

Why Are Marriage and Family Formation Increasingly Disconnected Across Europe? A Multi-Level Perspective On Existing Theories

Abstract

Childbearing outside of marriage has increased drastically in recent decades. However, the existing explanations for this development are not coherent. Proponents of the Second Demographic Transition framework view the rise in non-marital childbearing as part of a pattern of progress driven by processes such as emancipation from traditional social norms; whereas other scholars perceive this trend in the context of a “pattern of disadvantage”, as non-marital births are often concentrated among lower socio-economic groups. In this paper, we posit that the relevance of the aforementioned theoretical explanations might vary depending on the geographic scale at which variation occurs: i.e., across nation states, subnational regions, or individuals. To explore this hypothesis, we analyse harmonised survey data from 16 European countries. We apply hierarchical models to study how the likelihood that a woman living in a couple will have her first child either within non-marital cohabitation or within marriage is linked to national and subnational regional variation in socio-economic conditions that are related to explanations based on the existing theoretical considerations. Our results suggest that the Second Demographic Transition framework is very important for understanding variation between countries, whereas arguments pointing to a pattern of disadvantage seem to be more relevant at the individual and subnational regional level. It thus appears that taking a multi-level perspective can help us better understand why the existing theoretical explanations are not fully coherent.

Keywords

Marriage, childbearing outside marriage, social norms, economic conditions, spatial variation, Europe

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Introduction

In the mid-20th century, European politics were characterised by a strong division between a capitalist West and a communist East. However, when we look at trends in non-marital childbearing over the last centuries, we see that European societies were never more similar than in this period: across Europe, most prospective parents married before having their first child (Klüsener, Perelli-Harris, & Sánchez Gassen, 2013; Klüsener, 2015). Childbearing outside of marriage started to rise in the 1960s, and the “Golden Age of Marriage” soon came to an end in most parts of Europe (Kiernan, 2004; Perelli-Harris et al., 2012). An important feature of this shift was the increase in the share of children born to unmarried cohabiting couples (Perelli-Harris et al., 2012). This trend towards the weakening of the link between marriage and family formation is one of the most important changes in family life over the past 50 years. Over this period, we have witnessed substantial spatiotemporal variation both in the timing of the onset of increases in non-marital childbearing, and in the intensity of these increases over time (Perelli-Harris et al., 2012; Klüsener et al., 2013; for Latin America see Esteve, Lesthaeghe, & López-Gay, 2012). The fact that demographic changes are dependent on the compositional characteristics of populations and the prevailing contextual socio-economic and policy conditions contributed to this spatiotemporal variation (Lesthaeghe, 1980; Coale & Watkins, 1986; Liefbroer & Billari, 2010; Vitali & Billari, 2017). It has therefore been argued that more research is needed on the question of how such aspects are shaping variation (Kuijsten, 1996; Billari, 2004).

The existing explanations for the weakening of the link between marriage and family formation are not coherent: proponents of the Second Demographic Transition framework (Van de Kaa, 1987; Lesthaeghe, 2010) view the rise in non-marital

childbearing as part of a pattern of progress driven by processes such as emancipation from traditional social norms and individualisation. Other scholars see this trend in the context of a “pattern of disadvantage”, as non-marital births are more likely to occur among individuals with relatively low socio-economic status (Perelli-Harris et al., 2010). In this paper, we posit that one reason why these existing explanations are inconsistent is that their relevance might vary according to the geographic scale at which variation is occurring. Thus, empirical support for these theoretical considerations might differ depending on whether studies look at variation across nation states, subnational regions, or individuals. We derived our position from an apparent puzzle: while many studies that have examined individual-level variation have found support for a pattern of disadvantage (e.g., Upchurch, Lillard, & Panis, 2002; Perelli-Harris et al., 2010), the fact that highly developed Nordic and western European countries were and are forerunners in the rise of non-marital childbearing lends support to explanations based on the Second Demographic Transition framework.

In our empirical analysis, we will study spatial variation in the likelihood that a woman living in a couple will have her first child either within non-marital cohabitation or within marriage. For our analysis, we draw upon harmonised survey data from 16 European countries. We use a three-level hierarchical model that allows us to link outcomes at the individual level with national and subnational regional variation in socio-economic conditions. This model, which is based on existing theoretical explanations, also enables us to control for a number of individual-level characteristics. We believe that Europe is an ideal context for such a study because of the great diversity across the continent in economic conditions, levels of secularisation (Halman & Draulans, 2006),

long-standing norms related to family formation behaviour (Hajnal, 1965), and welfare state types (Esping-Andersen, 1999; Esping-Andersen, 2009).

Background

The Second Demographic Transition framework and the pattern of disadvantage considerations

Societies that experience increases in cohabitation have been characterised by loose intimate relationships, enhanced individual freedom in making important life course decisions, and a de-traditionalisation of personal life (Giddens, 1992; Beck & Beck-Gernsheim, 1995). In such societal contexts, cohabitation may be seen as a rational way of avoiding too much commitment and of maintaining some distance within the union (Lappegård & Noack, 2015).

Proponents of the Second Demographic Transition framework subscribe to these views (Van de Kaa, 1987; Lesthaeghe, 2010). They also argue that secularisation is an important factor in the rise in non-marital childbearing, as it limits the ability of religious institutions to influence family formation behaviour. Historically, religious institutions have placed considerable importance on the enforcement of the social norm that childbearing should occur within marriage (e.g., Coester, 1993; Buitendag, 2008). Increasing female economic empowerment is also considered to be an important factor in the emergence of new patterns of family behaviour by advocates of the Second Demographic Transition framework and other scholars (e.g., Bumpass, 1990; Lesthaeghe, 2010). However, this view is not universal (Oppenheimer, 1994). From an economic perspective, traditional marriage has often been characterised as a trade in which men and women specialise in different areas of life (Becker, 1981). Scholars have argued that

recent trends towards female empowerment and gender equality have reduced the gains of marriage for women, and have thus fostered a rise in cohabitation (Lesthaeghe, 1995, for empirical support on the role of the expansion of women's education, see, e.g., Vitali, Aassve & Lappegård, 2015). It has also been noted that for dual-career couples in particular, cohabitation might be an attractive prelude to marriage, as the partners can use this period to explore the viability of a potential marriage by negotiating the division of labour between them (e.g., Ono, 2003).

