UNIVERSITAT DE BARCELONA

Imputing parenthood status in EU-SILC using SHARE for Spain, Austria, and Finland

G. Abio, M. Fink, T. Saroglou, A. Stoyanova[1]

Abstract

This research note details the methodology employed to impute parenthood status in EU-SILC when children leave home and no information of being a parent is available. To that end, we explore the information available at the Survey of Health, Ageing and Retirement in Europe (SHARE). In this note, four models are presented, applied separately on males and females of Austria, Spain and Finland. Our results show that the substitution effect of higher education prevails for females and decreases the probability of having a child; while the income effect prevails for men, increasing the probability of having a child. Higher income, both at individual and household level, is associated with increased probability of having a child in all samples, except the one of Spanish males. Nevertheless, the negative effect on the probability of having a child was spotted in one of the higher household income quartiles, possibly capturing the substitution effect of their partners.

Keywords: Education, Demographic Change, National Transfer Accounts

JEL: E01, J11, P51, O57

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[1] abio@ub.edu; marian.fink@wifo.ac.at; thsarogs7@alumnes.ub.edu; alexandrina.stoyanova@ub.edu

1. Introduction

National Transfer Accounts (NTA) are usually estimated by age and sometimes gender, but there is a high potential for analysis at a more disaggregated level. Abio et al. (2020) estimate disaggregated National Transfer Accounts adding education and family status to the previous characteristics. Unlike education, which varies only marginally throughout the life-cycle, parenthood status and living with children are the two most important characteristics affected by the timing of the surveys. Most surveys provide information on the number of household members residing in the household at the moment of the survey, leaving outside of the survey children who do not live in the household because they have moved out to live on their own or to live with the other parent. This problem exists across all ages; however, it becomes accentuated in the older age groups. To overcome it, we use the Survey of Health, Ageing and Retirement in Europe (SHARE) that contains information on parenthood status irrespective of the household composition for the 50+ population. From the information contained in SHARE, we create an imputation procedure that allows us to identify parenthood status from the age of 50 onwards in EU-SILC. Because EU countries have different welfare regimes, we perform the analyses separately for each country except for the UK, as this country does not participate in the SHARE.

2. Method

A total of 6,856 individuals from Austria (3,782 females, SHARE WAVE 4), 5,623 from Spain (2,896 females, SHARE WAVE 4) and 2,586 from Finland (1,327 females, SHARE WAVE 7) were included in the initial survey data. After deleting observations with missing values for the relevant variables, our final sample consists of 5,247 individuals from Austria, 3,727 from Spain and 2,007 from Finland.

Parenthood is our dependent variable. For Finland, parenthood is a binary indicator that equals one for those individuals who ever had a biological child, even if the child is deceased, and zero otherwise. For Austria and Spain, the binary indicator equals one for those individuals who have an alive child, including biological, foster, adopted children, and the children of their partner.

The determinants of parenthood include age, education, partnership status, individual income and household income. The independent variable age begins at 50 years and is split in seven groups: 50-54, 55-59, 60-64, 65-69, 70-74, 75-79 and 80+. Age is included to control for any possible cohort effects. The inclusion of education was decided due to its widely accepted relationship to fertility (Musick et al., 2009; Nisén et al., 2014; Jalovaara et al., 2019). Education includes three different binary indicators; the first equals one for those individuals with have less than a high school level of education, the second equals one for those individuals who have obtained a high school diploma, and the third one equals one for those individuals who hold a university degree. Being in a partnership has also been shown to result in higher likelihood of having a child (Brien et al., 1999; Baizán et al., 2003). In our study, partnership status is defined as binary variable that takes the value of one for those who have a partner and zero otherwise. Income - both at the individual and household level - is also an important determinant of fertility (Schultz, 2006; Herzer et al., 2012); thus, it is also included in our analysis. Individual annual income includes earnings from employment or self-employment, old age pensions, retirement pensions, survivor and war pensions, private occupational pensions, disability pensions and benefits, sickness pensions and benefits, unemployment and insurance benefits, and public care insurance benefits. Household income refers to average net monthly household income. Both individual and household incomes are divided into quartiles and

each quartile is represented by a different binary indicator, with Q1 being the lowest income quartile and Q4 being the highest income quartile.

Given the binary nature of our dependent variable, we employ weighted logistic regressions with robust standard errors. Each regression was performed separately for men and women and for each country.

We estimate four different models of parenthood. Model 1 is defined as follows:

$$y_i = \alpha_i + \beta_i Partner + \sum_{j=0}^{3} \gamma_j Age_{ji} + \sum_{j=0}^{3} \delta_j Education_{ji} + \varepsilon_i \quad (1)$$

with y_i denoting our outcome variable, Age_g are the age groups, $Education_g$ represents the educational level groups and ε_i is the error term.

In models (2) and (3) we add individual and household income quartiles to model (1), respectively. Finally, all determinants are included in model 4:

$$y_i = \alpha_i + \beta_i Partner + \sum_{j=0}^{3} \gamma_j Age_{ji} + \sum_{j=0}^{3} \delta_j Education_{ji} + \sum_{j=0}^{3} \lambda_j IndIQ_{ji} + \sum_{j=0}^{3} \mu_j HHIQ_{ji} + \varepsilon_i \quad (2)$$

Due to the lack of individual income data, we were only able to estimate models 1 and 3 for Finland.

Due to missing educational level values, the final samples used in models 1 and 2 contain 4,958 observations (2,831 females) for Austria, 3,471 observations (1,893 females) for Spain and 1,969 observations (1,052 females) for Finland. Finally, due to missing data on household income, the number of observations in models 3 and 4 were further reduced to 3,001observations (1,785 females) for Austria, 1,661(933 females) for Spain and 1,188 (621 females) for Finland.

Table 1. Descriptive statistics, Austria.

	All		Males		Females	
	N	Mean	N	Mean	N	Mean
Is a parent	5,088	0.873	2,171	0.867	2,918	0.878
Has a partner	5,088	0.652	2,170	0.782	2,918	0.556
Age	5,088	65.651	2,170	65.351	2,918	65.874
Less than secondary education	5,007	0.249	2,140	0.143	2,867	0.329
Secondary education	5,007	0.495	2,140	0.555	2,867	0.451
University education	5,007	0.254	2,140	0.301	2,867	0.219
Individual income (euros)	4,407	22,000.280	1,826	31,360.920	2,581	15,377.830
Household income (euros)	3,048	6,027.688	1,221	7,268.980	1,821	5,191.299

Tables 1-3 present descriptive statistics of the baseline characteristics of the study population stratified by gender. In all three countries more than 65%, except for Austrian women, has a partner and almost one in nine adults is a parent. The most staking cross-country difference is in the highest educational level attained. While above 65% of Austrians and Finish hold at least secondary education, in Spain the figure is only around 20%.

Table 2. Descriptive statistics, Spain.

