

Early Life Course Decisions of Central and Eastern Europeans: a Gendered Connection between Family Formation and Moving Intentions?

We investigate the connection between the family formation events and spatial mobility in early life course. In the paper we hypothesise that life course events may be positively related, negatively related or not related at all. Furthermore we theorise that gender serves as a channel through which the connection between family formation and spatial mobility is expressed that can be mediated by individual educational attainment. In order to verify the hypotheses, we use Generations and Gender Survey wave 1 data. We run seemingly unrelated bivariate ordered probit regression to estimate the relationship between the early life course events. We find a positive association between family formation events and spatial mobility. However, there is no evidence suggesting this association is channelled through gender or moderated by education. These findings have the following implications. First, there is an indication that life course events are planned jointly. Secondly, the future research ought to focus on realisation of connected marriage, fertility and mobility intentions.

Introduction

In recent decades the de-standardisation of life course in Europe has received a steady interest from social scientists. With life course increasingly shedding its traditional linear patterns, new life models and their combinations have become more evident over time. Marriage lost its attractiveness as a dominant motivation to leave parental home (Sobotka and Toulemon, 2008; Billari et al., 2001). Destinations after home leaving became more varied including single living and cohabitation blurring the line linking home leaving and marriage.

The connection between marriage and childbearing has changed too. It is no longer necessary to be married before the child birth. Change in the role marriage plays in life has made space for other family arrangements such as cohabiting with children and single parenthood. Conversely in the most recent period from 2000, spatial mobility became a more pronounced part of life course in Europe. People started moving more often than before whether for work, family related events or retirement (van Mol and de Valk, 2016; Viry et al., 2015).

Although all these trends divorce from the traditional life course model of 1950-60s by painting a more complex life pattern, they are not universally applicable for the whole European continent. Parts of Central and Eastern Europe (CEE) remain arguably defined by a traditional life course. In comparison to North Western Europe, a considerable proportion of

the youth leaves home after first marriage while marriage remains closely linked to childbearing (Perelli-Harris and Lyons-Amos, 2015; Sobotka and Toulemon, 2008). Spatial mobility has a more important role in the life course of Central and Eastern Europeans than other Europeans. Intra-European migration from east to west and from East to South grew considerably after the Eastern Enlargements of the European Union (EU) in 2004 and 2007. For instance, Polish labour migration to Germany that is the largest migration flow in real terms in Europe is possible only thanks to the freedom of movement within the EU (van Mol and de Valk, 2016).

There is a certain degree of intra-group heterogeneity in CEE. Some countries such as the Baltic States behave more like Nordic countries in terms of home leaving age while the others such as Poland or Czechia follow more traditional patterns with quite a large share of population leaving home at first marriage (Billari et al., 2001). Childbearing is still associated to marriage in Poland while it is not the case in Estonia or Bulgaria where a majority of children are born outside marriage (Sobotka and Toulemon, 2008). Migration processes are not fully generalisable in the region either. There is a stark difference between population change driven by migration while some countries such as Czechia and Slovenia have experienced population growth through immigration other populations like the ones of Lithuania and Romania declined due to outmigration (Fihel and Okólski, 2019).

The cleavage of de-standardisation of the life course is not only a result of country differences. Women and men behave differently in life course. Family life is structured by substantial gender inequalities. Single parenthood is consistently higher among women. In Europe single parenthood is 15 per cent more common among women rather than men (Sobotka and Toulemon, 2008). Conversely, more men than women tend to raise children in wedlock. In general women experience faster transition to adulthood that is manifested through earlier marriage and parenthood than among men (Bruckner and Mayer, 2004). The link between family formation events and moving is tighter for women as well. Women leave home at younger ages than men, predominantly to live with a partner (Billari and Liebroer, 2007). This links to the phenomenon of women factoring in moving together and marriage as decisive elements for making their migration decisions (Kley, 2010). For men these aspects are less relevant.

A variety of de-standardised life courses in CEE brings about an image of an unpieced puzzle. Differences in timing of family formation events and diverse patterns and magnitudes of spatial mobility that vary between genders make it a difficult task to understand what defines life course events and their interactions. There have been several important attempts addressing the connection between spatial mobility, childbearing and marriage. Scholars interested in the relationship between life course events have shown how these events interrelate throughout a life time. However, no clear mechanism defining the relationship between family formation events and spatial mobility has been established. Living far away from a partner may not be feasible for family formation therefore moving to live with partner is linked to marriage postponement (Guzzo, 2006). On the other hand, moving to live with a partner may require funds accumulated in time which can in turn delay marriage (Feijten and Mulder, 2002). We know that spatial mobility can be followed by a spell of increased fertility (Kulu, 2005) or childbirth can lead to residential reallocation (Kulu, 2008). In both cases larger living spaces can explain a large share of variation. There is evidence that the contrary holds and parents choose to stay in the place they live even after childbirth especially if they own their housing (Clark and Ledwith, 2006; Clark and Huang, 2003).

In the region characterised by low and lowest-low fertility (Billingsley, 2010; Billari and Kohler, 2004; Kohler et al., 2002) and negative net migration (Rees et al., 2012), coupling between family formation and spatial mobility may not only indicate a natural wish to live with a partner, but allude to willingness to migrate within or outside a country. That could have grave consequences for population size at both national and subnational levels. Since the fall of socialism, a significant number of countries in CEE have been subject to low fertility rates and virtually no immigration that could balance out the population decline (Fihel and Okólski, 2019). Population projections draw a grim future for the CEE with an expected population decline reaching 10 to 20 per cent between 2019 and 2050 for selected countries (United Nations, 2019; Bijak et al., 2007). The discussion around low fertility, changing patterns of family formation and spatial mobility has not yet touched upon the relationship between these processes in the post-socialist context. Expanding knowledge in the field would allow to better understand and address the population change in CEE. Therefore, the central question is the following: what is the relationship between family formation events and spatial mobility in CEE?

We address the question by looking at correlations between the dyads of life course event intentions of marriage-spatial mobility and fertility-spatial mobility in post-socialist EU member states of Bulgaria, Czechia, Estonia, Lithuania and Romania. The analyses are inspired by theoretical deliberations on the potential connection between these life course events. Prior work has demonstrated the role intentions play in marriage formation (e.g. Guzzo, 2009), fertility (e.g. Vidal et al., 2017) and internal migration (e.g. De Groot et al., 2011). Yet, there has been a limited number of empirical papers analysing and reconciling life course event intentions in CEE. The contribution to the literature is therefore two-fold. First, to the best of our knowledge this is an original effort to investigate the correlational relationship between family formation and spatial mobility intentions in CEE. Looking at the connection between the intention dyads permits to generalise rather than specify the relationship between family formation and spatial mobility. Second, we use a novel in the field estimation strategy of the seemingly unrelated bivariate ordered probit approach. It allows to see whether seemingly unrelated intentions of marriage and mobility as well as fertility and mobility are interrelated after controlling for a set of exogenous variables.

We find a statistically significant positive correlation between intention dyads of marriage-spatial mobility as well as fertility-spatial mobility. The positive correlation is robust to addition of control variables capturing the highest level of education achieved, number of previous children and partnership status. We find no significant differences between genders, nor educational gradient that explains the connection. Our results suggest that family formation intentions are joint with moving intentions.

The remaining part of this paper is organised as follows. The next section provides background for the study and develops three hypotheses. The subsequent part describes the data and introduces seemingly unrelated bivariate ordered probit empirical model and estimation in detail. The following section reports results. In the concluding section, we provide a discussion of limitations and implications of the findings.

Family formation and spatial mobility in life course

Marriage in life course

In a society life course is closely associated to a progression of events that change the status of an individual. Particularly, forming a union is a defining life event that leads to a reshuffling of multiple roles. As a sign of maturity marriage has long competed with the labour market entry or education as a dominant motive to leave parental home and establish a personal household. In modern day Europe, this does not seem to be the case anymore.