The Second Demographic Transition framework has been criticised for not fully explaining the socio-economic differences in patterns of childbearing within cohabitation (Sobotka, 2008; Perelli-Harris et al., 2010). Based on the Second Demographic Transition framework, we might expect to find that highly educated individuals are at the forefront in the shift in family formation behaviour towards higher rates of childbearing within cohabitation: as these individuals are more likely than their less educated counterparts to hold liberal values, they may be more likely to challenge the prevailing social norms. However, this expectation does not align with empirical evidence showing that many societies have a negative educational gradient of childbearing within cohabitation: i.e., women with lower levels of education are more likely than women with higher levels of education to have a child within cohabitation. Evidence of this pattern has been provided for several European countries (Perelli-Harris et al., 2010) and the United States (Rindfuss, Morgan, & Offutt, 1996; Upchurch et al., 2002; Ventura, 2009). For cohabitation independent of childbearing, a negative educational gradient has also been found for a large number of Latin American countries (Esteve et al., 2012).

The aforementioned findings have led some scholars to suggest that there may be factors other than those posited by the Second Demographic Transition framework that

explain new patterns of family behaviour, or that the Second Demographic Transition is evolving along two different trajectories (McLanahan, 2004; Sobotka, 2008). One such factor is confrontation with blocked opportunities stemming from economic constraints and economic uncertainty (Billy & Moore, 1992; Oppenheimer, 1994; Manning & Smock, 1995; Kiernan, 2004). These economic issues are central to the theoretical argument that the rise in non-marital childbearing is related to a pattern of disadvantage (Perelli-Harris et al., 2010). A “general milieu of social disorganization” might emerge among groups who are disadvantaged or are negatively affected by large-scale economic crises (Billy & Moore, 1992). In such an environment, social norms that prescribe the “right” order of life course events can lose relevance. Individuals facing blocked opportunities and economic uncertainty may prefer cohabitation to marriage because the former union type requires a lower level of commitment than the latter union type, or they may decide to postpone marriage until their level of uncertainty about their future income opportunities is reduced (see also Oppenheimer, 1994; Kalmijn, 2011). Scholars in the US have argued that such developments have resulted in greater disparities in children’s resources (e.g., McLanahan, 2004). There is also evidence suggesting that mechanisms related to a pattern of disadvantage can operate in parallel to mechanisms connected to the Second Demographic Transition. A study by Vitali et al. (2015) found that the expansion of women’s education has been a driver of the diffusion of cohabitation in Norway, even though the early adopters of cohabitation were women with lower levels of education. Overall, according to the pattern of disadvantage considerations, we would expect to find that childbearing within cohabitation tends to spread among people with lower social status and in contexts with unfavourable economic conditions.

Why might the role of specific socio-economic conditions vary across geographic scales?

When conceptualising how individual decision-making might be related to norms in the social context and socio-economic and policy conditions, it is important to note that links can exist in multiple social and geographic dimensions. Such links can, for example, operate in a dyadic form between partners; in household and family contexts; within neighbourhoods or (local) social networks of friends and co-workers; and at the subnational regional, national, and supranational level. We will focus here on the subnational regional level and the national dimension.

At the subnational regional level, we expect to find that compositional characteristics strongly influence family formation patterns. If, for instance, a large share of the population of a given region are religious, even non-religious couples living in this region might decide to marry before having children out of concern that their children could otherwise be stigmatised socially. Meanwhile, at the national level, there is considerable variation not only in compositional characteristics, but also in policies that could affect the decision about whether to have a child within or outside of marriage. We acknowledge that some variation in policies might exist as well at the regional level in highly federalised countries, but there is usually less variation across regions in the same country than there is across countries (Perelli-Harris & Sánchez Gassen 2012). A country's policies and laws do not necessarily reflect the compositional characteristics of its population; as these policies may, for instance, be implemented by the elite with the intention of modernising society. Moreover, the path dependency of family legislation can cause time lags in the adaptation of existing legislation to changing views on what constitutes proper family behaviour. As a result, the legislation might still provide

economic incentives for traditional behaviour, such as getting married, even if large shares of the population are already open to alternative family formation strategies. The tendency for the link between compositional characteristics and policies and legislation to be looser at the national than at the regional level can contribute to disparities in the associations between specific aggregate-level conditions and family formation patterns at these two levels.

The socio-economic dimensions of the link between marriage and family formation

To explore the question of whether the relevance of existing theoretical explanations varies by geographic scale, we focus in our paper on four key social and economic dimensions at the macro level that might be related to variation in the likelihood that a woman living in a couple has her first child within non-marital cohabitation or within marriage. Of these dimensions, the disapproval of cohabitation, the importance of religious norms, and the economic autonomy of women are linked to the Second Demographic Transition framework; while the fourth dimension, the economic situation and the level of access to economic resources, is related to the pattern of disadvantage argument.

Both the “*social disapproval of cohabitation*” and the “*importance of religious norms*” dimensions refer to social norms that may be connected to people’s decision-making and the pace at which childbearing within cohabitation is diffusing in a region. Research that looked into how religiosity is linked to family behaviour at the individual level found evidence of strong positive associations between levels of religious affiliation and/or levels of religious commitment on the one hand, and conservative sexual norms and behaviour on the other (Thornton, Axinn, & Hill, 1992; Katz, 2001; Finke &

Adamczyk, 2008). By contrast, individuals with secular attitudes seem to be much more likely to cohabit (Village, Williams, & Francis, 2010) and to have children within cohabitation (Berghammer, 2012). However, social disapproval of cohabitation is not just dependent on religiosity; we also find regions in Europe (e.g., in Russia or Estonia) where the degree of adherence to religious norms is comparatively low, yet the level of disapproval of cohabitation is high. We therefore cover both dimensions in our analysis.

We believe that social disapproval of cohabitation is associated with family formation along two dimensions. In a region where many people disapprove of cohabitation, it is more likely that one or both partners will be of the opinion that couples should be married prior to having children. Furthermore, as already mentioned above such social disapproval may also influence the behaviour of individuals who are in principle open to cohabitation (Vignoli & Salvini, 2014). If they perceive that cohabitation and childbearing within cohabitation is generally regarded as a norm-deviating behaviour in their region, they may decide to adopt the norm-complying behaviour of marrying before having a child. Hence, in regions where the levels of disapproval of cohabitation are low, the diffusion processes may occur more quickly than in more conservative regions. It should be noted that we are looking at associations and not at causalities, as lower levels of disapproval might also stem from a higher share of the population having already followed the new trend in family behaviour. We expect to find that children are less likely to be born within cohabitation in countries and regions where the levels of disapproval of such behaviour are high.

