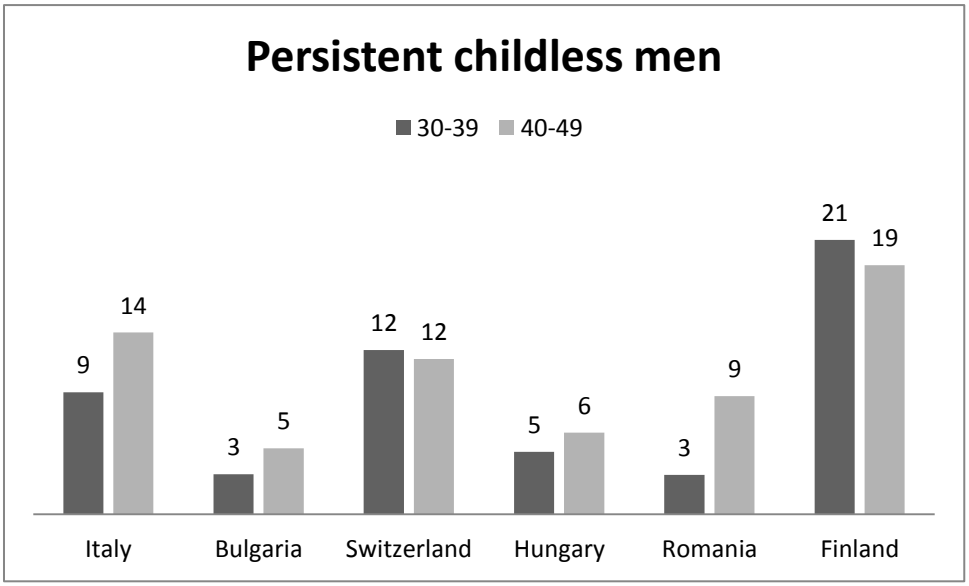


Figure 19. Proportion of unconvinced (childless men willing to have children in the future) and persistent childless men (childless women who do not want to have children in the future) in the sample by age class and country of residence.





5.2.2. The multinomial model results

Results of the multinomial logit are reported in the tables A,B,C,D,E,F (in Appendix), one for each country: on the left columns we find the estimated coefficients for unconvinced and persistent childless men, and in the right columns the same estimates for women.

Other things being equal, those women and men who are aged between 30 and 39 years old are more likely to be childless that have not relinquished parenthood yet, compared to those who are between 40 and 49 years old. Conversely they are less likely to remain persistently childless. This results are significant in Hungary, Romania, Bulgaria Italy, Finland (for

women, only in the unconvinced group), and in Switzerland (for men and women, only in the unconvinced group).

Union status has a major impact on the likelihood of being childless: in particular the traditional fertility determinant of being ever married results to be significant everywhere and the most important also to explain childlessness. With respect to those never married and not in couple, the ever-married are remarkably less likely to be childless, virtually in any country. In terms of magnitude the effect is greater on the persistent childless, than on the unconvinced ones, everywhere, and usually the effect is greater for men than for women. At the same time, with respect to the singles, also the cohabiters have a reduced probability of being and remaining childless in any country, apart from Switzerland, where among women cohabitation increases the probability of being childless (for men it is not significant). This peculiarity could be driven by policies, as in Switzerland only married fathers and mothers can benefit from tax reduction.

Once we control for union status, the education level seems to lose its relevance as a determinant of childlessness. The associations interestingly differ by sex and country. The most educated women (ISCED 5-6) in Finland, Switzerland, and Italy seem to be more likely to be in the group of childless who intend to have children in the future, rather than the averagely educated. The effect of education is opposite in Bulgaria where the most educated are less likely to be in that group, while in the rest of Eastern European countries the effect is not significant. We might argue, therefore, that at least in Western Countries, the most educated women are those who mostly tend to postpone motherhood. The highly educated women are more likely to be persistent childless than the averagely educated ones, only in Italy. In this country having a higher education level seems to conflict more with childbearing: it is not only a matter of postponement, indeed, but the intentions for the future seem to be negatively influenced at the same time. Consistently the less educated childless women in Italy are also less likely to be in the unconvinced group, as childless women from Hungary, Romania and Bulgaria. Hungary is the only country where the less educated women are those more likely to persist in their childlessness, probably for some mechanism of selection, due to the anticipated timing of childbearing in this country: among the less educated women, those who are childless in their thirties really choose to live in this condition.