Cohorts born after WWII serve as a good focus group to see the changes in the marriage institution. People born in 1950s and later postponed union formation to later ages and broke from the norm of 'age-deadline' for marriage (Corijn and Klijzing, 2001). Not only the connection between age and marriage has changed, but leaving parental home and entering into marriage has been decoupled too. Instead of marrying a considerable part of post-war cohorts entered into their first union via non-marital cohabitation (Sobotka and Toulemon, 2008; Mills, 2004). The rise of non-marital cohabitation has accommodated the change in fertility behaviour of the post-war cohorts. For instance, there had been a steady increase of births outside marriage in the 1960s cohort in comparison to 1950s. As a result marriage became gradually detached from parenthood as more forms of families such as consensual union or single parenthood emerged (Thornton and Philipov, 2009; Corijn and Klijzing, 2001).

Marriage and union formation are often linked to spatial mobility. A change in marital status leads to residential relocation whether that is due to moving in with one's spouse or upgrading the housing (Clark and Dieleman, 1996). However, the phenomenon is time sensitive. Individuals in the process of getting married are much more likely to change their residence in comparison to the ones who are unmarried or have been married for some time (Mulder and Wagner, 1993). To put it differently, in the framework of joint processes of marriage and relocations, marriage has a positive impact on spatial mobility in short run and no long-term effects (Jang et al., 2014). This is why short distance moves are likely to happen in relation to expected marriage. Anticipating family formation, moves take place shortly before a wedding (Michielin and Mulder, 2008). In a longer perspective marriage can be a deterrent from 'long-stay housing' that requires stronger commitment between partners and financial stability. Both of these factors are relevant determinants of family formation. Not only marriage, but spatial mobility gets postponed in favour of cohabitation and (affordable) housing (Feijten and Mulder, 2002). Spatial mobility does not necessarily affect marriage (Jang et al., 2014). In reverse, it can have a disrupting effect where migration of one of the partners leads to divorce (Ferrari and Macmillan, 2019).

Fertility in life course

Having children is closely linked to other life domains be it union formation or spatial mobility. In the ‘golden age’ of family having a child would be the ultimate event completing a long transition to adulthood. Traditionally having children has been seen as an indisputable part of a couple’s union defining it as a ‘love marriage’ (Burkart and Kohli, 1992). In the post-war cohorts this particularly time-sensitive connection has eroded, but preserved its significance in relation to other fertility related aspects such as education and labour market participation.

Having a child is still embedded in a setting of partnership. In order to have a child, it is important to have a partner with whom one would have a child. However, fertility is no longer strictly a result of marriage. Union formation or marriage can come before or after the birth of a child exposing a more relaxed association between the timing of marriage (if any) and fertility (Huinink and Kohli, 2014). Together with the temporal aspect of fertility and family formation, geography plays a role too. In Europe there exist regional differences revealed by extramarital fertility. In Central and Eastern Europe the extramarital fertility is higher than in Southern Europe, but lower compared to Nordic countries (Billari et al., 2001). Notwithstanding, age norms are relevant in association to educational attainment and job market performance. Reaching educational goals and successfully integrating into a labour market in most cases will have a priority over fertility in terms of timing. This pertains to a shortened period in which family formation, especially childbearing, can take place (Mills et al., 2011; Brewster and Rindfuss, 2000; Blossfeld and Huinink, 1991). Fertility and spatial mobility (or migration) are closely linked as well. The relationship, however is non-trivial because family formation can influence spatial mobility, often short distance, due to a need to improve housing conditions for a growing family (Kulu and Milewski, 2007). On the other hand, the opposite may hold too. With higher parity, the propensity to move decreases (Kulu and Milewski, 2007) especially if the family owns housing (Clark and Ledwith, 2006).

Spatial mobility in life course

Spatial mobility almost always takes place in relation to other life course events. It is linked to leaving parental home either for education, employment or family formation. Spatial mobility is not only strongly associated to life course, but is especially more likely during transitions in life course (Kley, 2011). It is expected for higher education and employment opportunities to

be concentrated in cities, therefore moving for vocational training and jobs often includes moving from rural to urban areas (Mayer, 2004; Mulder, 1993).

Union formation through cohabitation or marriage is known to trigger spatial mobility. Naturally for singles union formation explains a large share of higher risk of moving than for the coupled (Mulder and Wagner, 1993). In general, any change in partnership status increases chances of residential mobility (Clark, 2013) even if the increase is marginal (Li, 2004). Inevitably fertility decisions are done factoring in dwelling spaciousness and family-friendliness of an area. These are important motives for families who already have or are planning children to move out of cities (Kulu and Milewski, 2007). Timing of life events matters too when spatial mobility is involved. Fertility related moves are more likely to happen a few months before or after the birth of a child; this tendency holds for parity progression up to three children (Kulu, 2008). There is heterogeneity in intentions to move that stems from the number of previous children. If childless individuals who intend to have a child relocate at lower rates, individuals who already have children are more prone to moving to anticipate a need to adjust housing (Vidal et al., 2017). The opposite holds true as well. Increase in family size may not have any effect – neither positive, nor negative- motivating families to move to new dwellings (Li, 2004). Parents may choose to stay where they live even after childbirth especially if they own their housing (Clark and Ledwith, 2006; Clark and Huang, 2003).

Gendered life course

In life course individual characteristics can define the timing, spacing and interconnectedness of life course events. Hence gender is a considerable source of divergence in relation to when and how people leave parental home to form unions and have children. Considering the de-standardisation of life course, women and men portray a heterogeneous reality.

To start with, not only “age deadlines”, but gender differences stratify and structure life course. Women rather than men experience a faster transition to adulthood by marrying and having children at younger ages (Brückner and Mayer, 2005). Women move out of their parents homes earlier, get married and have children younger than men. The spacing between the life course events is more narrow for women than for men. This shows tighter “age deadlines” to meet family formation goals for women as opposed to men.

After marriage, women move in with their partner at higher likelihood than vice versa (Clark, 2013; Clark and Dieleman, 1996; Mulder and Wagner, 1993). Often this is defined by their partners being a few years older with sufficient means to provide housing. More generally in partnerships, residential mobility decisions tend to prioritise men's career and women's household work (Crane, 2007; Turner and Niemeier, 1997). Even facing a growing involvement of fathers in housework and child rearing, mothers adapt to their partners' career by embracing residential mobility arrangements that may disregard their professional careers (Goldscheider et al., 2015).

Intentions in life course and hypotheses

Intentions are proximate determinants for actual marriage, fertility and spatial mobility behaviour in life course. In this section we use intentions to develop a set of hypotheses that link family formation events to spatial mobility. To do so, we employ the theory of planned behaviour (TPB) as the main framework underpinning the role of intentions in individual behaviour.

The TPB provides a conceptual framework to handle complex human social behaviour (Ajzen, 1991; Ajzen and Fishbein, 1973). According to the TPB, intentions play a vital role in determining performance of a behaviour. For reliable prediction of behaviour, measures of intentions must correspond to or be compatible with the behaviour, they must remain stable between the point at which intentions are expressed and fulfilled, and prediction of behaviour must improve if intentions or behavioural controls reflect actual behaviour. Said intentions are accountable for a considerable share of variance in actual behaviour (Ajzen, 1991).

The TPB has been applied in understating the connection between life course events intentions and actual behaviour. First, when individuals start cohabiting with their partners, they usually have intentions to marry later (Guzzo, 2009). That is especially strong in the case of first cohabitation. Predictably having intention to marry contributes to probability to actually get married. Second, fertility intention is a good approximation of actual fertility. Work that has adopted the TPB in fertility intentions analyses in Europe has found the theory predictive (Billari et al., 2009; Dommermuth et al., 2009). Third, intentions have explanatory power in the context of residential mobility. De Groot et al. (2011) found that having intentions to move makes individuals four times as likely to actually change houses than not.

There is considerable evidence to argue that intentions capture a substantial share of actual behaviour *ex ante*. Together with the previous research on the connection between marriage, fertility and spatial mobility in the life-course, the TPB permits to postulate the following hypotheses. The first hypothesis assumes a positive relationship between marriage and spatial mobility as well as fertility and spatial mobility. Here marriage-spatial mobility and fertility-spatial mobility dyads are life-course events that individuals treat as connected. They either link marriage to spatial mobility, fertility to spatial mobility or vice versa.