Similarly, we believe that religious norms are associated with family behaviours at both the individual and the aggregate level (Finke & Adamczyk, 2008; Klüsener & Goldstein, 2016). We assume that the mechanisms through which these norms are linked

with individual behaviour are very similar to those described for the social disapproval of cohabitation dimension. However, at the aggregate societal level, religious norms are likely to be upheld differently in space and time than social norms that discourage cohabitation, as the former are dependent on how dominant religious institutions are able to influence societal debates and legislation over time. Many European countries have historically had one dominant (national) religion, and the views of these religious institutions regarding proper family formation behaviour have been—and may still be today—reflected in each country’s family legislation (see, for example, Finke & Adamczyk, 2008; Witte, 2012). Thus, we expect to see substantial cross-country variation in secularisation tendencies, both in terms of compositional characteristics and in terms of the extent to which policies and legislation that regulate family formation continue to reflect traditional religious views. Given the role played by (national) religious institutions, we believe that the between-country dimension is more relevant for religious norms than for social disapproval of cohabitation. Nevertheless, there may also be regional differences in religious norms within countries, especially between metropolitan and rural areas. Overall, we expect to find that people living in contexts in which religious norms continue to be influential are more likely to marry before becoming a parent than people living in more secular areas.

Regarding the dimension “*women’s economic autonomy*”, we believe that the degree to which women and men have similar access to gainful employment influences how couples with young children divide paid employment and child-rearing responsibilities between them. In countries and regions where the male breadwinner ideal is still prevalent, work-family reconciliation policies are usually poorly developed. Under these conditions, employers are likely to be hesitant to offer high-paying jobs with career

options to young women, as they might fear that these women will leave the labour market for longer periods of time when they have children. Because of their restricted access to the labour market, women may be more economically dependent on their male partner. This pattern is likely to change if women have more gender-equal employment opportunities; a process that can be fostered by improved access to childcare outside of the family. As a result, marriage may lose its function as a strategy women use to secure their own livelihood and that of their potential children against separation from or the death of the male partner.

We believe that the dimension of women's economic autonomy is closely linked to the evolution of the welfare state, which has reduced individuals' reliance on kinship networks and the church as providers of social security and assistance. This process is sometimes also referred to as *defamilisation* or *decommodification* (McLaughlin & Glendinning, 1994; Esping-Andersen, 1999), and the degree of defamilisation that has already occurred differs across countries (Esping-Andersen, 1999; Perelli-Harris & Sánchez Gassen, 2012). Where it has happened, defamilisation may have allowed women to become less reliant on the institution of marriage, and more willing to have children outside of marriage. We expect to find that in regions where women have greater economic autonomy, more children will be born within cohabitation. Since theoretical considerations suggest that women's economic autonomy is linked to the evolution of the welfare state in a given country, we assume that this dimension will be more relevant for understanding between-country variation than within-country variation.

The introduction of the "*structural economic conditions and access to economic resources*" dimension is motivated by considerations pointing to a pattern of disadvantage; i.e., the assumption that blocked opportunities increase the likelihood of

having children outside marriage. As access to employment and housing has become more limited in many parts of Europe in recent decades, young adults are increasingly postponing leaving the parental home, marrying, and having children (Kohler, Billari, & Ortega, 2002; Mills & Blossfeld, 2013; Vignoli, Rinesi, & Mussino, 2013). Studies have linked rising levels of uncertainty to processes of globalisation, including increased global competition (Mills & Blossfeld, 2013); while Kalmijn (2011) has presented evidence of the effects of employment insecurity across Europe on the union formation decisions of males. These and similar findings seem to indicate that people with lower educational attainment are especially affected by reduced job security and diminished wage protection due to globalisation processes (Kalmijn, 2013).

Taking these developments into account, Perelli-Harris et al. (2010) have argued that individuals with higher levels of education may be more likely to marry and to have children within marriage than their less educated counterparts (see also Kalmijn, 2011, 2013). For a woman with a low level of education, the option to marry a man with a low level of education and uncertain employment prospects may offer few benefits, both materially and symbolically (Esping-Andersen & Billari, 2015). This is particularly true in contexts in which women have relatively high levels of economic independence because the gender-based differences in employment opportunities are small and institutional childcare is widely available (Konietzka & Kreyenfeld, 2002). Overall, based on the pattern of disadvantage considerations, we would expect to find that children would be more likely to be born within cohabitation than in marriage in countries and regions with unfavourable economic conditions, and among individuals with more limited access to economic resources.

Data

For our study, we use harmonised individual-level survey data on union formation and fertility behaviour for 16 European countries. We focus on first births to women living in a couple that occurred either in non-marital cohabitation or within marriage between 2000 and 2007. We decided to exclude births to mothers who were living alone. This decision could be debated, as in some countries, such as in the United Kingdom, births that take place outside of a partnership represent a significant proportion of overall births. However, we are mostly interested in the recent increases in fertility outside of marriage, which are predominantly driven by a growing number of births in cohabitation (Thomson, 2014). In addition, some of the lone mothers might not have been in a stable relationship, and thus may not have had the option to marry. We therefore decided to focus on births occurring within couples.

The individual-level survey data are made available by the Harmonized Histories project (www.nonmarital.org) (Perelli-Harris, Kreyenfeld, & Kubisch, 2010). The data for 12 countries (Austria, Belgium, Bulgaria, Estonia, France, Germanyⁱ, Hungary, Italy, Lithuania, Norway, Romania, and Russia) stem from the Generations and Gender Programme (GGP), which conducts national panel surveys with a focus on family formation behaviour (www.ggp-i.org). For the Netherlands, the data come from the Family and Fertility Survey (FFS), which is very similar to the Generations and Gender Surveys (GGS). The data for Poland originate from the Employment, Family, and Education Survey. For Spain and the United Kingdom, the Harmonized Histories datasets are based on data drawn from the Spanish Survey of Fertility and Values and the British Household Panel Survey. As not all of the national surveys cover in addition to women

also men, and as we do not want to rely on secondary information related to the biological parity of the birth, we included only female respondents in our sample.