	All		Males		Females	
	N	Mean	N	Mean	N	Mean
Is a parent	3,647	0.899	1,659	0.887	1,988	0.910
Has a partner	3,647	0.769	1,659	0.853	1,988	0.698
Age	3,647	67.773	1,659	67.678	1,988	67.852
Less than secondary education	3,475	0.824	1,578	0.796	1,897	0.847
Secondary education	3,475	0.091	1,578	0.102	1,897	0.082
University education	3,475	0.084	1,578	0.100	1,897	0.070
Individual income (euros)	3,148	9,538.322	1,369	13,739.020	1,779	6,305.743
Household income (euros)	1,738	4,242.307	758	4,264.352	980	4,225.256

Table 3. Descriptive statistics, Finland.

	All		Males		Females	
	N	Mean	N	Mean	N	Mean
Is a parent	1,975	0.886	919	0.873	1,056	0.897
Has a partner	1,975	0.755	919	0.798	1,056	0.717
Age	1,975	65.939	919	65.932	1,056	65.945
Less than secondary education	1,973	0.294	919	0.316	1,054	0.274
Secondary education	1,973	0.327	919	0.350	1,054	0.307
University education	1,973	0.378	917	0.333	1,054	0.418
Household income (euros)	1,188	3,402.684	567	3,479.526	621	3,332.523

3. Results

The estimation results of the likelihood of being a parent are shown in Tables 4-9. All available samples, that is, individuals aged 50 and above, are used in the analyses presented here. It should be noted that in the initial estimations, that were later used to impute parenthood in EU-SILC, only individuals aged 60 and above were considered. these analyses are given in the Appendix to this research note.

3.1 Partnership

As expected, people having a partner are more likely to be parents as revealed by the positive and statistically significant coefficients β in all four models. The largest effect is found in Spanish males in Model 4, where the change in partnership status increases the probability of being a parent by 355 percentage points (pp). Even the smallest impact of partnership status on the likelihood of having a child, observed for Finnish females in Model 1, is quantitatively important (53.8 pp). The only coefficients that turned out not to be statistically significant are those found for Finnish males and females in Model 4, possibly due to the low number of available observations.

3.2 Education

Although not all higher education coefficients δ are statistically significant, the ones that are statistically significant reveal a lower probability of parenthood for females with lower education and a higher probability of parenthood for males with a higher education.

More specifically, Austrian females who hold a university degree are less likely to become mothers compared to their counterparts with less than secondary education. The effect is stable across all four models, being the largest in Model 1 with highly educated Austrian women being 75.4 percentage point less likely to have a child than those with the lowest levels of education. The inverse relationship between education and parenthood is also observed for Spanish women, however the effect is only marginally significant in 1 and 2.

An opposite pattern is observed in some of the models that use the male samples. However, only a few of the estimated coefficients are statistically significant at the margin for Spanish and Finish men. Being those more educated more likely to be parents.

3.3 Individual Income

The impact of individual income on the likelihood of being a parent is positive, both for males and females but not in all models and not in all samples. The strongest effect is observed for Spanish men. In Model 1, the likelihood of having a child among Spanish men from the highest income quartile is 106 pp higher than that of their counterparts belonging to the lowest income strata. The individual income is not statistically significant in Model 4 when the household income is added to the covariates.

For women, individual income exerts a positive effect on the probability of having a child, both in Spain and in Austria. However, only a few of the coefficients are statistically significant at the margin and the increase is of around 40 pp.

Interestingly, once the household income is added to the covariates (Model 4), individual income remains relevant only for Spanish females. Women from the higher income

quartiles are more likely to be mothers than those from the lowest quartile. That may be explained by the fact that Spanish women included in wave 4 of SHARE belong to a cohort characterised mainly by male breadwinner and female homemaker families.

There are no results for Finland, due to the unavailability of individual income data.

3.4 Household Income

Our findings revel that household income does not significantly impact the likelihood of having a child for women. The only exception is the significant and positive effect of household income for Finish women. Females from the third income quartile are more likely, 114.4 pp, to be mothers than their counterparts form the lowest income quartile.

For men in Austria and Finland, household income is consistently the strongest determinant of the likelihood of being a parent. For Austrian males, the probability of parenthood is around 90 percentage points higher in the well-off households. In the case of Finland, men are also more likely, more than 120 pp, to be fathers if they are from wealthier families.

Finally, the only negative statistically significant effect of household income on the probability of being a parent is found for Spanish males. But it only holds for those belonging to the second lowest income quartile compared to those from the lowest quartile.

4. Imputation of childlessness in EU-SILC

After doing the regressions, the next step to impute parenthood status to EU-SILC observations is to obtain the marginal distribution of parents by sex, education and age group for each country.

For men, the marginal distributions are obtained directly from SHARE, while for women they are taken from an external data source (Zeman, Brzozowska, et al., 2014; Kreyenfeld & Konietzka, 2017). In the case of Spain, since there were no observations without children in the high education group for men of ages 75-79, we decided to use the mean of the corresponding adjacent age groups. In the case of Finland, we could only find data for the female cohorts born in 1940-1969, and we decided to use the values of the closest age group for older ages where data were missing.

Figures A-C show these boundaries for each of the three education levels: low, medium and high. For Austrian females, the boundaries of childlessness are significantly larger when education is higher. This relationship is not observed for Austrian males. Generally, the boundaries remain relatively stable across similarly educated age groups, with the exception of highly educated women aged 80 or above.

Older women in Spain have higher childlessness boundaries than younger women, with the exception of low educated women. As in Austria, the higher the education level for women, the higher the childlessness boundary is. The relationship is again not observed for Spanish men. Finally, Finland's childlessness boundaries follow some interesting patterns. While low educated men have much higher childlessness boundaries than the rest of the groups when they are between the ages of 50 to 54, older low educated men's childlessness boundaries cluster around the boundary values that the rest of the groups have. Once again, education does not exhibit a clear relationship with

boundaries for men. Higher educated women have the highest childlessness boundaries, while the medium educated ones have the lowest. Therefore, in the case of Finnish women, education does not reveal a clear relationship with the marginal distribution of mothers. It should be noted, however, that from the age group of 65-69 onwards, the boundaries of Finnish women are constant, since there was no availability of data for women born before 1940.