H1: Family formation and spatial mobility are positively related life course events

The second hypothesis suggests that family formation and spatial mobility events are negatively related. The connection between marriage and spatial mobility as well as fertility and spatial mobility is negative and postpones or prevents one of the events in dyads from taking place. This hypothesis arises from the gradual decoupling of life-course events that have been taking place in Europe (Buchmann and Kriesi, 2011). A disconnection between marriage and childbearing has been gaining momentum (Thornton and Philipov, 2009) whilst serial cohabitation has been found to have a significantly strong negative association with intentions to marry in younger cohorts (Vespa, 2014). Therefore, the following hypothesis says:

H2: Family formation and spatial mobility are negatively related life course events

The third hypothesis assumes a hypothetical scenario in which marriage, childbearing, and residential mobility are not related and take place as completely parallel events. In some cases individuals may plan family formation events and moving arrangements separately with no connection between them.

H3: Family formation and spatial mobility are not related life course events

Women and men exhibit differences in their family life planning. Women have more pronounced intention to have children than men. The intention becomes stronger with age which is connected to biological and “age deadline” perseverance that is more important for women (Hayford, 2009). For women marriage is an important channel to realise their fertility intentions. The realisation of intentions among married women is higher than among the unmarried (Hayford, 2009). Family formation events have a stronger impact on women’s

spatial mobility decisions too (Kley, 2010). Moving in together or getting married encourage women to migrate more often than men. Hence, we hypothesise that in case there exists a non-zero relationship between family formation and spatial mobility, gender will be a channel through which that relationship is directed. In other words:

H4: Women rather than men establish a stronger association between family formation and spatial mobility

Education, as a measurable component of a broader socio-economic background, delineates the de-standardisation of life course. Moreover, the gendered gap in educational attainment deepens the differences of life course for women and men. Lack of educated men in areas characterised by lower educational attainment drives women to move to areas where men are more educated (Kröhnert and Vollmer, 2009). This type of spatial mobility usually takes place towards cities where marriage factors combine with female labour market participation. In urban areas not only women find better employment, but also more suitable men with whom they can potentially marry and have children (Edlund, 2005). However, education is known to suppress fertility intention realisation for women (Berrington and Pattaro, 2014), but increase chances of getting married for men (Kalmijn, 2013). Higher levels of education are associated to more spatial mobility in general as university graduates prioritise jobs over residential stability (Venhorst et al., 2011). That is why, we suggest that education should serve as a tempering factor for the gender effect in connection to family formation and spatial mobility.

H5: Education reduces the gendered differences in association between family formation and spatial mobility

Data, variables and methods

Data

To study the relationship between marriage and moving intentions as well as fertility and moving intentions, we use the Generations and Gender Survey (GGS) wave 1. The GGS data was collected to study the demographic behaviour and social developments in developed countries that are mostly located in Europe (GGP, 2019). The main goal of the Generations and Gender Programme is to initiate analyses on the developments and the determinants of a

plethora of demographic and social phenomena that are related to family formation processes, demographic change, intergenerational relationships and relationships between partners. The first wave of the GGS provides variables capturing fertility and partnership aspects. Together with demographic variables, intentions of respondents that are included in the survey. The first wave of the GGS was carried out between 2002 and 2013. The GGS Wave 1 data represents 20 countries from respondents aged 17 - 85.

The focus of this paper is CEE countries that joined the EU in the two Eastern Enlargement waves in 2004 and 2007. Not all of the new member states have participated in the GGS wave 1. Due to data quality concerns Bulgaria, Czechia, Estonia, Lithuania, and Romania have been chosen as countries that have data on respondents' intentions to marry, have children and move. In these countries, the GGS surveys were performed between 2004 and 2006.

The selection of these five countries in particular allows for an inclusive analysis of marriage, fertility and spatial mobility intentions in five CEE countries. After selecting individuals aged from 17 years-old to 49 years-old for dependent variables of interest, the sample size varies from 20,754 to 3431 observations depending on selected specifications.

Variables

We have chosen three focal dependent variables from the GGS wave 1 all of which are dichotomised for the sake of the analysis. The first focal dependent variable captures respondents' intention to marry. Respondents were asked if they intend to marry within the period of three years with values ranging from 1 to 4. Values 1 and 2 indicate no or low intention (definitely not, probably not) whereas 3 and 4 show higher and definite intention to marry (probably yes, definitely yes). The second focal dependent variable is intention to have children which is measured on a 1-4 scale with respective labels of definitely not, probably not, probably yes, definitely yes assigned to each numeric value. The third focal dependent variable is intention to move. The question asked whether respondents intended to move within the next three years on a scale from 1 to 4 (definitely not, probably not, probably yes, definitely yes). We focus on spatial mobility rather than internal or international migration because most respondents indicating positive intention to move specify their willingness to move predominantly within the same municipality. Intention to move to another municipality is less

pronounced whilst very few respondents are willing to move abroad with an exception of Bulgaria. For more see Figure 2.1.

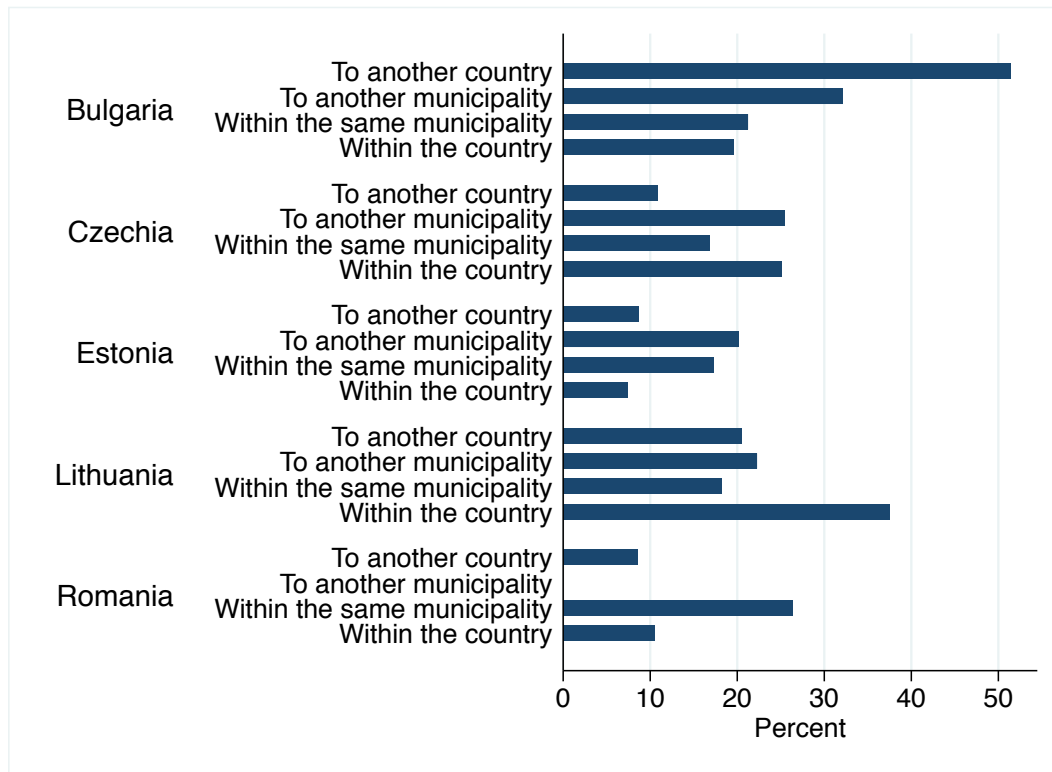


Figure 2.1 - Frequency statistics of destinations of intended move

There are seven controls included in the analyses (Appendices B1 and B2). These are age, gender, highest education level individual achieved, father's highest education level, the number of children, and the partnership status (non-cohabiting partner and no partner). Previous studies show that willingness to move and expected family size decline with age (Liefbroer, 2009). Marital, fertility, and moving intentions may differ with respect to gender as well (Wiik et al., 2010; Stecklov et al., 2010; Berrington, 2004). In order to control for gender differences, we include respondent's gender in the estimation where 0 refers to female and 1 to male. Educational level is known to affect fertility, marriage and migration (Mills et al., 2011; Billari et al. 2009; Blossfeld and Huinink, 1991). In this study education is measured in ISCED. Moreover, having children can explain internal migration (Thomas 2019), reduced likelihood of subsequent pregnancies (Upchurch et al., 2002) and cases when intentions to marry plummet (Guzzo, 2009). General summary statistics of the sample are provided in Table 2.1 while country specific summary statistics can be found in Appendix B3.