In general, the effect of education on men childlessness and fertility intentions is weaker and it is strongly country-dependent. In Hungary and Italy it is never significant. In Switzerland and Bulgaria the most educated men are more likely to be unconvinced childless, and in

Romania less educated men are those who are less likely to belong to this group, in a mechanism of postponement (and not renounce) similar to those observed for women in most countries. There appears a slight tendency of highly educated men to show higher childlessness intentions – once controlling for other factors – only in Finland.

Occupational class appears to be weakly related with childlessness persistency or reversibility, both among men and women. In many of the countries under focus the coefficient for men are never statistically significant, as in Finland, Switzerland, Romania and Bulgaria, and therefore occupational status seems completely unrelated to men's childlessness. Few are the exceptions. Compared to the upper-skilled white collar, the low-skilled blue collar men are less likely to be unconvinced childless only in Hungary (probably they are those who postpone less), and more likely to be in the persistent childless group in Italy. In Italy also being out of the labor market increases the likelihood of persistent childlessness for men. We can therefore envisage for Italy a group of "frail" men that are more often childless without intentions (or hope?) to have children in the future. It is interesting that in Italy the sign of the estimated coefficient of the above variables are opposite on women's childlessness. In most country where women's participation to the labour market is limited and the male-breadwinner family typology still relevant, being out of the labour market decreases the likelihood to be childlessness – no matter the future intentions – as in Switzerland, Romania, and Italy. In the other countries this variable have no significant effect, while in Bulgaria the sign of the effect is surprisingly positive: being a housewife thus increases the likelihood of persistent childlessness – as it occurs among men.

Compared to upper white-collar women, blue-collar women are less likely to be persistent childless in Finland, Switzerland and Hungary (only upper blue collar however) and to be unconvinced childless in Italy and Romania and Hungary (only low-skilled blue collar). The type of work contract (permanent/other vs. fixed) has no effect on childlessness and fertility intentions in Finland, the only country for which the information was included in the model.

Health status is related to persistence of childlessness. Men having a chronic disease are more likely to be persistent childless in Switzerland, Italy, Hungary and Bulgaria, and less likely to be unconvinced childless in Finland and Romania. Less healthy women are more often persistently childless in Switzerland, Italy and Romania. Therefore we can state that *ceteris paribus* a poor health status can be a further – often neglected by literature – factors behind infertility.

Family of origin characteristics seems to matter as well. The only-children are more likely to be childless and relinquish parenthood than individual with siblings. The effect however is

country-dependent, as the association is significant for both men and women in Italy, Finland and Bulgaria, only for women in Hungary (but only for those having two or more siblings), only for men in Switzerland. Having siblings reduce also the risk of being childless, but planning to have children in the future, in Italy, Switzerland, and only for those having two or more siblings in Bulgaria, Hungary and Romania. This findings pose some concern for the future: if this mechanism persist, it is possible to envisage a further increase of childlessness when young people coming from smaller families on average than the previous generations will enter the reproductive age.

Somewhat unexpectedly, women who experienced parental marriage disruption during the childhood are more likely to be mothers, regardless the future intentions of having children or not. The effect however is significant only in Finland, Romania and Italy. The variable is not available for Hungary. Parental divorce appears to have no impact on men's fertility intentions, with the exception of Italy (negative effect on undecided childless), and Bulgaria (negative effect on undecided childless). Having had a working mother during childhood decrease the likelihood of being in the persistent childless group among the Italian women for which the variable has been included in the model, while increase the probability of being childless planning to have children.

With regard to the attitudes the analysis has been carried out only in Eastern Countries for the lack of suitable data in the other countries. Attitudes seem to play role in childlessness. For example those who agreed with the following statement: "Women need children to be fulfilled" are less likely to be persistently (but also unconvinced) childless. The result holds for the three countries and for both men and women.