Figure A. Boundaries by education level: Austria

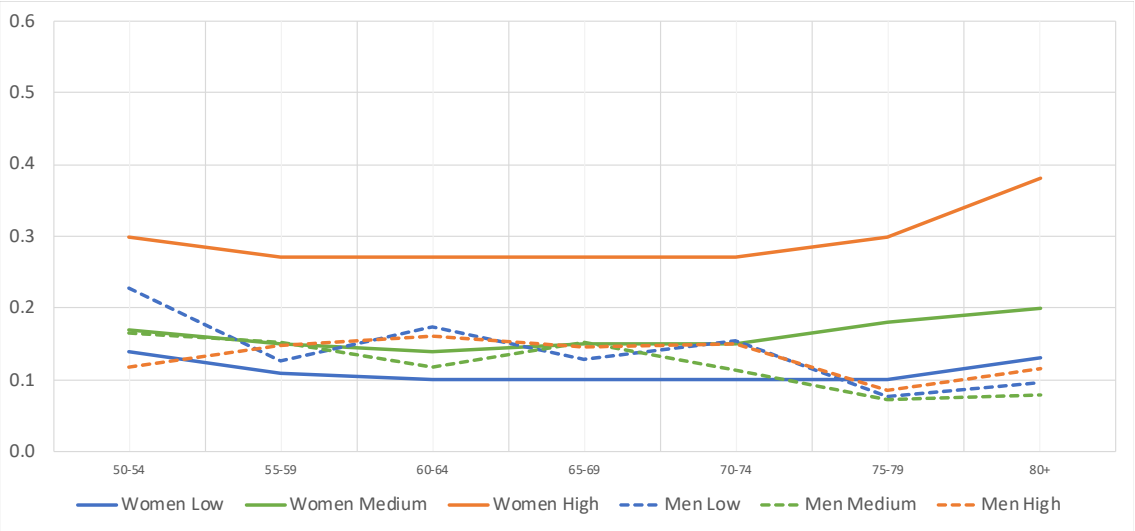


Figure B. Boundaries by education level: Spain

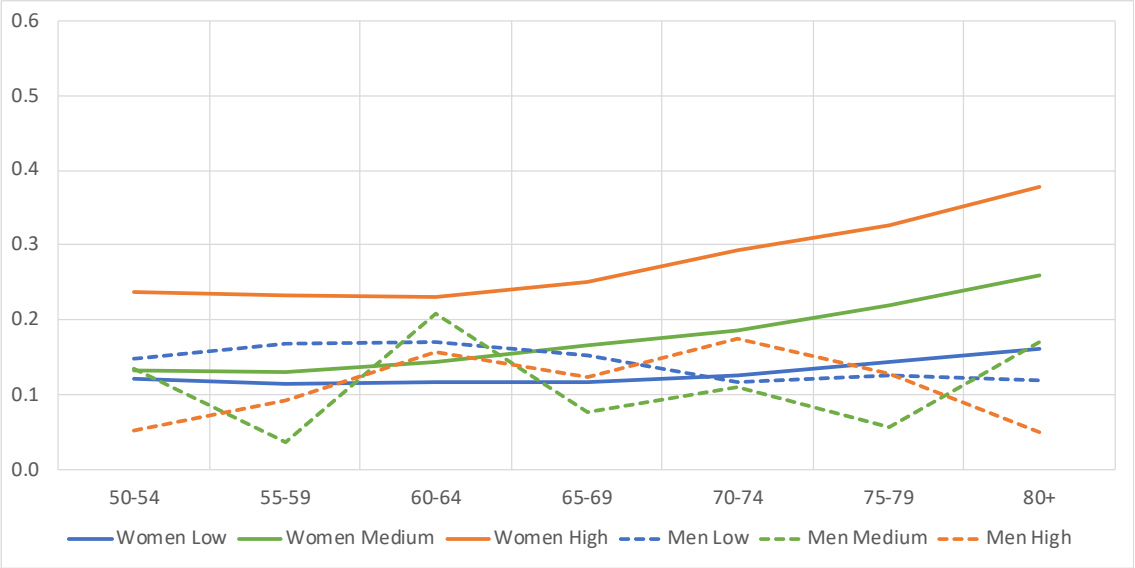
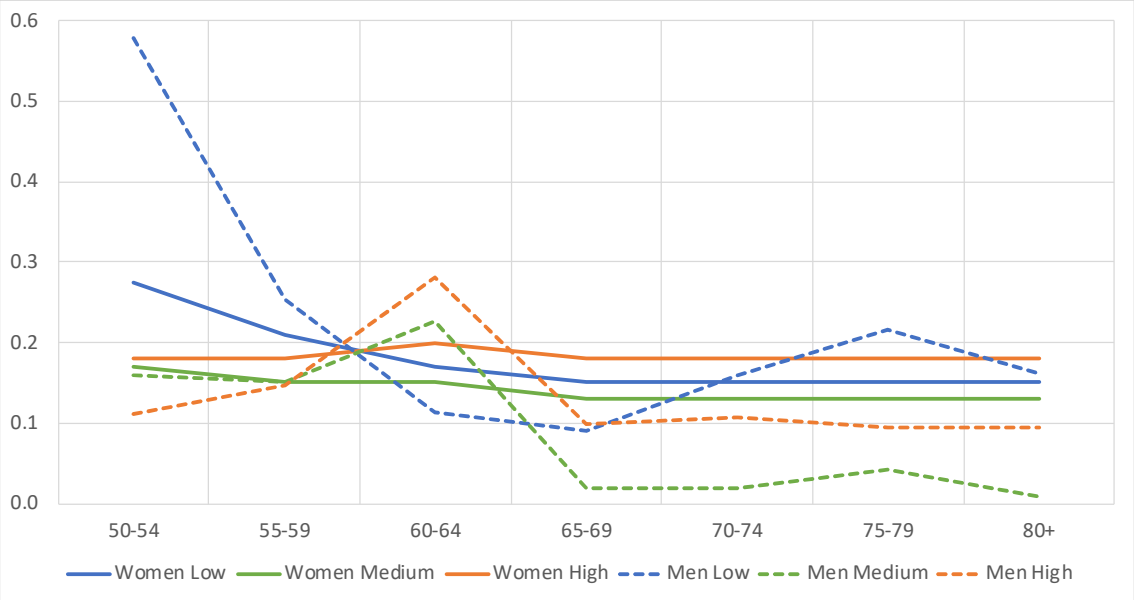


Figure C. Boundaries by education level: Finland



Once we have the boundaries given by the marginal distributions, we proceed to estimate the probability of being a parent for individuals aged 50+ in EU-SILC using the regression results. We apply the following procedure to all individuals aged 50+. First, we assign the condition of being a parent to all individuals who are living with their children and hence are reported to be parents in EU-SILC. In the case of couples, if one partner is reported to be a parent, the other partner is assigned the same parenthood status, regardless of the fact that he or she is the reported parent of the children of their partner.

Second, we assign childlessness to women. Those who are not living with children are assigned a probability of being a mother based on the previous regression results. We include a random component to distinguish observations with the same characteristics for which the same regression coefficient is applied. We then order the observations by age group and education level according to their probability of being a mother, including those who are already assigned to be one in the previous step, and use the boundaries as cut-off values for the childlessness imputation.

The third step consists of doing the imputation to men in a couple. In this case, the male partner is assigned the childlessness status of his female partner.