Table 2.1 - Summary statistics

	Observations	Mean	Std. Dev.	Minimum	Maximum
Focal dependent variables					
Intention to marry	7,750	2.308		0	1
Intention to have a child	23,880	1.7608		0	1
Intention to move within	30,350	1.7452		0	1
Covariates					
Age	30,446	33.666	8.9734	17	49
Gender	30,446	0.4695		0	1
Individual education (ISCED)	30,273	3.2828		0	6
Father's education (ISCED)	26,345	2.7686		0	6
Number of children	30,446	1.1913	1.1737	0	14
Non-cohabiting partner	30,409	0.0707		0	1
No partner	30,409	0.2978		0	1

Source: GGS wave 1, own calculations.

Methods and model

We adopt the seemingly unrelated bivariate ordered probit approach to analyse the relationship between marriage, fertility and moving intentions in life-course. Importantly, the seemingly unrelated bivariate ordered probit approach is equipped to work with endogenous variables (Sajaia 2008). This feature of the method permits to isolate the connection between variables of interest controlling for relevant background variables that may be responsible for a certain part of common variance.

In the GGS, the respondents report their intentions at the same point in time. These intentions can be tied together in some way or be independent from each other. That is why the relationship between life-course event intentions of marriage, fertility and spatial mobility may be biased because of the possible presence of non-observed variables that potentially have an impact on the intentions. In order to overcome this problem, we use a modelling strategy that employs a joint model of intentions in life-course (Sajaia 2008; Vignoli et al. 2013).

The seemingly unrelated bivariate ordered probit model is made of two equations that constitute a system of two intentions. We focus on two sets of intentions that are marriage-moving and fertility-moving intentions. First model looks at *Marriage* and *Moving* that capture individual characteristics i as well.

$$Marriage_i^* = X'_{1i}\beta_1 + \varepsilon_{1i} \text{ (equation 1)}$$

$$Moving_i^* = X'_{2i}\beta_2 + \varepsilon_{2i} \text{ (equation 2)}$$

Second model focuses on *Fertility* and *Moving* of an individual i .

$$Fertility_i^* = X'_{3i}\beta_3 + \varepsilon_{3i} \text{ (equation 3)}$$

$$Moving_i^* = X'_{4i}\beta_4 + \varepsilon_{4i} \text{ (equation 4)}$$

X'_{1i} , X'_{2i} , X'_{3i} and X'_{4i} are vectors of selected independent variables that capture exogenous variation in respondents age, age squared, gender and father's education. These vectors include such control variables as individual education, number of previous children and partnership status. β'_{1i} , β'_{2i} , β'_{3i} and β'_{4i} are vectors of unknown parameters whilst ε_{1i} , ε_{2i} , ε_{3i} and ε_{4i} are

error terms. The explanatory variables are assumed to be exogenous. The assumption implies that the unknown error terms and covariates that we can observe are independent. It allows the model to be stripped of all exogenous variation in the model and concentrate the endogenous variation in the error terms. In this way we can estimate the correlation between endogenous factors captured by the error terms that influence both sets of marriage-moving and fertility-moving intentions.

In addition, we have to assume that the error terms ε_{1i} , ε_{2i} , ε_{3i} and ε_{4i} are normally distributed with a zero mean and a unit variance. The connection between the error terms in equations 1 and 2 as well as equations 3 and 4 are expressed by the correlation coefficient ρ . We use the likelihood ratio test to check the existence of independence between the equations 1 and 2 then equations 3 and 4. The H_0 for the test is $\rho = 0$. If the H_0 is rejected, then we can proceed with estimating a meaningful relationship between marriage-moving and fertility-moving intentions. We use an estimation command *bioprobit* developed for Stata by Sajaia (2008).

2.5 Results

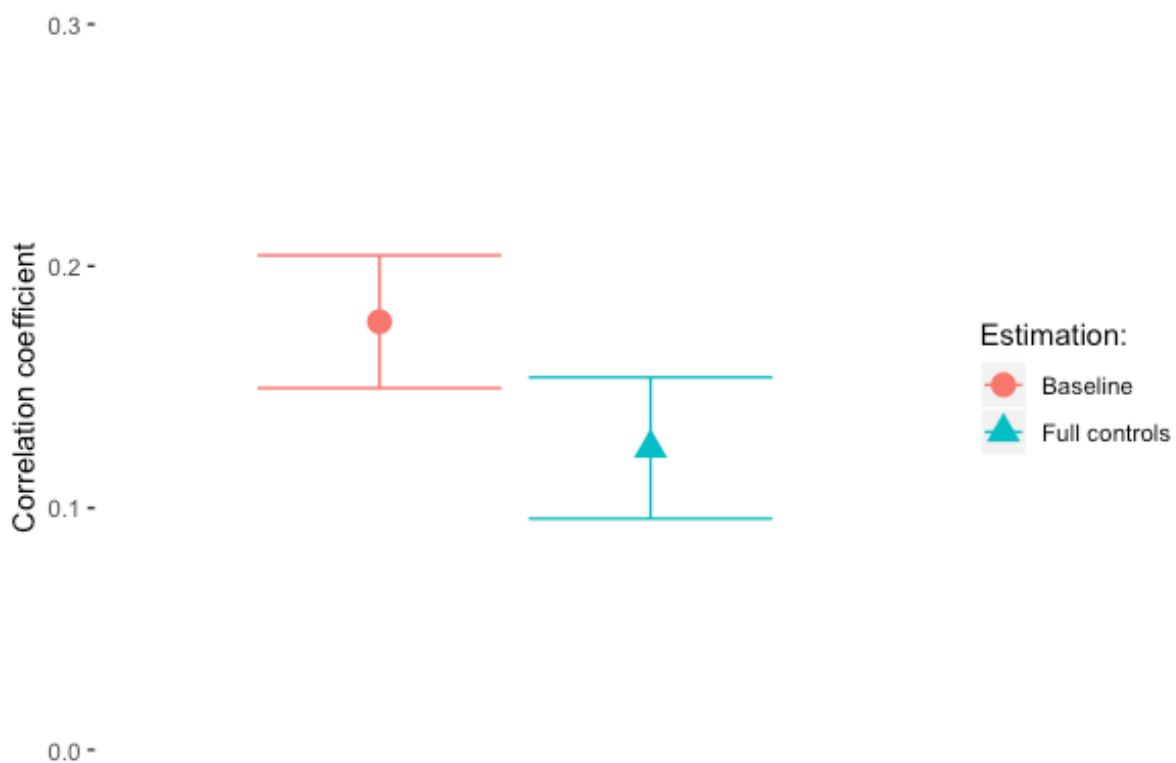
Seemingly unrelated bivariate ordered probit estimation for marriage and moving intentions

In this section we outline the estimation results for marriage and moving intentions. Figure 2.2 presents the correlation between the focal variables with baseline controls for age, age squared, gender and father's education and full controls that in addition to exogenous variables include individual education, number of children and partnership status (for detailed estimation results see Appendix B1).

The baseline models presents statistically significant correlation between the error terms. The correlation between intentions to marry and move is 0.199. It confirms the positive relationship between marriage and spatial mobility in life-course hypothesis.

The controls for the estimation have been selected for the following reasons. Accounting for individual social and economic factors matters when analysing marriage intentions, we include individual highest education achieved as a control into the analysis

(Guzzo, 2009). Having children impacts marital intentions (Guzzo, 2009) and residential reallocation (Vidal et al., 2017). Partnership status and cohabitation with a partner affect marital (Guzzo, 2009) and moving (Feijten and Mulder, 2002) intentions. Controlling for individual education, number of children and partnership status allows to establish a clearer picture of the connection between marriage and moving intentions. The correlation between intentions to marry and move remains positive 0.175. It is important to note that baseline and full control estimations are not significantly different from one another.