In Finland, at the place of attitudes, we include religion attachment. Not surprisingly religious persons are less likely to exclude childbearing from their life. The effect however is statistically significant only among men.

6. Conclusions

This study is the first one analysing micro level determinants of childlessness in a plurality of countries (Eastern, Northern, Central and Southern Europe), characterised by diverse socioeconomic and value background, different welfare regimes and dissimilar prevalence of childlessness. The originality of this paper lays also into the approach: we decide to study childlessness determinants in a gender perspective, and to keep into account the life-course picture, to point out both the determinants of childlessness at 30-39 and at 40-49. Moreover

we also point out the factors associated to the persistency in the decision to remain childless or not in the future.

We have already mentioned the difficulties in finding suitable comparable data for all the selected country to study childlessness micro-level determinants in a cross-country perspective. Few surveys indeed contains the information on ever-born children, both for men and women. The process of data harmonization was challenging, and necessarily the common logit model could include only a limited number of covariates. Nonetheless results fill – at least in part – the gap of knowledge of this phenomenon.

First of all, it is useful to make a general comment on our findings. The hypothesis – based on previous findings in literature – that different determinants explain men and women childlessness has not been corroborated by the results of our models: there are some differences, actually, but in most cases in term of magnitude of the association rather than on the sign of the relation. In other cases – e.g. in the multinomial logit – most of gender differences are country-specific. The main variables are found to act in the same direction. Even labor market participation – and to some extent education – seems to have the same impact on childlessness by sex in most country, apart from those where the male breadwinner household model is still prevailing.

Union status is still a crucial determinants to decide to have children: being ever married results to be significant everywhere and at any age and therefore can be considered very important determinant of childlessness. On the whole, the link between marriage and childbearing is still the strongest one among those that have been analyzed across countries. Cohabitating is also associated to a reduced risk of childlessness – compared to the singles – but the effect in terms of magnitudes are smaller for cohabiters than for the ever-married. Childbearing thus has remained basically a couple project up to now, and in most case is still linked to traditional marriage. As cohabitation spreads, according to the Second demographic transition framework, it is possible that the impact of cohabitation on childlessness become more and more similar to that observed for the ever married. Otherwise, childlessness levels could increase even more.

Another important result to highlight is that the determinants of postponement are similar to the factors behind childlessness in later stage of the life. The logit model estimated among the childless in their thirties and the forties are not radically different. The magnitude of some relationships can differ, but in general the determinants are the same. Apart from the variable on health status, that seem relevant only for younger women, all the other relationships go in the same directions.

It is useful to remark that once we control for union status, the education level seems to lose its relevance as a determinant of childlessness. Less educated individuals postpone less, as they are usually more likely to start the family formation process at younger ages, thus increasing the likelihood to have children also when they are younger. This effect disappears at the oldest ages. Individuals with high education are instead more likely to be childless in their forties (with respect to those with medium levels of education) and the odds – as we remarked before – are surprisingly very similar among men and women. It is possible that the highly educated individuals tend to delay the decision to have children for the desire to pursue career or to reach better socio-economic status. However if the postponement is extreme (after 40s), it limits the possibility to conceive for the emergence of biological fertility impairments. The most educated thus are more likely to transform a voluntary postponement in "involuntary" childlessness. The growing demand for assisted reproduction all over Europe witnesses the existence of this mechanism. It is also possible however that the *habits creates the habits*. Being used to live without children makes people less prone to change their lifestyles, in a self-reinforcing mechanism. Tempo policies should be recommended, to contrast the generalised postponement process, therefore.

Analysing the persistence of the intentions or remaining children can just give some hints with this respect. Again union status is relevant and the lack of a suitable partner increases the likelihoods of excluding future childbearing. Education level and social status seem less relevant than we expected. Other factors seem to increase the persistence in childlessness, as such, for instance, being in poor health. Again a self-reinforcing mechanism could be in act: the more people postpone the more likely chronic diseases emerge, that push people to relinquish parenthood definitively. Another interesting factor linked to the persistence of childlessness is being an only-child. Path-dependency can emerge also in this case as the lower fertility had been in the past, the faster childlessness may diffuse in the future. Values and attitudes and the secularization process, seem to be important factors behind childlessness – as also macro analysis confirms those results (Miettinen et al. 2015) – but the lack of information for all the countries under study limited the possibilities to generalize the results.