Finally, in the last step we deal with single men. We add males in a couple (who already have a parenthood status) to single males and apply a similar procedure as in step 2, first ordering the observations by age group, education level and their probability of being a father according to the regression coefficients and the random component. Single parents and fathers in a couple are at the top of the list. Then we assign the parenthood status to single men (who are not reported to be parents) taking into account the marginal distribution found in SHARE.

Figures D-I show the boundaries and the marginal distributions obtained with the imputation separately for women and men. We closely match the boundaries for women for all education levels. There is a mismatch with the boundaries of higher educated older Austrian women. This mismatch appears to be caused by the low number of observations belonging to those groups.

For men, we match very well the boundary for Austria and relatively well for Spain. For Spanish males, we match the boundary very closely for the lowest education level, however, there is a wider gap for some age groups for the medium and high education levels. For Finnish men, we match the boundaries quite closely, however, a mismatch starts to appear for middle-educated individuals over the age of 65. Similarly to the case of Spanish males, this mismatch is related to the lack of representativeness of these specific age groups in Share.

Figure D. Share of childlessness; Austrian Females

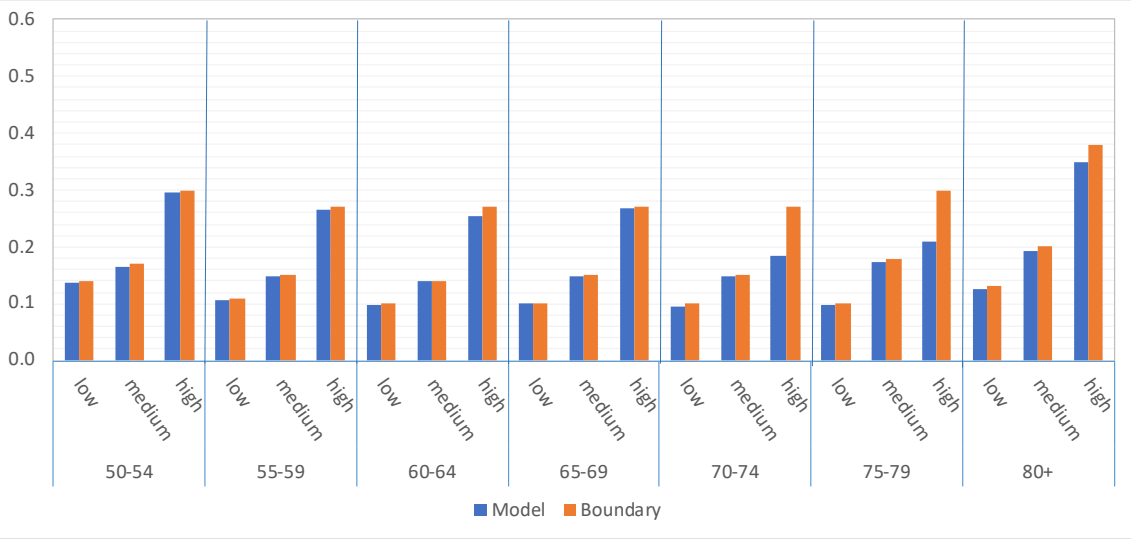


Figure E. Share of childlessness; Austrian Males

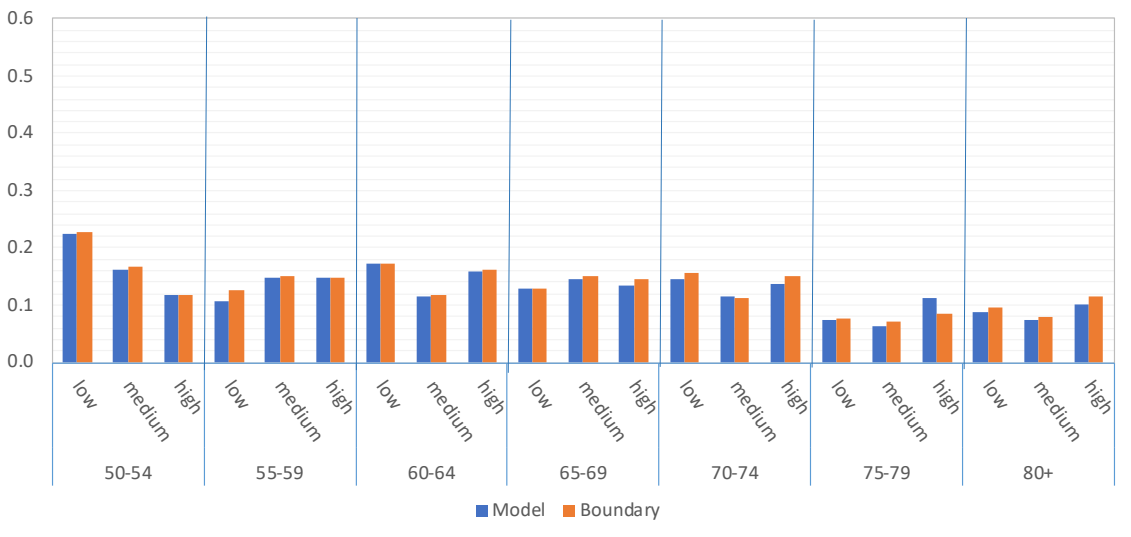


Figure F. Share of childlessness; Spanish Females

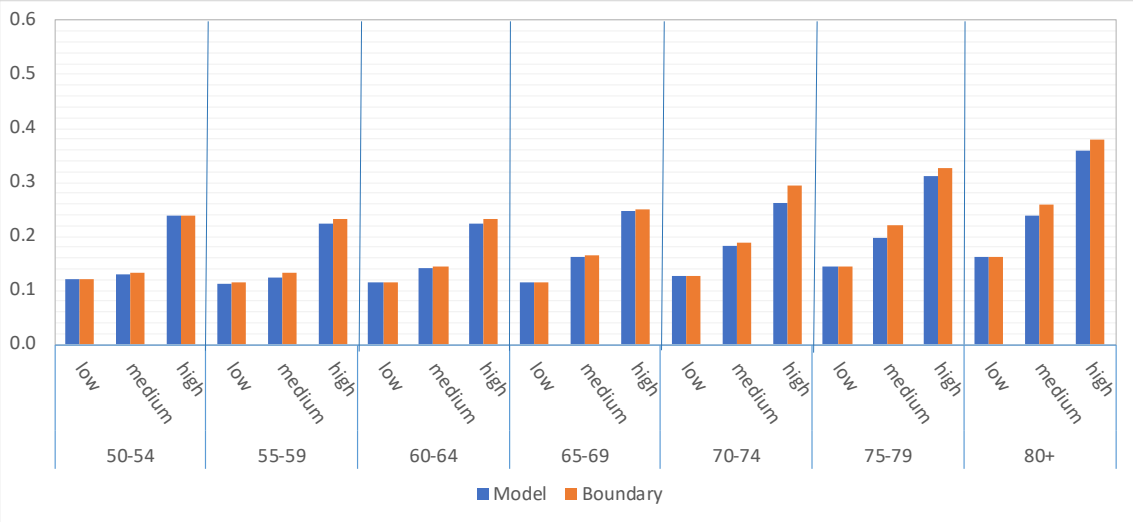
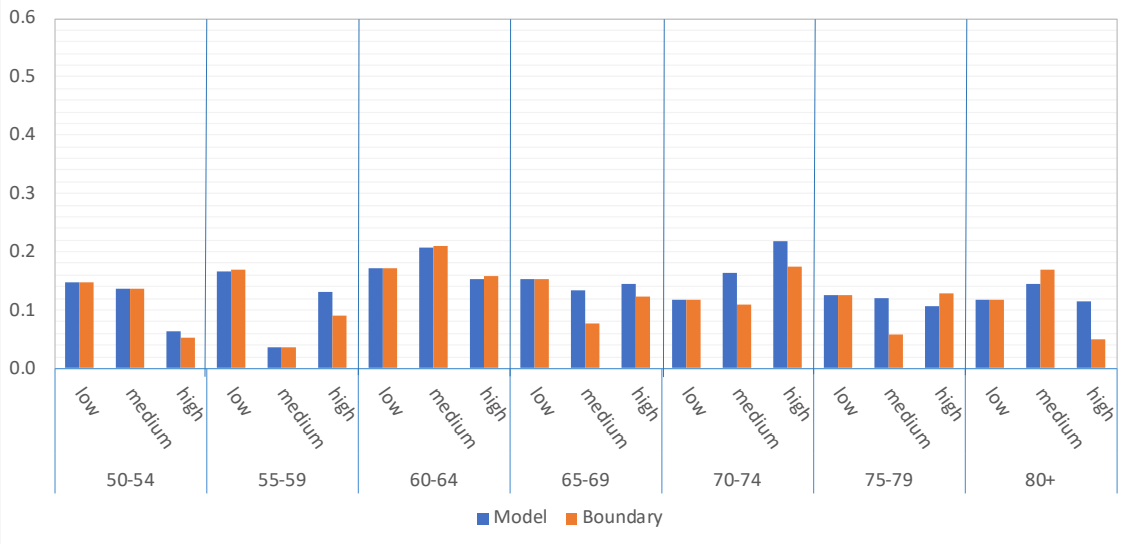


Figure G. Share of childlessness; Spanish Males



Lastly, Figure J shows the shares of our population by education, partnership and parenthood status (single and childless, in a couple and childless, single and a parent, in a couple and a parent, and student). We are able to use the above results to estimate the missing population shares with respect to parenthood status of individuals over the age of 50. Overall, the population shares follow an intuitive path, with single individuals – both parents and childless –surpassing couples towards the end of the lifetime. An earlier version of this figure – which includes only an imputation of childlessness for people aged above 60 – can be found in the Appendix. Comparing the two figures shows that we have managed to close the gap of unaccounted parents significantly. Nevertheless, it is clear from Figure J that there still exists a certain gap for the individuals aged between 45-49 years.