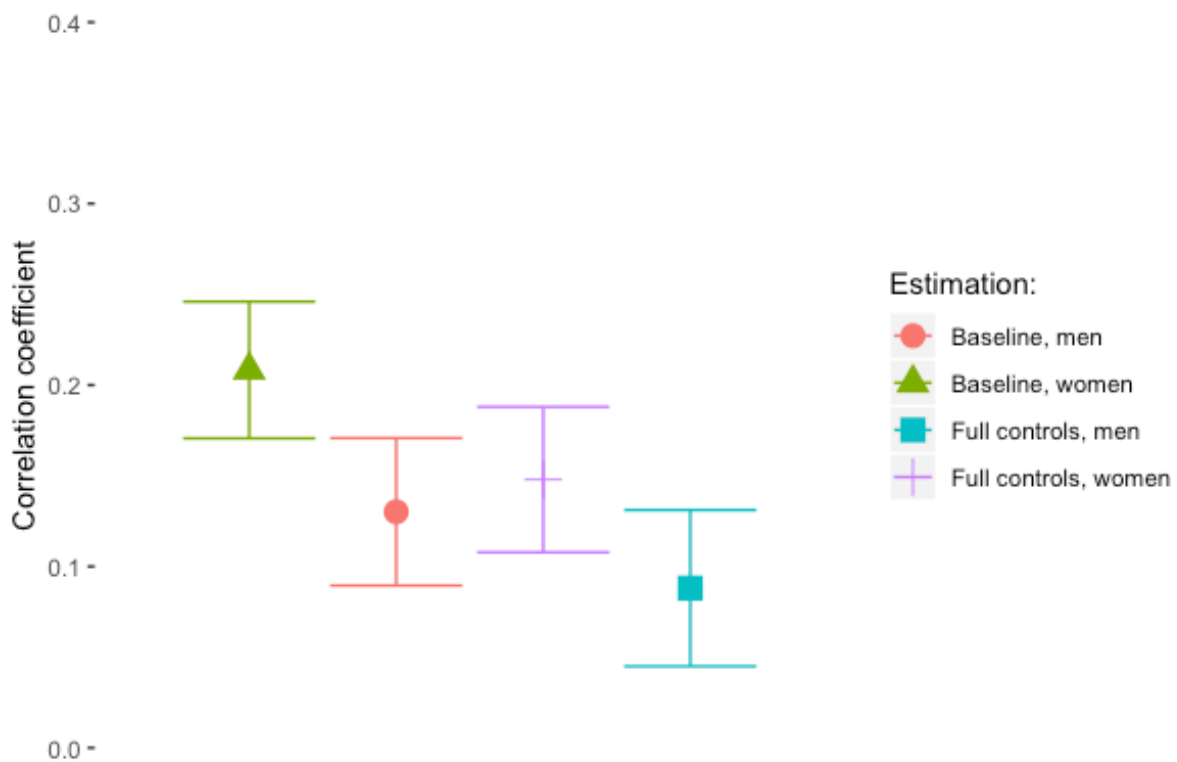


(Source: GGS Wave 1, own estimation)

Figure 2.2 - Correlation between marriage and moving intentions

We observe different magnitudes of correlation point estimates between genders. Even if the correlation between marriage and moving intentions remains present in the analyses focusing on female and male subsamples in Figure 2.3. For women, the correlation between the error terms is 0.244. For men, the correlation between the error terms is 0.149. This shows a considerable 10 per cent difference between genders. The difference is reiterated in the estimation with full controls. The correlations between intentions to marry and move for women and men are 0.207 and 0.137 respectively indicating a remaining difference of 7 per

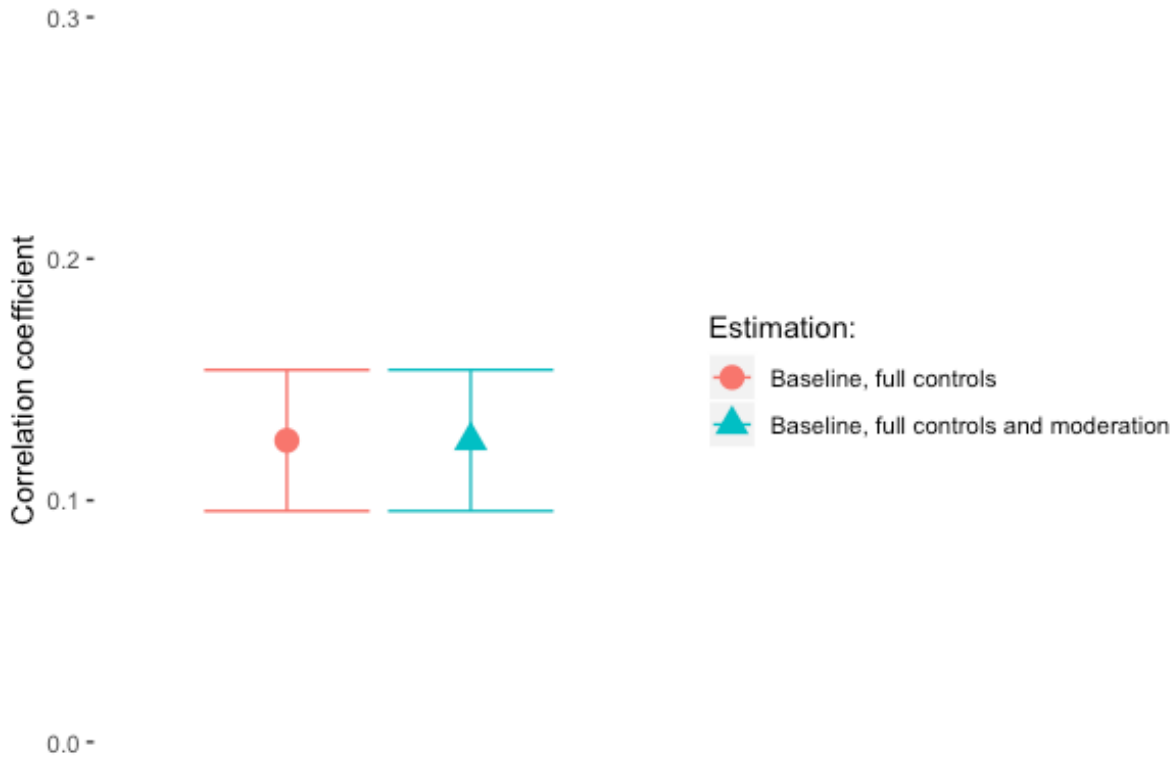
cent between women and men. However, these differences between genders are only indicative of possible direction, but not significant. These results stand against hypothesis 4.



(Source: GGS Wave 1, own estimation)

Figure 2.3 - Gendered correlation between marriage and moving intentions

The findings show that including individual education as a moderator has no effect on the positive association between marriage and moving intentions (Figure 2.4). In addition, controlling for education does not provide any significant evidence that education weakens the connection between marriage and moving.



(Source: GGS Wave 1, own estimation)

Figure 2.4 - Correlation between marriage and moving intentions, moderation effect

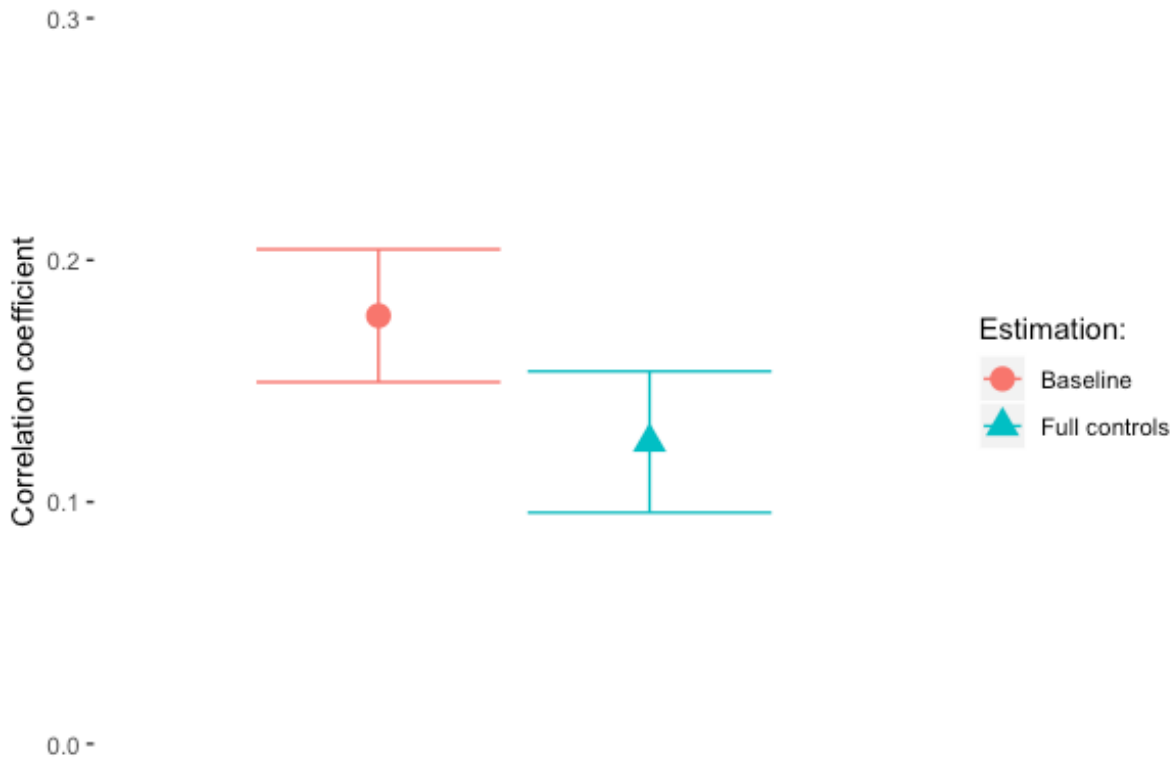
In general, the results show that there is a positive association between intentions to marry and move. The association is not affected by inclusion of controls, nor division into gender specific samples.