Unfortunately up-dated comparative data sources – as for instance the old European Fertility Survey, or the Demographic and Health Surveys – with the information on the exposure of sexual intercourse, the use of contraception, the possible sterility problems, are not available and therefore some elements are lacking to build a comprehensive model able to distinguish voluntary and involuntary childlessness, but also irreversible childlessness.

The availability of opportune information that allow to make a distinction between voluntary and involuntary childlessness would be useful not only for academic purpose, but it would be of paramount importance to design and implement tailor-made policies that can be explicitly targeted to reduce childlessness, when it is not desiderated. If a decade ago the mainstreaming idea among scholars was that policies should have removed the obstacles that impeded couples to have a second child, today the main issue is how to allow European people to have at least one child before it is too late.

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Appendix

Table A: Multinomial logit regression results, men and women (unconvinced or persistent childless vs. parents). Romania.

	ROMANIA			
	MEN		WOMEN	
	Fathers vs unconvinced childless	Fathers vs persistent childless	Mothers vs unconvinced childless	Mothers vs persistent childless
Intercept	3.681**	2.983**	1.128*	3.634***
Marital status (Ref. Single not in couple)				
Ever married	-5.925***	-6.100***	-3.803***	-4.577***
Single and cohabiting	-4.043***	-4.582***	-1.694***	-2.925***
Education (Ref. Medium education)				
Low Education	-0.455*	-0.227	-1.025**	-1.149
High Education	0.358	0.123	-0.519	-0.573
Health status (Ref. No chronical disease)				
Chronical disease	-1.411**	-0.022	-0.037	0.991**
Siblings (Ref. No sibling)				
One sibling	0.161	-0.091	-0.532*	-0.452
2 or more siblings	-0.245	-0.557	-0.460	-0.706
Women need children to be fulfilled (Ref. Not agree)				
Agree	-0.662**	-1.282***	-0.377	-2.052***
Marriage is old-fashioned (Ref. Not agree)				
Agree	0.135	0.532	0.173	-0.257
People is trustworthy (Ref. Not agree)				
Agree	-0.143	0.054	-0.046	0.309
Current job (Ref. High skilled white collar)				
Low skilled white collar	0.518*	0.361	-0.215	-0.770
High skilled blue collar	-0.228	0.257	-0.763*	0.668
Low skilled blue collar	-0.506	0.150	-1.363**	-0.109
Not in work	-0.365	0.557	-0.807**	-0.137
Family of origin dissolution (Ref. No)				
Yes	0.017	0.098	-1.673**	-2.015**
Age class (Ref. 40-49)				
30-39	1.047***	-1.319***	2.009***	-1.076***

* = p<=.10; ** = p<=.05; *** = p<=.01;

Table B: Multinomial logit regression results, men and women (unconvinced or persistent childless vs. parents). Bulgaria.

	BULGARIA			
	MEN		WOMEN	
	Fathers vs unconvinced childless	Fathers vs persistent childless	Mothers vs unconvinced childless	Mothers vs persistent childless
Intercept	1.854***	2.085**	1.614**	2.065**
Marital status (Ref. Single not in couple)				
Ever married	-6.020***	-7.159***	-5.392***	-5.258***
Single and cohabiting	-3.667***	-5.216***	-2.277***	-3.198***
Education (Ref. Medium education)				
Low Education	-1.477***	-0.334	-1.703**	0.104
High Education	0.784**	-0.257	-0.731**	0.196
Health status (Ref. No chronical disease)				
Chronical disease	-0.491	0.991**	-0.511	0.238
Siblings (Ref. No sibling)				
One sibling	0.107	-0.260	-0.032	-0.421
2 or more siblings	-0.603	-1.797**	-0.673*	-1.006*
Women need children to be fullfilled (Ref. Not agree)				
Agree	-0.061	-1.262**	-0.831**	-1.849***
Marriage is old-fashioned (Ref. Not agree)				
Agree	0.047	0.422	0.348	-0.250
People is trustworthy (Ref. Not agree)				
Agree	-0.117	-0.608	-0.239	0.158
Current job (Ref. High skilled white collar)				
Low skilled white collar	0.309	0.654	-0.081	-0.015
High skilled blue collar	0.220	0.498	-0.300	0.152
Low skilled blue collar	0.311	1.024	-0.506	-0.792
Not in work	0.175	0.913	0.145	1.157
Family of origin dissolution (Ref. No)				
Yes	-0.104	-2.202**	-0.557	-1.099
Age class (Ref. 40-49)				
30-39	1.077***	-1.330**	1.052***	-1.386***