Figure H. Share of childlessness; Finnish Females

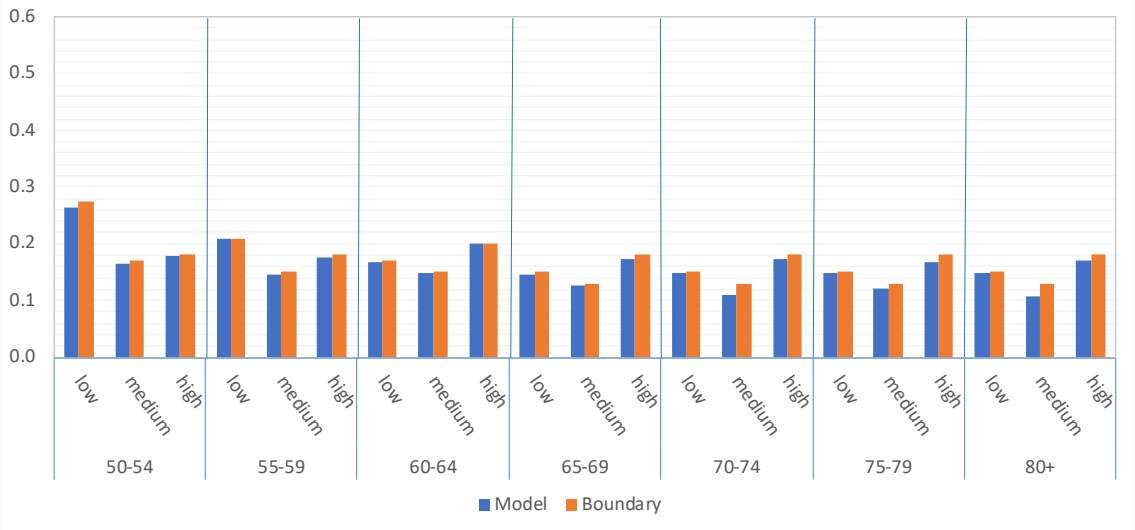


Figure I. Share of childlessness; Finnish Males

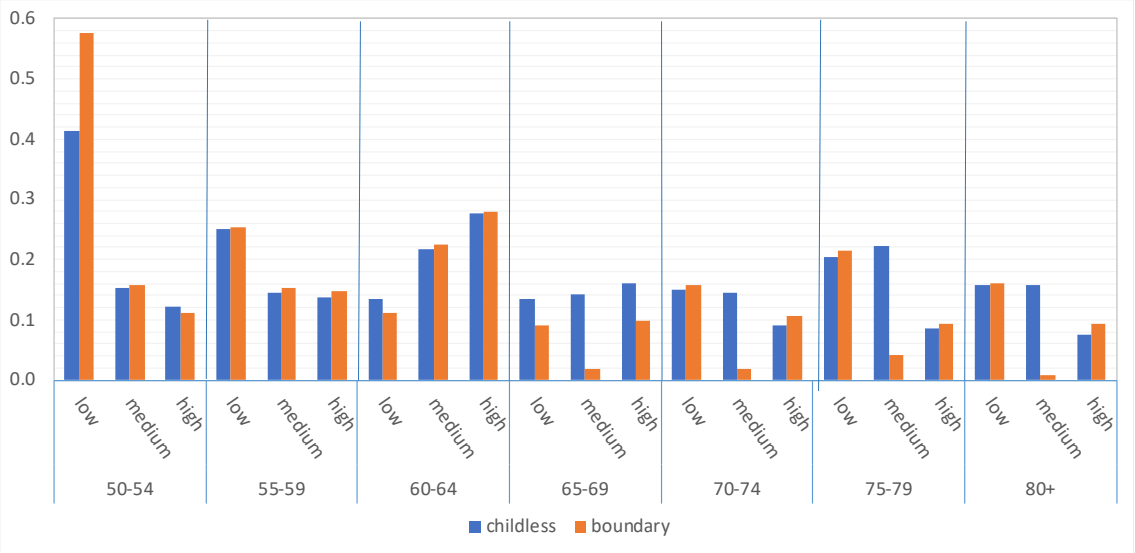
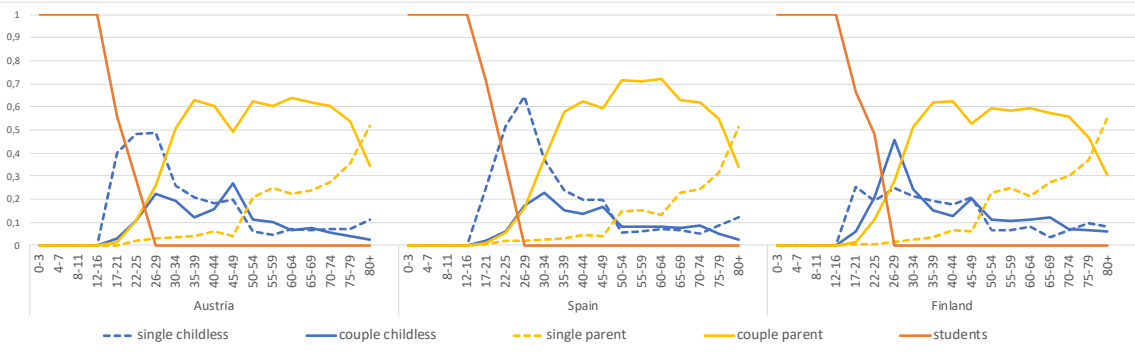


Figure J. Population shares by education, partnership and parenthood status



5. Discussion and concluding remarks

With the exception of partnership, our models revealed a significant level of heterogeneity, both across genders and countries. University education decreases the probability of having a child for Austrian females, but increases it for Spanish males. Secondary education reduces the likelihood of having a child for Spanish females, but increases it for Finnish males. The overall trend appears to be that the higher levels of education have a positive effect for males and a negative one for females. This could be attributed to relative levels of the substitution and income effects between the two genders when it comes to fertility (Cohen et al., 2013). The cost of having a child falls disproportionately on women, highlighting the substitution effect. At the same time, the income effect prevails for men.

The positive impact of income on the likelihood of being a parent, when significant, implies a stronger income effect. This also holds when instead of individual income, household income is included in the analyses. The only exception is observed for Spanish males where income increases significantly reduce the probability of having a child. Nevertheless, a positive income effect among individuals belonging to lower socioeconomic strata has been shown in previous research (Cohen et al., 2013). The observed relationship could be capturing the substitution effect of females within the household.

Regarding the imputation, our model managed to largely match the boundaries. There are three main improvement points. First, the individuals aged between 45 and 49 years still represent inconsistent population shares, since no data is available to allow us to impute childlessness for this age group as well. Second, the low number of observations for the higher educated Finnish women caused a mismatch between the boundaries and our model. Finally, there were also mismatches with the boundaries of educated – and especially middle-educated – males in Spain and Finland.

In order to be able to improve our predictions of parenthood and to more accurately impute the probability of being a parent into the EU-SILC dataset, the results must be strengthened statistically and the differences between the groups must be clarified. To achieve these goals, we need a higher number of observations, especially among Finnish females. Additionally, more accurate boundaries for the Spanish and Austrian male groups are required. Despite the lack of statistical significance in some cases, our imputation appears to provide an accurate picture regarding the population shares. Nevertheless, the omission of individuals aged 45-49 from our imputation has left a gap in our population shares and an important next step is to utilise a dataset that will allow us to fill it.