Seemingly unrelated bivariate ordered probit estimation for fertility and moving intentions

In this section, we present the estimations for fertility and moving intentions. Figure 5 reports both baseline and the estimation with controls for age, age squared, gender, father’s education and partnership status (for detailed estimation results see Appendix B2). In the baseline model estimations the correlation between the error terms of fertility and moving intentions equates to 0.1777.

Taking into account individual socioeconomic factors matter when analysing fertility intentions, we include individual highest education as a control (Billari et al., 2009). Having children is known to have an effect on future spatial mobility (Vidal et al., 2017) and fertility intentions (Schoen et al., 1999) while partnership status can affect both fertility and moving

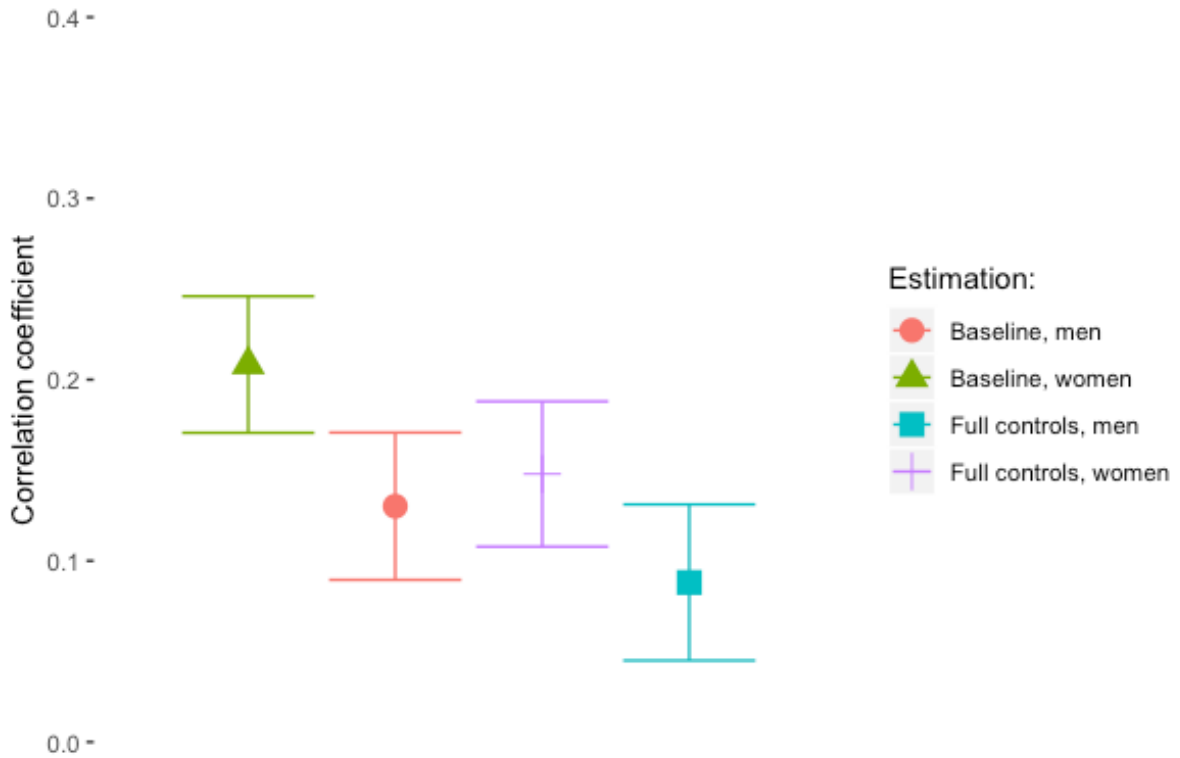
intentions. That is why these controls are included in our estimation and reported in Figure 5. In baseline estimation will full controls the correlation between intentions to have a child and move is 0.125. Even if correlation estimation in base line and full controls models are not significantly different as seen from Figure 2.5, our findings verify that there is a positive connection between fertility and moving intentions as hypothesised.



(Source: GGS Wave 1, own estimation)

Figure 2.5 - Correlation between fertility and moving intentions

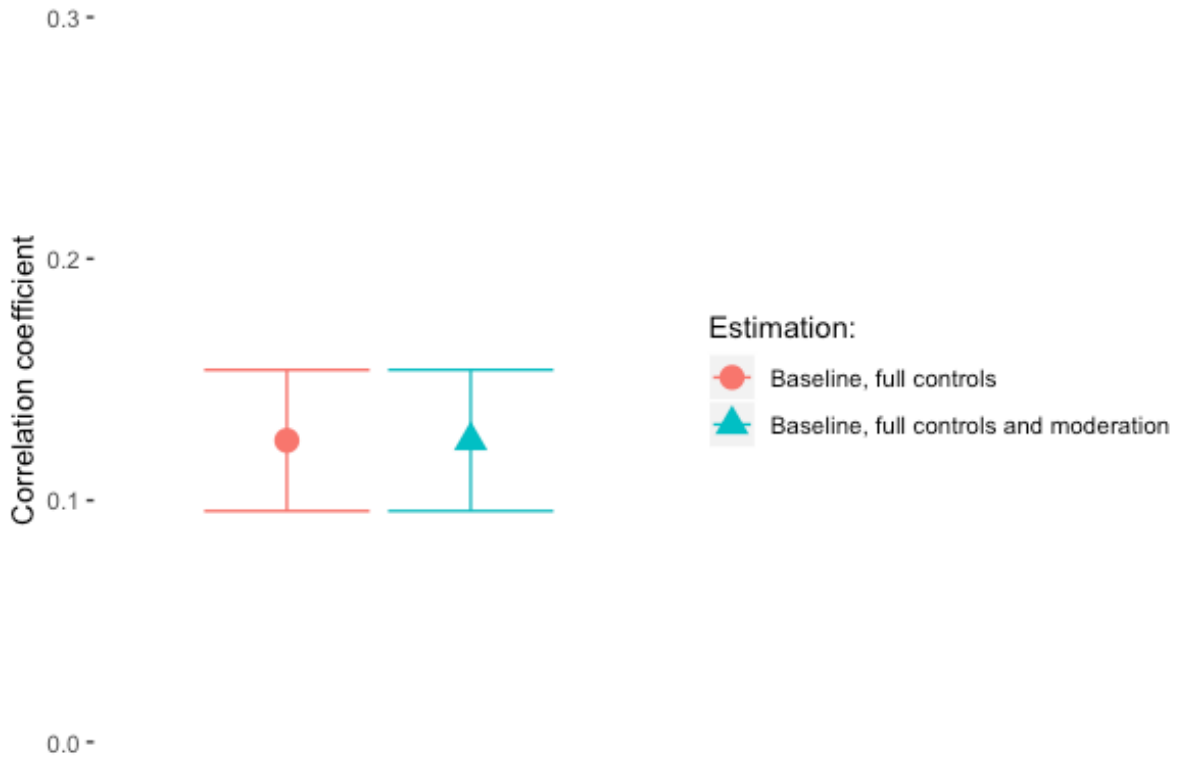
The positive relationship between fertility and moving intentions holds in specifications used for separate female and male subsamples as reported in Figure 2.6. In the baseline the correlation between the error terms is 0.207 for women and 0.127 for men. Including all covariates the correlations between intentions to marry and move for women and men are estimated at 0.148 and 0.0849 respectively. The differences in correlation point estimates between women and men are not significant.