The aggregate-level data on socio-economic conditions at the subnational regional and country level have been derived from survey data. In compiling the information on variation in social norms, we could rely in part on aggregate information obtained from our individual-level survey data. However, these data alone were not sufficient, as not all of these surveys included questions related to the factors we want to control for. Thus, in addition to using the GGS/FFS data (wave 1 collected between 2002 and 2010), we also obtained data from other surveys, such as the European Social Survey (ESS, waves 1 to 4, collected biennially between 2002 and 2008) and the European Value Survey (EVS, wave 4 from 2008). Fortunately, there is considerable overlap in the norm-related questions posed in these three surveys. When extracting information, we did not restrict the samples by sex and age, as we are interested in investigating the general social conditions within a country or a subnational region. More detailed information on sources and survey questions are given in Appendix 1.

Pooling the responses to similar questions from different surveys also allowed us to address the challenge that the data from single survey waves frequently provide us with small numbers of observations at the regional level. We only collected information from surveys that use the same regional division of countries as our harmonised histories to denote the region of residence. We made an effort to pool the responses from different surveys only if the questions related to this item are identical. From this general rule we deviated in one instance only; in this case, we pooled responses from two questions that do not have identical wording, but have a very similar meaning (see Appendix 1 for details). In extracting the aggregate-level data, we applied design weights when they were

available. The unemployment data were derived from aggregated information from the EU-SILC surveys, as provided in the GGP Contextual Database (GGP-CDB, 2016).

In our models, we apply aggregate-level socio-economic controls at the level of the countries and the subnational regions in which the respondents live. For each of the countries we had to decide which of the existing subnational regional divisions we would consider in our analysis. This decision could have far-reaching implications, as the outcomes might differ depending on the level of aggregation at which the variables on socio-economic conditions are introduced in the model. This issue, which is also referred to as the *modifiable areal unit problem* (Openshaw, 1984), is one of the central challenges in spatial analyses. The European Union has developed the NUTS classification system, which uses different geographic hierarchies to divide Europe into subnational regions and smaller countries with comparable population sizes (NUTS 1 to NUTS 3). However, this system of classification has its limitations: it is not clear-cut,ⁱⁱ and it does not consistently reflect long-standing administrative and socio-economic divisions within countries. In general, the regional divisions in our study are at the NUTS 1 level (Belgium, Estonia, France, Germany, Italy, Lithuania, Spain, and the United Kingdom). Where the data allow and where considering a higher level of regional detail better reflects long-standing administrative and meaningful socio-economic divisions, we chose the NUTS 2 level (Austria, Bulgaria, Hungary, Norway, Poland, and Romania). In the case of the Netherlands, we are limited to the national level because the survey data do not provide information on region of residence. However, since the population size and the area of the Netherlands are comparable to those of other regions in our sample, we do not consider this to be a substantial problem. For Russia, which does not employ the NUTS classification system, we use the level of the economic regions, which are approximately

comparable to the NUTS 1 regions in terms of population size. In total, we distinguish between 116 subnational regions and small countries in our study (see Appendix 2 for details).

Model

For the analysis, we employ a multilevel logistic regression model with random intercept, as both our hypotheses and our data are hierarchically structured (i.e., individuals are nested in regions that are nested in countries). The logistic link function is applied, as we treat our dependent variable—i.e., whether women living in a couple have their first child within non-marital cohabitation or within marriage—as dichotomous (Agresti, 2002). The use of multilevel models allows us to detect the links between aggregate-level socioeconomic characteristics and individual behaviour, and to identify the macro characteristics associated with variation in individual-level outcomes across regions and countries. In these models, the clustering of observations is seen as an intrinsic characteristic of the population, and is explicitly considered in the analysis.

We apply a three-level hierarchical model consisting of individuals nested in 116 regions that are nested in 16 countries. Studies that have examined the question of how many observations are required at the highest level within a multilevel framework have made varying recommendations, ranging from just 8 or 10 to 30, 50, or even 100 groups (Bryan & Jenkins, 2016; Stegmueller, 2013). Simulations performed by Stegmueller (2013) support our research design, as his results for a multilevel (probit) model suggest that 15 countries is the cut-off point below which standard errors become too biased. A positive aspect of our dataset is that it includes countries from all parts of Europe, with no area of Europe being disproportionately overrepresented (we cover, for example, one

country from Scandinavia, one from the British Isles, and one from the Iberian Peninsula). This range of countries decreases the likelihood that we severely violate the model assumption that our observations are independent.

We follow an empirical strategy consisting of three steps. First, we estimate the so-called null model (without aggregate-level and individual-level covariates) to test whether a multilevel analysis would be well-suited for our data. Second, we run a model in which we just include first-level (i.e., individual-level) variables to investigate whether they are associated with the question of whether women living in a couple have their first child within cohabitation or within marriage. Our individual-level variables include the mother's age at the time of childbirth; her educational attainment at the time of the interview; and the social background of her parents, measured in educational attainment (see also Koops, Liefbroer, & Gauthier, 2017). The information on educational attainment allows us to study the relevance of the pattern of disadvantage framework at the individual level as well. Finally, we estimate a larger model that includes the first-, second-, and third-level variables (at the individual, regional, and country levels) in order to interpret the variability associated with these spatial dimensions. A comparison between the different model specifications is made through the intra-class correlation coefficient, which expresses how much of the total unexplained variation in childbearing within cohabitation is attributable to the subnational regional level and to the national level. This coefficient is computed following standard practices (Snijders & Bosker, 1999).

It may be problematic to use absolute values at both the between- and the within-country level when controlling for social norms and economic conditions, as nation states may represent "black boxes" of complex auto-organisation (Decroly & Grasland, 1993) for which our covariates cannot fully control. For example, living in a region with a

relatively high unemployment level in a European country with a rather low unemployment level may have a different impact on demographic decisions than living in a region with a similar level of unemployment that is situated in a country with a relatively high unemployment level. In dealing with such issues, we do not use the absolute levels as our aggregate-level socio-economic controls in the within-country dimension. Instead, we consider a relative measure that indicates to what degree the region deviates from the country mean. We thus employ two variables for each of our aggregate-level dimensions. Our “between-country” measure uses absolute national-level average values to measure the association between childbearing within cohabitation and variance in our covariates between countries. For our “within-country” measure, we take the subnational regional values and subtract from them the average national-level values in order to derive the relative difference from the national average.