Table 4. The likelihood of being a parent for Austrian Males

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	2.189*** (0.156)	2.113*** (0.17)	1.697*** (0.216)	1.747*** (0.223)
Education (Ref. Less than secondary)				
Secondary	0.022 (0.223)	-0.019 (0.249)	-0.019 (0.279)	-0.04 (0.289)
University	0.006 (0.242)	-0.121 (0.288)	-0.121 (0.305)	-0.071 (0.334)
Age groups (Ref. Aged 50-54)				
Aged 55-59	0.072 (0.278)	0.112 (0.313)	0.266 (0.345)	0.266 (0.352)
Aged 60-64	-0.157 (0.231)	-0.046 (0.257)	0.069 (0.28)	0.085 (0.291)
Aged 65-69	-0.135 (0.244)	-0.129 (0.263)	0.085 (0.297)	0.025 (0.306)
Aged 70-74	-0.086 (0.253)	-0.144 (0.273)	0.14 (0.311)	0.088 (0.317)
Aged 75-79	0.617* (0.363)	0.729* (0.4)	0.995** (0.459)	0.947** (0.464)
Aged 80+	0.854*** (0.329)	0.827** (0.351)	0.722* (0.377)	0.782** (0.381)
Individual income (Ref. Q1 (lowest))				
Q2	-	0.443 (0.293)	-	0.549 (0.379)
Q3	-	0.619** (0.276)	-	0.339 (0.374)
Q4 (highest)	-	0.602** (0.271)	-	0.249 (0.376)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	0.819*** (0.265)	0.87*** (0.281)
HHQ3	-	-	0.893*** (0.289)	0.987*** (0.321)
HHQ4 (highest)	-	-	0.935*** (0.285)	0.946*** (0.297)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5. The likelihood of being a parent for Austrian Females

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	0.941*** (0.145)	0.9*** (0.174)	1.312*** (0.233)	1.168*** (0.258)
Education (Ref. Less than secondary)				
Secondary	-0.284 (0.174)	-0.07 (0.187)	-0.147 (0.215)	-0.072 (0.222)
University	-0.754*** (0.19)	-0.614*** (0.222)	-0.664*** (0.231)	-0.586** (0.253)
Age groups (Ref. Aged 50-54)				
Aged 55-59	-0.029 (0.253)	-0.028 (0.273)	-0.104 (0.308)	-0.04 (0.318)
Aged 60-64	0.263 (0.24)	0.43* (0.255)	0.446 (0.291)	0.484 (0.295)
Aged 65-69	0.267 (0.251)	0.555** (0.276)	0.673** (0.313)	0.768** (0.325)
Aged 70-74	0.043 (0.246)	0.23 (0.27)	0.312 (0.306)	0.391 (0.317)
Aged 75-79	0.355 (0.313)	0.479 (0.329)	0.668* (0.375)	0.673* (0.381)
Aged 80+	-0.208 (0.265)	-0.071 (0.285)	0.062 (0.304)	0.111 (0.314)
Individual income (Ref. Q1 (lowest))				
Q2	-	-0.383* (0.212)	-	-0.281 (0.257)
Q3	-	-0.451* (0.233)	-	-0.356 (0.291)
Q4 (highest)	-	-0.403 (0.256)	-	-0.326 (0.33)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	-0.042 (0.205)	-0.053 (0.231)
HHQ3	-	-	0.15 (0.28)	0.169 (0.307)
HHQ4 (highest)	-	-	0.107 (0.24)	0.164 (0.279)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6. The likelihood of being a parent for Spanish Males