(Source: GGS Wave 1, own estimation)

Figure 2.6 - Gendered correlation between fertility and moving intentions

We observe a persistent positive association between fertility and moving intentions (Figure 2.7). Including individual education does not indicate any difference between full-controls estimation and estimation with education as moderator neither in point estimates, nor in statistical difference. Logically, we cannot claim that education weakens the connection between fertility and spatial mobility.



(Source: GGS Wave 1, own estimation)

Figure 2.7 - Correlation between fertility and moving intentions, moderation effect

Overall, the results that we obtain establish a positive relationship between intentions to move and intentions to have children across different estimations. The positive relationship between fertility and spatial mobility intentions holds in specifications used for the baseline sample and separate female and male subsamples controlling for age, age squared, gender and father’s education as well as individual education, number of previous children and partnership status. Yet we find no strong evidence of gendered connection between fertility and spatial mobility, nor we see this connection change when individual education is included.

Conclusions

In the paper we sought to investigate the connection between life course event intentions of marriage, childbearing and moving in Central and Eastern Europe. Using the individual level data from the Generations and Gender Survey wave 1 we found positive correlations between family formation and moving intentions. The results hold robust across different estimations

for the general sample as well as female and male subsamples. In particular, we find a positive association between intentions to marry and move which stands in line with previous findings in the field (Mulder and Wagner, 1993). We too establish a positive connection between intentions to have children and move that is consistent with other literature (e.g. Kulu and Milewski, 2007). Our contribution, however is two-fold. First, we hypothesised that family formation and spatial mobility may be connected in the life course. There were five postulated mechanisms through which marriage-moving and fertility-moving events may interact. The findings are consistent with the first hypothesis: marriage and spatial mobility well as fertility and spatial mobility are interrelated life course events. Second, we applied the theoretical framework to isolate the unique connection between family formation and spatial mobility.

There are notable limitations of the study that provide avenue for further research. The lack of detailed follow-up data on fulfilled marital, fertility and moving intentions in the sample restrict causal inference. Therefore, the extent to which it is possible to identify mechanisms that stand behind the connections between marriage-spatial mobility and fertility-spatial mobility in the life-course is limited. Moreover, dichotomisation of dependent intention variables strips data of variation, future explorations of categorical dependent variables could provide a more nuanced picture of the relationship we find. We do not explicitly treat the distance of moving as an object of our study. Further examination of the role the distance of move plays in the association would clarify the picture. Lastly, in the event of international migration, there is no data that would allow to track whether individuals fulfil the initial intentions abroad, therefore the study can be set in the context of spatial mobility rather than migration.

Largely, the findings suggest that spatial mobility, marriage, and fertility go hand-in-hand. This may be of particular importance in the context of CEE as the region has been experiencing population loss since 1990s. Joint family formation and moving events could indicate that marriage and childbearing take place after spatial mobility or vice versa. Our findings can have implications not only in the context of internal migration, but also hint on broader processes that encompass international migration as well. In both cases this could exacerbate depopulation within countries in CEE if no measures are adopted.

Reference list

- Aassve, A., Arpino, B., & Billari, F. C. (2013). Age norms on leaving home: Multilevel evidence from the European Social Survey. *Environment and Planning A*, 45(2), 383-401.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behaviors. *Journal of Personality and Social Psychology*, 27(1), 41-57.
- Andersson, G. (2000). The impact of labour-force participation on childbearing behaviour: Pro-cyclical fertility in Sweden during the 1980s and the 1990s. *European Journal of Population/Revue européenne de démographie*, 16(4), 293-333.
- Berrington, A. (2004). Perpetual postponers? Women's, men's and couple's fertility intentions and subsequent fertility behaviour. *Population Trends*, 117, 9-19.
- Berrington, A., & Pattaro, S. (2014). Educational differences in fertility desires, intentions and behaviour: A life course perspective. *Advances in Life Course Research*, 21, 10-27.
- Bijak, J., Kupiszewska, D., Kupiszewski, M., Saczuk, K., and Kicing, A. (2007). Population and labour force projections for 27 European countries, 2002-052: impact of international migration on population ageing. *European Journal of Population/Revue Européenne de Démographie*, 23(1), 1.
- Billari, F. (2004). Becoming an adult in Europe: A macro (/micro)-demographic perspective. *Demographic research*, 3, 15-44.
- Billari, F. C., Philipov, D., & Baizán, P. (2001). Leaving home in Europe: The experience of cohorts born around 1960. *International Journal of Population Geography*, 7(5), 339-356.
- Billari, F. C., Philipov, D., & Testa, M. (2009). Attitudes, norms and perceived behavioural control: Explaining fertility intentions in Bulgaria. *European Journal of Population*, 25(4), 439-465.
- Billari, F., & Kohler, H. P. (2004). Patterns of low and lowest-low fertility in Europe. *Population studies*, 58(2), 161-176.
- Billingsley, S. (2010). The post-communist fertility puzzle. *Population Research and Policy Review*, 29(2), 193-231.
- Blaauboer, M., & Mulder, C. H. (2010). Gender differences in the impact of family background on leaving the parental home. *Journal of Housing and the Built Environment*, 25(1), 53-71.
- Blossfeld, H. P., & Huinink, J. (1991). Human capital investments or norms of role transition? How women's schooling and career affect the process of family formation. *American Journal of Sociology*, 97(1), 143-168.
- Brewster, K. L. & Rindfuss, R. R. (2000). Fertility and women's employment in industrialized nations. *Annual Review of Sociology*, 26(1), 271-296.
- Buchmann, M. C., & Kriesi, I. (2011). Transition to adulthood in Europe. *Annual Review of Sociology*, 37, 481-503.
- Burkart, G., & Kohli, M. (1992). *Liebe, Ehe, Elternschaft: Die Zukunft der Familie*. München: Piper.
- Clark, W. A. (2013). Life course events and residential change: Unpacking age effects on the probability of moving. *Journal of Population Research*, 30(4), 319-334.
- Clark, W. A., and Dieleman, F. M. (1996). Households and housing. *Choice and outcomes in the housing market*.
- Clark, W. A., & Huang, Y. (2003). The life course and residential mobility in British housing markets. *Environment and Planning A*, 35(2), 323-339.
- Clark, W. A., & Ledwith, V. (2006). Mobility, housing stress, and neighborhood contexts: evidence from Los Angeles. *Environment and Planning A*, 38(6), 1077-1093.