Choice of covariates on social norms and economic conditions

To measure “*social disapproval of cohabitation*”, we employ a variable containing information on the extent to which people think it is acceptable for couples to live together without being married. We constructed an index with values ranging from 1 (low disapproval) to 5 (high disapproval). The highest levels of disapproval (Table 1) are mostly found in central and eastern European countries, as well as in Italy. Variation is rather low within western Europe, but there is substantial regional variation on this measure in a number of countries. These findings lend support to our assumption that it is preferable to study associations not only at the national level, but also at the subnational regional level.

[Table 1 about here]

However, as the focus of our analysis is on childbearing within cohabitation and not on cohabitation itself, it is important to note that there is a chance that attitudes towards these two behaviours may not be consistent. For example, people may think it is acceptable for couples to live together as long as they marry when they have children; thus, while cohabitation may be seen as socially acceptable, this may not be the case for childbearing within cohabitation. To test whether the two variables measure the same underlying social norm, we compared the responses to the two questions in those subnational regions for which data on social disapproval of non-marital childbearing are available (all subnational regions apart from the Italian ones). As the correlation between these measures is, at 0.67, quite high, our decision to choose disapproval of cohabitation as a measure appears to be justified.

To capture “*importance of religious norms*”, we use responses to a question that asks people how important religion is to their life. This covariate is constructed as an index from 0 (not important) to 10 (very important). We prefer this measure to alternative variables that capture the frequency of participation in religious activities, as norms related to how often church members are expected to take part in religious activities vary across the religious denominations of Europe. Our religiosity variable also exhibits substantial variation between and within countries (Table 1).

For the dimension “*women’s economic autonomy*”, we employ a question that measures the extent to which views consistent with a male breadwinner model are still dominant in a society; i.e., whether people agree or disagree that men should be given preference when the available jobs are scarce. From this question, we constructed an

index ranging from 1 (low level of disagreement) to 5 (high level of disagreement). We acknowledge that responses to this question might measure gender equality better than female economic autonomy. Nevertheless, we believe that the prevalence of the view that men should be given preference in the labour market is negatively linked with opportunities for women to participate successfully in the labour market. This assumption is also supported by the observation that the correlation between our measure and the female employment rate across our 116 subnational regions is, at 0.74, very strong. However, we prefer to rely on responses to the norm-related question rather than the female employment rate, because the survey responses are less likely than the employment rate to be influenced by the overall economic conditions within a region or country.

To measure “*structural economic conditions and access to economic resources*”, we use the unemployment rates for 2003; the only year for which we could obtain data for all of the regions. This year is approximately in the middle of the period from which we derived our births (2000 and 2007). Because we do not include the births of children who were conceived after the onset of the recent global recession, we believe the values for 2003 are quite representative for our study period. We decided to use the unemployment rate for all adults (ages 25-64) (GGP-CDB, 2016, derived from EU-SILC surveys) rather than the youth unemployment rate (ages 15-24). While the youth unemployment rate might be considered preferable because non-marital childbearing usually occurs at younger ages, we believe that the overall unemployment levels must be high for a culture of anomie to emerge. Thus, the use of the adult unemployment rate seems to be more appropriate.

Results

Figure 1 displays the spatial variation in our dependent variable. It shows that there is considerable regional variation in the likelihood that a woman living in a couple has her first child within cohabitation or within marriage. The countries with the highest shares of first births within cohabitation are Norway and Estonia, at around 60 per cent. At the other end of the spectrum is Italy, where just two per cent of first births are to cohabiting couples. The shares are below 10 per cent for many Polish and some Romanian regions. Countries with a high degree of regional variation include Germany, Norway, Poland, and Russia. Overall, however, the between-country component of variation seems to be more relevant than the within-country component. For example, there are clear divides in levels along the French-Italian border and along the Austrian-Italian border.

[Figure 1 about here]

Turning to our multilevel regression analysis, we start by investigating to what extent variation in our dependent variable can be attributed to variation in our aggregate-level dimensions in the different models. Figure 2 illustrates that in model 1 (the unconditional (null) model), 28 per cent of the total unexplained variation in first births occurring among married vs. cohabiting couples can be attributed to between- or within-country variation across our 116 regions. Between-country variation clearly dominates, as 24.6 percentage points are related to differences between countries. Meanwhile, just 3.4 percentage points can be linked to within-country variation. This finding supports the view that the country level is far more relevant than the regional level in explaining variation in childbearing within cohabitation. It is, however, important to note that these

numbers may be influenced to some degree by the level of regional detail at which we conduct our analysis.

[Figure 2 about here]

When we control for individual characteristics (Model 2), the unexplained variation that can be attributed to variation across our 116 regions increases to almost 32 per cent; whereas when we control in addition for aggregate-level covariates (Model 3), only 7.3 per cent of the unexplained variation can still be linked to variation across regions and countries. This suggests that our selected aggregate-level variables can account for a very large proportion of the between- and within-country spatial variation in the likelihood that a woman living in a couple will have her first birth within cohabitation or within marriage.

Table 2 presents the results for the individual- and aggregate-level variables. As most of the individual-level variables are not in the main focus of this paper, we comment on them only briefly. The outcomes for age show that childbearing within cohabitation is more likely to occur among young women and women over age 40. Our results for educational attainment are in line with the findings of Perelli-Harris et al. (2010); i.e., in our European-wide sample, the educational gradient is found to be negative. The social background items are not significant (for a more nuanced analysis see Koops et al., 2017). It should be noted that the estimates of the individual-level covariates are very similar in Model 2, which includes only these covariates; and in Model 3, which also contains the aggregate-level covariates.

[Table 2 about here]

As we turn to the results for the variables on socio-economic conditions (Model 3), we can observe that the within-country variation for the dimension “*disapproval of cohabitation*” is significantly related to variation in patterns of childbearing within cohabitation, but that this is not the case for the between-country variation. The within-country association is in the expected negative direction, which implies that those subnational regions with higher levels of social disapproval of cohabitation have lower levels of childbearing within cohabitation. This finding could be interpreted as evidence of a social imitation mechanism among people living in the same region, which may contribute to a strong relationship between the degree of social approval of cohabitation and the likelihood of having a child within cohabitation.

Our religiosity variable is significant in both the between-country and the within-country dimensions. The coefficients are in the expected direction: i.e., in regions and countries where religion is considered less important, childbearing within cohabitation is more common. This result lends support to the argument put forward by proponents of the Second Demographic Transition framework that secularisation plays a prominent role in recent changes in family formation behaviour.