* = p<=.10; ** = p<=.05; *** = p<=.01;

Table C: Multinomial logit regression results, men and women (unconvinced or persistent childless vs. parents). Hungary.

	HUNGARY			
	MALE		FEMALE	
	Fathers vs unconvinced childless	Fathers vs persistent childless	Mothers vs unconvinced childless	Mothers vs persistent childless
Intercept	1.841***	2.923***	-1.032*	1.272
Marital status (Ref. Single not in couple)				
Ever married	-5.800***	-5.842***	-4.406***	-4.294***
Single and cohabiting	-3.724***	-3.970***	-2.399***	-2.053***
Education (Ref. Medium education)				
Low Education	-0.629	-0.090	-1.367**	1.686**
High Education	-0.041	-0.271	-0.400	0.758
Health status (Ref. No chronical disease)				
Chronical disease	0.035	0.560*	0.062	0.453
Siblings (Ref. No sibling)				
One sibling	-0.161	-0.398	0.059	-0.790
2 or more siblings	-0.393	-0.822*	-0.639*	-1.205**
Women need children to be fullfilled (Ref. Not agree)				
Agree	0.153	-1.065***	-0.635**	-2.020***
Marriage is old-fashioned (Ref. Not agree)				
Agree	0.724**	-0.409	1.084***	-0.329
People is trustworthy (Ref. Not agree)				
Agree	0.068	-0.756**	0.286	-0.162
Current job (Ref. High skilled white collar)				
Low skilled white collar	-0.415	-0.387	-0.362	-0.636
High skilled blue collar	-0.409	0.159	-0.926*	-0.339
Low skilled blue collar	-0.641*	0.532	-0.714	-1.560*
Not in work	-0.275	0.843	-0.490	-0.724
Age class (Ref. 40-49)				
30-39	1.422***	0.021	2.928***	-0.075

* = p<=.10; ** = p<=.05; *** = p<=.01;

Table D: Multinomial logit regression results, men and women (unconvinced or persistent childless vs. parents). Switzerland.

	SWITZERLAND			
	MALE		FEMALE	
	Fathers vs unconvinced childless	Fathers vs persistent childless	Mothers vs unconvinced childless	Mothers vs persistent childless
Intercept	0.264	0.1567	0.980***	-0.4816
Marital status (Ref. Single not in couple)				
Ever married	-3.2532***	-3.1791***	-1.921***	-2.7656***
Single and cohabiting	-0.3398	-0.3292	0.797**	0.924***
Education (Ref. Medium education)				
Low Education	-0.138	-0.426	0.079	-0.2931
High Education	0.5074**	0.3921	0.713***	0.2772
Health status (Ref. No chronical disease)				
Chronical disease	-0.1656	0.6106**	-0.031	0.496**
Siblings (Ref. No siblings)				
One sibling	-0.4444	-0.6654**	0.336	-0.2706
Current job (Ref. High skilled white collar)				
Low skilled white collar	-0.4096	0.2101	0.315	-0.1515
High skilled blue collar	-0.0502	-0.00654	-0.804	-1.2002*
Low skilled blue collar	0.0657	0.2535	-1.057	-0.6672
Not in work	-0.4115	0.4213	-1.391***	-1.6947***
Father's job (Ref. High skilled white collar)				
Low skilled white collar	0.4998	0.0169	-0.632*	0.0917
High skilled blue collar	0.4181*	-0.00593	-0.146	0.3453
Low skilled blue collar	-0.2152	0.0885	0.100	0.8844***
Not in work	0.771	0.7354	-0.169	0.1232
Family of origin dissolution (Ref. No)				
Yes	0.3294	0.2477	-0.156	0.1623
Age class (Ref. 40-49)				
30-39	1.3928***	0.3807	1.501***	-0.2107