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	3.273*** (0.232)	3.394*** (0.261)	3.507*** (0.339)	3.549*** (0.364)
Education (Ref. Less than secondary)				
Secondary	0.115 (0.476)	0.355 (0.516)	0.614 (0.627)	0.562 (0.693)
University	0.686* (0.398)	0.883 (0.541)	0.437 (0.569)	0.309 (0.573)
Age groups (Ref. Aged 50-54)				
Aged 55-59	0.252 (0.429)	-0.055 (0.49)	-0.034 (0.586)	-0.25 (0.629)
Aged 60-64	0.008 (0.441)	-0.146 (0.514)	0.252 (0.59)	0.045 (0.629)
Aged 65-69	0.088 (0.441)	-0.122 (0.53)	-0.004 (0.583)	-0.088 (0.654)
Aged 70-74	0.658 (0.471)	0.483 (0.558)	0.63 (0.633)	0.398 (0.684)
Aged 75-79	0.747 (0.476)	0.343 (0.544)	0.742 (0.612)	0.586 (0.676)
Aged 80+	1.144** (0.464)	0.696 (0.55)	0.847 (0.61)	0.691 (0.694)
Individual income (Ref. Q1 (lowest))				
Q2	-	0.806* (0.456)	-	-0.293 (0.634)
Q3	-	0.741 (0.457)	-	-0.056 (0.654)
Q4 (highest)	-	1.064** (0.44)	-	0.046 (0.59)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	-0.907** (0.403)	-0.88** (0.436)
HHQ3	-	-	0.419 (0.442)	0.414 (0.48)
HHQ4 (highest)	-	-	.369 (0.47)	0.464 (0.492)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. The likelihood of being a parent for Spanish Females

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	1.404*** (0.234)	1.406*** (0.298)	1.992*** (0.356)	1.92*** (0.446)
Education (Ref. Less than secondary)				
Secondary	-0.652* (0.375)	-0.546 (0.457)	0.117 (0.541)	0.308 (0.601)
University	-0.196 (0.358)	-0.454 (0.407)	-0.273 (0.487)	-0.205 (0.521)
Age groups (Ref. Aged 50-54)				
Aged 55-59	0.294 (0.392)	0.359 (0.455)	0.254 (0.571)	0.409 (0.62)
Aged 60-64	0.992** (0.439)	1.034** (0.491)	0.719 (0.607)	0.55 (0.601)
Aged 65-69	0.671 (0.409)	0.657 (0.459)	0.581 (0.594)	0.659 (0.62)
Aged 70-74	0.704 (0.43)	0.659 (0.474)	0.639 (0.619)	0.665 (0.646)
Aged 75-79	0.704* (0.428)	0.555 (0.464)	0.642 (0.592)	0.423 (0.597)
Aged 80+	0.609 (0.396)	0.527 (0.443)	0.729 (0.56)	0.521 (0.577)
Individual income (Ref. Q1 (lowest))				
Q2	-	0.774** (0.323)		1.046** (0.448)
Q3	-	0.005 (0.363)		0.204 (0.471)
Q4 (highest)	-	0.112 (0.429)		0.043 (0.549)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	-0.101 (0.396)	0.038 (0.404)
HHQ3	-	-	-0.367 (0.386)	-0.349 (0.386)
HHQ4 (highest)	-	-	-0.29 (0.343)	-0.074 (0.354)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 8. The likelihood of being a parent for Finish Males

Variables	Model 1	Model 3
Having a partner	1.038*** (0.339)	0.514 (0.372)
Education (Ref. Less than secondary)		
Secondary	0.633* (0.356)	0.275 (0.460)
University	0.313 (0.380)	-0.104 (0.534)
Age groups (Ref. Aged 50-54)		
Aged 55-59	0.090 (0.526)	-0.158 (0.653)
Aged 60-64	-0.435 (0.553)	-0.787 (0.611)
Aged 65-69	1.116* (0.619)	0.740 (0.735)
Aged 70-74	0.637 (0.546)	0.525 (0.679)
Aged 75-79	0.289 (0.685)	0.340 (0.806)
Aged 80+	0.787 (0.650)	0.833 (0.822)
Household Income (Ref. HHQ1 (lowest))		
HHQ2	-	0.076 (0.468)
HHQ3	-	1.215** (0.520)
HHQ4 (highest)	-	1.468** (0.612)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 9. The likelihood of being a parent for Finish Females

Variables	Model 1	Model 3
Having a partner	0.538** (0.273)	-0.029 (0.393)
Education (Ref. Less than secondary)		
Secondary	-0.100 (0.424)	0.347 (0.448)
University	-0.566 (0.443)	-0.343 (0.434)
Age groups (Ref. Aged 50-54)		
Aged 55-59	0.155 (0.464)	-0.271 (0.521)
Aged 60-64	0.521 (0.489)	0.172 (0.566)
Aged 65-69	0.605 (0.538)	0.755 (0.753)
Aged 70-74	0.334 (0.556)	0.259 (0.640)
Aged 75-79	0.416 (0.598)	0.222 (0.696)
Aged 80+	0.186 (0.620)	0.218 (0.704)
Household Income (Ref. HHQ1 (lowest))		
HHQ2	-	0.483 (0.450)
HHQ3	-	1.144** (0.533)
HHQ4 (highest)	-	0.968 (0.617)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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Appendix

Tables A1-A6 contain the estimation results of the likelihood of being a parent for the restricted sample that includes only individuals aged 60 and above.