The dimension “*women’s economic autonomy*” is more salient at the between-country level than at the within-country level: i.e., the more strongly the respondents in a country disagree that men should be given priority in the labour market if jobs are scarce, the greater the likelihood that a woman living in a couple in that country will have her first child within non-marital cohabitation. These outcomes also support the Second Demographic Transition framework, which links the increase in childbearing within

cohabitation to the increasing (economic) autonomy of women. Our finding that only the outcomes at the between-country dimension are significant is in line with our expectation that the economic autonomy of women is closely linked with the evolution of the specific welfare state context in which individuals are embedded (Esping-Andersen, 2009).

Regarding the dimension “*structural economic conditions and access to economic resources*”, there is a positive association between the regional unemployment level relative to the country mean and the level of childbearing within cohabitation. However, this relationship is significant at the 0.1 level only. No significant coefficients are obtained for the between-country variable. One potential mechanism that could help explain why unemployment levels do not show up in the between-country dimension is an interaction association with social disapproval of childbearing within cohabitation. Levels of disapproval of non-marital childbearing are very high in central and eastern European countries, where unemployment levels are also very high. However, when we tested for it, we did not find any significant interaction association between the two indicators. Overall, the outcomes for this variable lend weak support to the assumption that blocked opportunities are associated with a higher risk of having a child within cohabitation at the regional level (Billy & Moore, 1992; Perelli-Harris et al., 2010).

To shed additional light on these issues, we ran separate models by educational attainment. However, the outcomes support to a limited degree only our assumption that adverse economic conditions are of particular relevance for individuals with a low socio-economic background. In the separate models that examine the effects of having a primary, a secondary, or a tertiary educational background, none of the unemployment variables is shown to be significant. If we pool the women with primary and secondary educational backgrounds in a single model without controlling for educational status, the

outcome for the within-country unemployment variable is close to being significant at the 0.1 level (p-value: 0.108), but the resulting odds ratio of 1.04 does not deviate strongly from the odds ratio observed for the model in which all of the women are included (1.03). One explanation for these outcomes might be that our data cover women only, whereas theoretical arguments have suggested that uncertainty effects are especially prevalent among disadvantaged men (Oppenheimer, 1994; Kalmijn, 2011). Thus, these patterns might be more clearly discernible if this analysis were carried out for men as well.

Robustness Checks

Our findings may not be valid without a series of sensitivity checks. First, to make sure that the outcomes of Model 3 are not dominated by one aggregate-level dimension, we ran this model separately for each of the four pairs of aggregate-level variables. When considered in isolation, the “*women’s economic autonomy*” measures contribute the most to the reduction in unexplained variation, although only for the more dominant between-country variation. The “*structural economic conditions and access to economic resources*” covariates contribute the least, while the other two variable pairs are somewhere in between. For the between-country “*structural economic conditions*” variable, the models return in isolation a significant negative coefficient (at the 0.1-level), which runs counter to our expectations based on the pattern of disadvantage considerations. While the contribution of “*women’s economic autonomy*” is quite substantial, all of the variables are relevant for explaining variation across regions and countries. In addition, we are reassured by the observation that the qualitative outcomes for the other three variable pairs remain unchanged in a full model without the two “*women’s economic autonomy*” measures.

A second aspect requiring robustness checks is that the variables related to the pattern of disadvantage considerations are controlled for at both the individual and at the two aggregate contextual levels, whereas variables related to the Second Demographic Transition framework are introduced at the two aggregate contextual levels only. This might explain why the two aggregate-level covariates related to the pattern of disadvantage framework are the least relevant aggregate-level controls. Hence, we decided to run a robustness check without our individual controls. The results indicate that the odds ratio of the within-country unemployment variable increases from 1.03 to 1.04, and becomes significant at the 0.05 level (p-value: 0.022). The significance levels of the other variables do not change, and the variable measuring between-country variation in unemployment remains insignificant. This suggests that controlling for education and social background at the individual level alters the model outcomes for the aggregate-level measures for economic conditions in the expected direction, but to a rather small degree only.

Third, we applied robustness checks to determine whether the results would be similar if a) we control for variation in female economic autonomy using the female employment rate rather than a norm-related variable; or if b) we take the youth unemployment rate (ages 15-24) instead of the unemployment rate for all adults (ages 25-64), since most births outside of marriage are to young parents. If we measure female autonomy using information on the female employment rate instead of opinion data on the question of whether men should be given preference in the job market when jobs are scarce, the models return a significant positive coefficient for the between-country dimension (p-value: 0.002). The within-country coefficient remains insignificant. When we replace adult unemployment with youth unemployment in our preferred model, the

between-country outcome remains insignificant, while the within-county covariate becomes insignificant (p-value: 0.102). Overall, these robustness checks suggest that the outcomes for the positive association with female economic autonomy at the between-country dimension are quite robust, while the outcomes for the regional dimension of variation in unemployment levels are more volatile. However, the significant negative gradient by level of education at the individual level is not affected when one of these variables is replaced with the other. This finding leads us to conclude that there is strong support for the pattern of disadvantage considerations at the individual level, but only weak support at the subnational regional level and no support at the national level. For the Second Demographic Transition model, we obtain support at both the national level and the subnational regional level.ⁱⁱⁱ

Discussion and Conclusion

In this paper, we have posited that one reason why existing explanations for the rising share of births within unmarried cohabiting unions are inconsistent is that their relevance might vary according to the geographic scale at which variation in family formation behaviour is occurring. To investigate this hypothesis, we specified a three-level model that studies variation across Europe in the likelihood that a woman living in a couple will have her first child within cohabitation or within marriage. A major strength of our empirical approach is that it allows us to simultaneously control for associations with aggregate-level conditions at the subnational regional and national level, and to control for a number of individual-level characteristics. The application of this approach has enabled us to shed new light on the inconsistencies in the theories that seek to explain recent changes in family formation behaviour.

Our model results demonstrate that across Europe, both between-country and within-country variation in social norms and economic conditions are relevant for understanding spatial variation in the likelihood that a woman in a couple will have her first birth within cohabitation or within marriage. Our finding that the between-country dimension is especially relevant is in line with the results of Klüsener et al. (2013) for recent periods and of Watkins (1991) for earlier periods. Nation states still seem to play an important role in shaping family behaviour. The mechanisms that appear to foster a convergence of norms related to family formation decisions within countries include national family legislation, standardised education systems, and nationwide mass media (Watkins, 1991).