- Coleman, D., & Rowthorn, R. (2011). Who's afraid of population decline? A critical examination of its consequences. *Population and Development Review*, 37, 217-248.
- Corijn, M., & Klijzing, E. (Eds.). (2013). *Transitions to adulthood in Europe* (Vol. 10). Springer Science and Business Media.
- Courgeau, D. 1989. Family formation and urbanization, *Population: An English Selection* 44(1): 123–146.
- De Groot, C., Mulder, C. H. & Manting, D. (2011). Intentions to move and actual moving behaviour in the Netherlands. *Housing Studies*, 26(03), 307-328.
- Detang-Dessendre, C., & Molho, I. (1999). Migration and changing employment status: a hazard function analysis. *Journal of Regional Science*, 39(1), 103-123.
- Dommermuth, L., Klobas, J. E., & Lappegård, T. (2009). *Now or later? The theory of planned behaviour and fertility intentions*. Dondena working paper. Milan: Carlo F. Dondena Centre for Research on Social Dynamics.
- Feijten, P., & Mulder, C. H. (2002). The timing of household events and housing events in the Netherlands: A longitudinal perspective. *Housing studies*, 17(5), 773-792.
- Fernandez, R., & Fogli, A. (2009). Culture: An empirical investigation of beliefs, work, and fertility. *American Economic Journal: Macroeconomics*, 1(1), 146-77.
- Ferrari, G., & Macmillan, R. (2019). Until work do us part: Labour migration and occupational stratification in non-cohabiting marriage. *Population Studies*, 1-20.
- Fihel, A., & Okólski, M. (2019). Population decline in the post-communist countries of the European Union. *Population & Societies*, (6), 1-4.
- Generations and Gender Programme (2019). *Generations and Gender Survey (GGS) - Wave 1*. DANS. <https://doi.org/10.17026/dans-z5z-xn8g>
- Goldstein, S., & Goldstein, A. (1981). The impact of migration on fertility: an 'own children' analysis for Thailand. *Population Studies*, 35(2), 265-284.
- Guzzo, K. B. (2006). The relationship between life course events and union formation. *Social Science Research*, 35(2), 384-408.
- Hayford, S. R. (2009). The evolution of fertility expectations over the life course. *Demography*, 46(4), 765-783.
- Heckhausen, J., Wrosch, C., & Fleeson, W. (2001). Developmental regulation before and after a developmental deadline: The sample case of "biological clock" for childbearing. *Psychology and Aging*, 16(3), 400.
- Hoem, J. M., Neyer, G., & Andersson, G. (2006). Educational attainment and ultimate fertility among Swedish women born in 1955-59. *Demographic Research*, 14, 381-404.
- Huinink, J., & Feldhaus, M. (2012). Fertility and commuting behaviour in Germany. *Comparative Population Studies*, 37(3-4).
- Huinink, J., & Kohli, M. (2014). A life-course approach to fertility. *Demographic Research*, 30, 1293-1326.
- Jang, J. B., Casterline, J. B., & Snyder, A. (2014). Migration and marriage: Modeling the joint process. *Demographic research*, 30, 1339.
- Kalmijn, M. (2013). The educational gradient in marriage: A comparison of 25 European countries. *Demography*, 50(4), 1499-1520.
- Kantorová, V. (2004). Education and entry into motherhood: The Czech Republic during state socialism and the transition period (1970-1997). *Demographic Research*, 3, 245-274.
- Kley, S., (2010). Explaining the stages of migration within a life-course framework. *European Sociological Review*, 27(4), pp.469-486.
- Kohler, H. P., Billari, F. C., & Ortega, J. A. (2002). The emergence of lowest-low fertility in Europe during the 1990s. *Population and Development Review*, 28(4), 641-680.
- Kulu, H. (2005). Migration and fertility: Competing hypotheses re-examined. *European Journal of Population/Revue européenne de Démographie*, 21(1), 51-87.

- Kulu, H. (2006). Fertility of internal migrants: comparison between Austria and Poland, *Population, Space and Place* 12(3): 147–170.
- Kulu, H. (2008). Fertility and spatial mobility in the life course: evidence from Austria. *Environment and Planning A*, 40(3), 632-652.
- Kulu, H., & Milewski, N. (2007). Family change and migration in the life course: An introduction. *Demographic Research*, 17.
- Lee, R., & Mason, A. (2010). Fertility, human capital, and economic growth over the demographic transition. *European Journal of Population/Revue européenne de Démographie*, 26(2), 159-182.
- Lerch, M. (2015). Does indirect exposure to international migration influence marriage and fertility in Albania?. *Journal of Population Research*, 32(2), 95-114.
- Li, S. M. (2004). Life Course and Residential Mobility in Beijing, China. *Environment and Planning A: Economy and Space*, 36(1), 27–43.
- Liefbroer, A. C. (2009). Changes in family size intentions across young adulthood: A life-course perspective. *European Journal of Population*, 25, 363–386.
- Marczak, J., Sigle, W., & Coast, E. (2018). When the grass is greener: Fertility decisions in a cross-national context. *Population Studies*, 72(2), 201-216.
- Mayer, K. U. (2004). Whose lives? How history, societies, and institutions define and shape life courses. *Research in Human Development*, 1(3), 161-187.
- Michielin, F., & Mulder, C. H. (2008). Family events and the residential mobility of couples. *Environment and Planning A*, 40(11), 2770-2790.
- Mikolaj, J., & Kulu, H. (2018). Divorce, separation, and housing changes: A multiprocess analysis of longitudinal data from England and Wales. *Demography*, 55(1), 83-106.
- Mills, M. (2004). Stability and change: the structuration of partnership histories in Canada, the Netherlands, and the Russian Federation. *European Journal of Population/Revue européenne de Démographie*, 20(2), 141-175.
- Mills, M., Rindfuss, R. R., McDonald, P., & Te Velde, E. (2011). Why do people postpone parenthood? Reasons and social policy incentives. *Human Reproduction Update*, 17(6), 848-860.
- Mulder, C. H. (1993). *Migration dynamics: a life course approach*.
- Mulder, C. H., & Wagner, M. (1993). Migration and marriage in the life course: a method for studying synchronized events. *European Journal of Population/Revue européenne de Démographie*, 9(1), 55-76.
- Perelli-Harris, B., & Lyons-Amos, M. (2015). Changes in partnership patterns across the life course: An examination of 14 countries in Europe and the United States. *Demographic Research*, 33, 145-178.
- Philipov, D. (2009). Fertility intentions and outcomes: The role of policies to close the gap. *European Journal of Population*, 25, 355–361.
- Rees, P., van der Gaag, N., de Beer, J., & Heins, F. (2012). European regional populations: current trends, future pathways, and policy options. *European Journal of Population/Revue européenne de Démographie*, 28(4), 385-416.
- Sajaia, Z. (2008). Maximum likelihood estimation of a bivariate ordered probit model: implementation and Monte Carlo simulations. *The Stata Journal*, 4(2), 1-18.
- Schoen, R., Astone, N. M., Kim, Y. J., Nathanson, C. A., & Fields, J. M. (1999). Do fertility intentions affect fertility behavior?. *Journal of Marriage and the Family*, 790-799.
- Sobotka, T., & Toulemon, L. (2008). Overview Chapter 4: Changing family and partnership behaviour: Common trends and persistent diversity across Europe. *Demographic research*, 19, 85-138.
- Stecklov, G., Carletto, C., Azzarri, C., & Davis, B. (2010). Gender and migration from Albania. *Demography*, 47(4), 935-961.

- Thomas, M. (2019). Employment, education, and family: Revealing the motives behind internal migration in Great Britain. *Population, Space and Place*, 25(4), [e2233]. <https://doi.org/10.1002/psp.2233>
- Thornton, A., and Philipov, D. (2009). Sweeping changes in marriage, cohabitation and childbearing in Central and Eastern Europe: New insights from the developmental idealism framework. *European Journal of Population/Revue européenne de Démographie*, 25(2), 123-156.
- Triandafyllidou, A., & Gropas, R. (2016). *European immigration: a sourcebook*. Routledge.
- UN (2019). *World Population Prospects 2019*. United Nations Population Division, New York. https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf
- UNECE. (2005). *Generations and gender programme: Survey instruments*. New York and Geneva: United Nations.
- Upchurch, D. M., Lillard, L. A., & Panis, C. W. (2002). Nonmarital childbearing: Influences of education, marriage, and fertility. *Demography*, 39(2), 311-329.
- Van Bavel, J. (2010). Choice of study discipline and the postponement of motherhood in Europe: The impact of expected earnings, gender composition, and family attitudes. *Demography*, 47(2), 439-458.
- Van Mol, C., & De Valk, H. (2016). Migration and immigrants in Europe: A historical and demographic perspective. In *Integration processes and policies in Europe* (pp. 31-55). Springer, Cham.
- Venhorst, V., Van Dijk, J., & Van Wissen, L. (2011). An analysis of trends in spatial mobility of Dutch graduates. *Spatial Economic Analysis*, 6(1), 57-82.
- Vespa, J. (2014). Historical trends in the marital intentions of one-time and serial cohabitators. *Journal of Marriage and Family*, 76(1), 207-217.
- Vidal, S., Huinink, J., & Feldhaus, M. (2017). Fertility Intentions and Residential Relocations. *Demography*, 54(4), 1305-1330.
- Viry, G., Ravalet, E., & Kaufmann, V. (2015). High mobility in Europe: An overview. In *High Mobility in Europe* (pp. 29-58). Palgrave Macmillan, London.
- Wiik, K. A., Bernhardt, E., and Noack, T. (2010). Love or money? Marriage intentions among young cohabitators in Norway and Sweden. *Acta Sociologica*, 53(3), 269-287.