Table A1. The likelihood of being a parent for Austrian Males

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	1.851*** (0.181)	1.87*** (0.182)	1.644*** (0.231)	1.658*** (0.231)
Education (Ref. Less than secondary)				
Secondary	0.100 (0.243)	0.117 (0.250)	0.112 (0.293)	0.143 (0.293)
University	-0.125 (0.260)	-0.068 (0.290)	0.003 (0.324)	0.053 (0.347)
Age groups (Ref. Aged 60-64)				
Aged 65-69	0.008 (0.231)	-0.012 (0.232)	0.013 (0.286)	0.005 (0.289)
Aged 70-74	0.072 (0.241)	0.033 (0.245)	0.048 (0.303)	0.031 (0.311)
Aged 75-79	0.751** (0.349)	0.742** (0.351)	0.858** (0.431)	0.843* (0.434)
Aged 80+	0.911*** (0.320)	0.908*** (0.327)	0.634* (0.377)	0.625 (0.386)
Individual income (Ref. Q1 (lowest))				
Q2	-	0.330 (0.307)	-	0.376 (0.521)
Q3	-	0.410 (0.276)	-	0.066 (0.490)
Q4 (highest)	-	0.324 (0.258)	-	0.153 (0.474)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	0.750** (0.327)	0.858** (0.338)
HHQ3	-	-	0.368 (0.325)	0.452 (0.368)
HHQ4 (highest)	-	-	0.434 (0.314)	0.494 (0.342)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A2. The likelihood of being a parent for Austrian Females

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	0.813*** (0.168)	0.866*** (0.187)	1.232*** (0.273)	1.001*** (0.289)
Education (Ref. Less than secondary)				
Secondary	-0.397** (0.191)	-0.391** (0.190)	-0.246 (0.236)	-0.197 (0.242)
University	-0.781*** (0.213)	-0.764*** (0.221)	-0.708*** (0.248)	-0.624** (0.258)
Age groups (Ref. Aged 60-64)				
Aged 65-69	-0.012 (0.224)	-0.004 (0.225)	0.208 (0.291)	0.136 (0.294)
Aged 70-74	-0.247 (0.219)	-0.237 (0.224)	-0.15 (0.287)	-0.227 (0.292)
Aged 75-79	0.035 (0.292)	0.039 (0.295)	0.217 (0.359)	0.132 (0.366)
Aged 80+	-0.538** (0.24)	-0.521** (0.243)	-0.395 (0.285)	-0.461 (0.293)
Individual income (Ref. Q1 (lowest))				
Q2	-	0.205 (0.212)	-	-0.282 (0.372)
Q3	-	0.143 (0.251)	-	-0.453 (0.396)
Q4 (highest)	-	0.130 (0.244)	-	-0.767* (0.399)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	0.078 (0.245)	0.246 (0.259)
HHQ3	-	-	0.308 (0.286)	0.580* (0.300)
HHQ4 (highest)	-	-	0.217 (0.263)	0.403 (0.286)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A3. The likelihood of being a parent for Spanish Males

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	3.19*** (0.259)	3.195*** (0.26)	3.235*** (0.369)	3.246*** (0.366)
Education (Ref. Less than secondary)				
Secondary	-0.039 (0.472)	-0.079 (0.486)	-0.110 (0.633)	-0.099 (0.617)
University	0.037 (0.419)	0.076 (0.447)	-0.577 (0.630)	-0.569 (0.616)
Age groups (Ref. Aged 60-64)				
Aged 65-69	0.032 (0.367)	-0.013 (0.368)	-0.231 (0.508)	-0.281 (0.507)
Aged 70-74	0.606 (0.408)	0.613 (0.413)	0.228 (0.557)	0.187 (0.564)
Aged 75-79	0.641 (0.416)	0.681 (0.420)	0.496 (0.566)	0.459 (0.578)
Aged 80+	1.033** (0.414)	1.116*** (0.416)	0.700 (0.543)	0.661 (0.537)
Individual income (Ref. Q1 (lowest))				
Q2	-	-0.094 (0.449)	-	-0.689 (0.865)
Q3	-	0.315 (0.376)	-	0.165 (0.741)
Q4 (highest)	-	0.502 (0.357)	-	-0.246 (0.727)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	-0.055 (0.438)	-0.139 (0.455)
HHQ3	-	-	1.093** (0.515)	1.108** (0.554)
HHQ4 (highest)	-	-	1.194** (0.538)	1.259** (0.537)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A4. The likelihood of being a parent for Spanish Females

Variables	Model 1	Model 2	Model 3	Model 4
Having a partner	1.579*** (0.256)	1.655*** (0.285)	1.936*** (0.420)	2.127*** (0.484)
Education (Ref. Less than secondary)				
Secondary	-0.56 (0.457)	-0.481 (0.476)	0.077 (0.703)	0.114 (0.758)
University	-0.635 (0.413)	-0.515 (0.434)	-0.538 (0.541)	-0.379 (0.582)
Age groups (Ref. Aged 60-64)				
Aged 65-69	-0.344 (0.411)	-0.339 (0.413)	-0.127 (0.551)	-0.083 (0.559)
Aged 70-74	-0.326 (0.428)	-0.335 (0.43)	-0.092 (0.577)	-0.107 (0.579)
Aged 75-79	-0.282 (0.430)	-0.322 (0.424)	-0.049 (0.563)	-0.144 (0.558)
Aged 80+	-0.374 (0.401)	-0.409 (0.406)	-0.020 (0.536)	-0.077 (0.541)
Individual income (Ref. Q1 (lowest))				
Q2	-	0.422 (0.333)	-	0.771 (0.525)
Q3	-	0.205 (0.318)	-	0.405 (0.466)
Q4 (highest)	-	-0.021 (0.343)	-	0.195 (0.499)
Household Income (Ref. HHQ1 (lowest))				
HHQ2	-	-	-0.163 (0.429)	-0.068 (0.441)
HHQ3	-	-	0.183 (0.462)	0.257 (0.458)
HHQ4 (highest)	-	-	-0.291 (0.378)	-0.272 (0.386)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A5. The likelihood of being a parent for Finish Males

Variables	Model 1	Model 3
Having a partner	1.248*** (0.445)	0.509 (0.531)
Education (Ref. Less than secondary)		
Secondary	0.665 (0.443)	-0.114 (0.501)
University	0.026 (0.457)	-0.533 (0.594)
Age groups (Ref. Aged 60-64)		
Aged 65-69	1.587*** (0.608)	1.335* (0.742)
Aged 70-74	1.051** (0.523)	1.185** (0.571)
Aged 75-79	0.670 (0.655)	0.944 (0.691)
Aged 80+	1.199* (0.619)	1.406* (0.730)
Household Income (Ref. HHQ1 (lowest))		
HHQ2	-	0.268 (0.608)
HHQ3	-	1.324* (0.750)
HHQ4 (highest)	-	1.698** (0.728)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A6. The likelihood of being a parent for Finish Females

Variables	Model 1	Model 3
Having a partner	0.637* (0.342)	0.522 (0.583)
Education (Ref. Less than secondary)		
Secondary	0.251 (0.487)	0.651 (0.575)
University	-0.620 (0.501)	-0.378 (0.566)
Age groups (Ref. Aged 50-54)		
Aged 65-69	0.049 (0.522)	0.562 (0.709)
Aged 70-74	-0.165 (0.546)	0.028 (0.578)
Aged 75-79	-0.136 (0.596)	-0.059 (0.651)
Aged 80+	-0.287 (0.618)	-0.066 (0.693)
Household Income (Ref. HHQ1 (lowest))		
HHQ2	-	1.039 (0.656)
HHQ3	-	0.536 (0.696)
HHQ4 (highest)	-	0.155 (0.852)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Figure K. Population shares (imputation only on 60+)