In our models, we introduced four variables that reflect different theoretical dimensions of recent changes in family behaviour. Several of our outcomes lend support to the arguments of the Second Demographic Transition framework (Lesthaeghe, 2010). For example, our outcomes on the role of secularisation show that at both the between-country level and the within-country level, there is a negative association between the degree of religiosity and the likelihood of childbearing within cohabitation. The results for the variable measuring disapproval of cohabitation and women's economic position also support our expectations based on the Second Demographic Transition framework. However, disapproval of cohabitation is just found to be relevant for within-country variation, while women's economic position is shown to be important for between-country variation only. One interpretation of the outcomes for the social disapproval variable is that the social norms which govern cohabitation may evolve primarily from regional-level trends in the acceptance of life course choices. On the other hand, our finding that the women's autonomy variable is significant at the between-country

dimension only is in line with our expectations based on welfare state research arguing that variation in welfare states has a strong effect on women's economic empowerment (Esping-Andersen, 2009), and that marriage is likely to lose its appeal as an income-securing strategy in countries with stronger welfare states.

We obtained some, but rather weak, support for the assumption that structural economic conditions are related to childbearing within cohabitation, but only at the within-country level: i.e., there is a positive association between unemployment rates at the regional level and childbearing within cohabitation that is significant at the 0.1-level. Both this outcome and our finding of a negative educational gradient at the individual level are in line with pattern of disadvantage considerations (Billy & Moore, 1992; Perelli-Harris et al., 2010). However, this pattern may also be partly attributable to the economic positions of women relative to those of their partners; an observation that would be consistent with the Second Demographic Transition framework. As we mentioned above, men with low social status who are living in deprived areas may not have an advantage over their female partners in terms of their access to resources. In recent decades, the employment opportunities for men and women have evolved differently, as men have been heavily affected by the decline in physically demanding jobs with low skill levels in the industrial and manufacturing sectors, while women have benefited from the expansion of jobs with low skill profiles in the service sector (see Blank & Shierholz, 2006). It is likely that this pattern contributed to a narrowing of the gender gap in access to income from employment among people with low socio-economic status. Men today also rarely receive more social assistance than women. Thus, the economic and symbolic gains associated with marriage may be relatively small for women in a couple in which both partners have a low socio-economic background, and these women may therefore be

especially likely to have a child within cohabitation. If these mechanisms are indeed relevant, economic processes at the couple level that are consistent with the Second Demographic Transition framework, and that are likely to exhibit a negative socio-economic gradient, might be driving the increases in cohabitation to a greater degree than has been hypothesised in the existing Second Demographic Transition literature.

Our conclusion would not be valid without a discussion of the limitations of this study. The data we used did not allow us to control for social norm-related opinions or labour market status at the individual level in the pan-European sample. Hence, we were unable to determine whether these associations stem from aggregate-level variation in compositional characteristics or from contextual influences. However, this shortcoming does not affect the validity of our findings regarding the degree to which spatial variation across Europe in the likelihood that a woman living in a couple will have her first child within cohabitation or within marriage is associated with variation in social norms and economic conditions. Other limitations are that our study uses a cross-sectional approach, and that we were only able to include data for 16 countries in our models. In terms of the latter issue, we are reassured by our finding that our significant aggregate-level coefficients are in line with our theoretical considerations. It is also reassuring that our main finding that the relevance of explanations based on the Second Demographic Transition framework and on the pattern of disadvantage considerations varies across geographic scales turned out to be quite robust in our sensitivity checks. Nevertheless, this investigation represents a first step; future efforts should be directed at verifying the associations identified in this research through the use of panel data and the adoption of causal approaches.

We conclude that in order to understand variation in childbearing within cohabitation across Europe, it is important to consider variation in socio-economic characteristics at different geographic scales. Our results provide support for the argument that the apparent inconsistencies in existing theoretical frameworks may arise because the importance of each of these theories varies according to the geographic scale at which variation is occurring. Some dimensions of the Second Demographic Transition framework, such as female economic autonomy, seem to be particularly useful for explaining between-country variation in childbearing within cohabitation. It thus appears that the Second Demographic Transition framework is vital for explaining why northern and western European countries are taking the lead in the rise in childbearing within cohabitation. Meanwhile, hypotheses related to the pattern of disadvantage considerations seem to be especially useful for explaining variation between individuals, and to some degree across sub-regions of countries. These outcomes are also in line with research results for the US, where Lesthaeghe and Neidert (2006) obtained evidence for the Second Demographic Transition framework by studying variation in family formation patterns across US states. By contrast, studies that have focused on individual-level differences have tended to find strong support for pattern of disadvantage considerations (e.g., Lichter, Graefe, & Brown, 2003).

Ideally, future studies should have access to demographic survey data for European countries that would allow researchers to control for social norm-related opinions and factors such as employment status at the individual level. The availability of this type of data would improve our understanding of how the relevance of theories related to recent changes in family formation behaviour varies depending on whether we are studying variation across individuals, subnational regions, or countries.

[Appendices 1 and 2 about here]

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Appendix 1: Source information for aggregate-level variables