* = p<=.10; ** = p<=.05; *** = p<=.01;

Table E: Multinomial logit regression results, men and women (unconvinced or persistent childless vs. parents). Italy.

	ITALY			
	MALE		FEMALE	
	Fathers vs unconvinced childless	Fathers vs persistent childless	Mothers vs unconvinced childless	Mothers vs persistent childless
Intercept	1.909***	1.844***	0.801***	2.498***
Marital status (Ref. Single not in couple)				
Ever married	-4.397***	-4.504***	-3.734***	-4.375***
Single and cohabiting	-3.170***	-3.236***	-2.442***	-2.760***
Education (Ref. Medium education)				
Low Education	-0.336***	0.176	-0.367***	0.021
High Education	0.168	-0.194	0.427***	0.109
Health status (Ref. No chronical disease)				
Chronical disease	-0.138	0.458***	-0.202	0.725***
Working mother (Ref. Not)				
Yes	0.050	0.125	0.071	-0.246**
Siblings (Ref. No sibling)				
One sibling	-0.352**	-0.402**	-0.351**	-0.456***
Two or more siblings	-0.521***	-0.779***	-0.597***	-0.977***
Current job (Ref. High skilled white collar)				
Low skilled white collar	0.051	-0.121	-0.101	0.084
High skilled blue collar	0.015	0.055	-0.233	0.011
Low skilled blue collar	0.196	0.397**	-0.411*	-0.053
Not in work	0.097	0.455**	-0.845***	-0.210
Family of origin dissolution (Ref. No)				
Yes	-0.293*	0.057	-0.256	-0.924***
Proportion life not in work				
	0.887***	1.068***	0.312	-0.385*
Age class (Ref. 40-49)				
30-39	1.256***	-0.506***	1.702***	-0.954***

* = p<=.10; ** = p<=.05; *** = p<=.01;

Table F: Multinomial logit regression results, men and women (unconvinced or persistent childless vs. parents). Finland.

	FINLAND			
	MALE		FEMALE	
	Fathers vs unconvinced childless	Fathers vs persistent childless	Mothers vs unconvinced childless	Mothers vs persistent childless
Intercept	0.391	2.552	-1.144	1.641
Union Status (Ref: Single not in couple)				
Married	-4.420***	-4.120***	-2.878***	-2.942***
Div/separated	-3.534***	-3.905***	-2.834***	-3.185***
Cohabiting	-2.570***	-3.103***	-1.184***	-1.658***
Education (Ref: Medium)				
Low	-0.586	1.002*	0.313	-0.48
High	0.253	0.469+	0.701**	0.168
Health status (Ref: Good)				
Poor	-0.996+	-0.279	0.346	0.319
Siblings (Ref: No sibling)				
One sibling	-0.404	-1.105***	-0.560+	-0.107
Two or more siblings	-0.108	-0.695*	-0.358	-0.512*
Current job (Ref. High skilled white-collar)				
Low skilled white-collar	0.815+	0.451	-0.142	-0.391+
Blue-collar	0.407	-0.07	-0.041	-0.574*
Enterpreneur/farmer	-1.4	0.164	0.235	-0.043
Not in employment	0.242	-0.304	-0.532+	-0.3
Family dissolution (Ref. No)				
Yes	-0.442	0.025	-0.706**	-0.367*
Religiousness (Ref. Secular)				
Religious	0.391	-0.756*	0.213	-0.264
Age class (Ref. 40-49)				
30-39	0.683*	-0.543*	1.963***	-0.229

+ = p<=.10; *= p<=.05; **= p<=.01; ***= p<=.001;