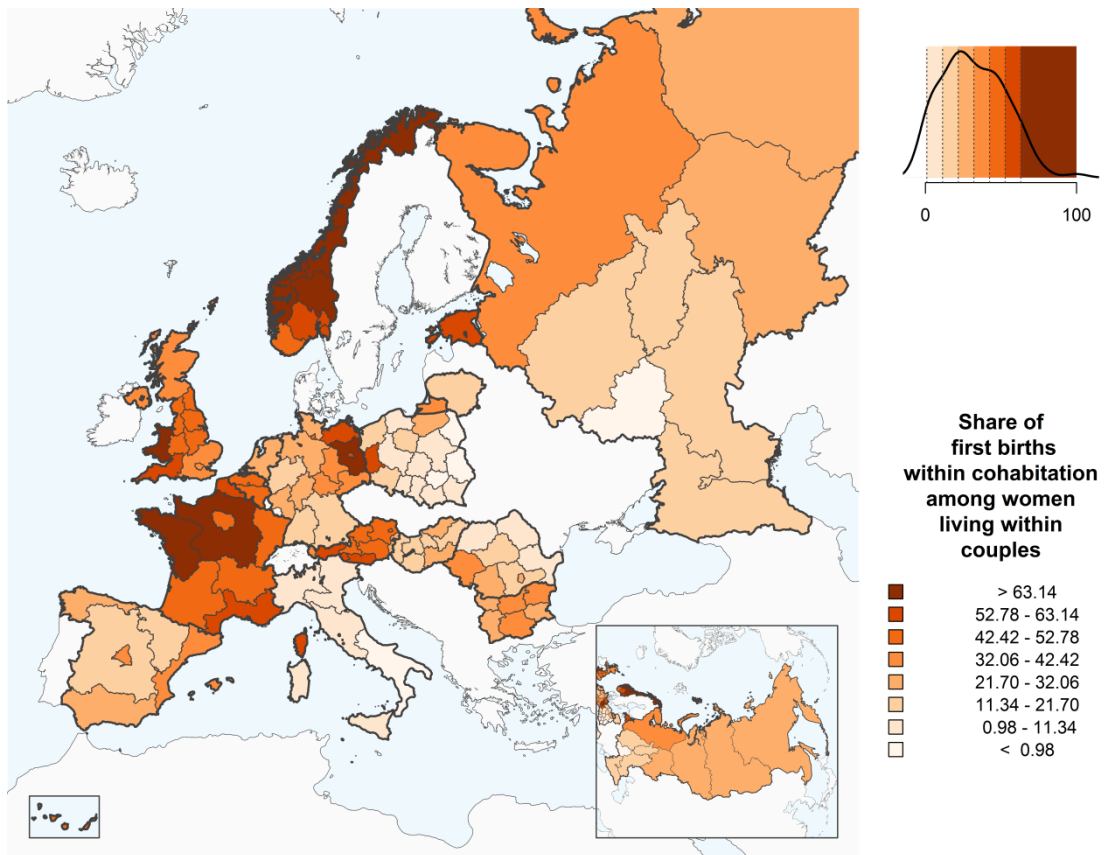
Aggregate-level measure	Surveys from which the pooled data has been derived*
<i>Social disapproval of cohabitation</i>	<p>EVS Wave 4 (2008): Question 47, v155 Countries not covered: Norway is omitted as it is not possible to split the data by region. Question text: “It is alright for two people to live together without getting married.” 1 Agree strongly, 2 Agree, 3 Neither agree nor disagree, 4 Disagree, 5 Disagree strongly</p> <p>GGG Wave 1: Question 1107b Countries not covered: For Spain and the United Kingdom no GGS surveys are available. Question text: “It is all right for an unmarried couple to live together even if they have no interest in marriage.” 1 Strongly agree, 2 Agree, 3 Neither agree nor disagree, 4 Disagree, 5 Strongly disagree</p>
<i>Importance of religious norms</i>	<p>ESS Wave 1 (2002): Question C13 Countries not covered: Bulgaria, Estonia, Lithuania, Romania, Russia</p> <p>ESS Wave 2 (2004): Question C13 Countries not covered: Bulgaria, Lithuania, Romania, Russia,</p> <p>ESS Wave 3 (2006): Question C21 Countries not covered: Italy, Lithuania</p> <p>ESS Wave 4 (2008): Question C21 Countries not covered: Italy</p> <p>Question text in all four waves: “Regardless of whether you belong to a particular religion, how religious would you say you are?” 0: Not at all religious (...) 10: Very religious</p>
<i>Women’s economic autonomy</i>	<p>ESS Wave 2 (2004): Question G8 Countries not covered: Bulgaria, Lithuania, Romania, Russia</p> <p>ESS Wave 4 (2008): Question D6 Countries not covered: Italy</p> <p>Question text in both waves: “When jobs are scarce, men should have more right to a job than women.”</p> <p>GGG Wave 1: Question 1114a Countries not covered: Italy and the Netherlands did not include this question in the questionnaire. For Spain and the United Kingdom no GGS surveys are available. Question text: “When jobs are scarce, men should have more right to a job than women.”</p>
<i>Structural economic conditions</i>	<p>Adult unemployment rate (ages 25), derived by Eurostat from Labour Force Survey Data, Downloaded from GGP Contextual Database: “The unemployment rate represents unemployed persons as a percentage of the active population. The active population is defined as the sum of persons in employment and unemployed persons. Persons in employment are those who during the reference week did any work for pay or profit for at least one hour, or were not working but had jobs for which they were temporarily absent. Family workers are also included. Unemployed persons are those who, during the reference week: a) had no employment, and b) were available to start work within the next two weeks, and c) had actively sought employment at some time during the previous four weeks. In addition, unemployed persons include those who had no employment and had already found a job to start later.”</p>

* In obtaining data from survey responses, we applied design weights whenever they were available.

Appendix 2: Overview countries and regional divisions

Country	Regional division for aggregate-level data
Austria	NUTS 2: 9 states (<i>Bundesländer</i>)
Belgium	NUTS 1: 3 regions (<i>gewesten/régions</i>)
Bulgaria	NUTS 2 (division as existing before 2006): 6 planning regions (<i>rajoni za planirane</i>)
Estonia	NUTS 0/1/2: one country
France	NUTS 1: 8 regions (<i>zone d'études et d'aménagement du territoire</i>), overseas departments are excluded
Germany	NUTS 1: 16 states (<i>Bundesländer</i>)
Hungary	NUTS 2: 7 planning and statistical regions (<i>tervezési-statisztikai régiók</i>)
Italy	NUTS 1: 5 regions (<i>gruppi di regioni</i>)
Lithuania	NUTS 0/1/2: one country
The Netherlands	NUTS 0: one country
Norway	NUTS 2: 7 regions (<i>landsdeler</i>)
Poland	NUTS 2: 16 regions (<i>województwa</i>)
Romania	NUTS 2: 8 regions (<i>regiuni</i>)
Russia	Equivalent to NUTS 1: 10 economic regions (<i>ekonomicheskiye rayony</i>)
Spain	NUTS 1: 7 groups of autonomous communities (<i>agrupación de comunidades autónomas</i>)
United Kingdom	NUTS 1: 11 regions* (<i>NUTS 1 statistical regions of England, Wales, Scotland, and Northern Ireland</i>); *in order to have regions with time-constant areas, for the analysis East of England (UKH) and South East England (UKJ) were joined into one region because territories were exchanged between these two regions during the period of observation.

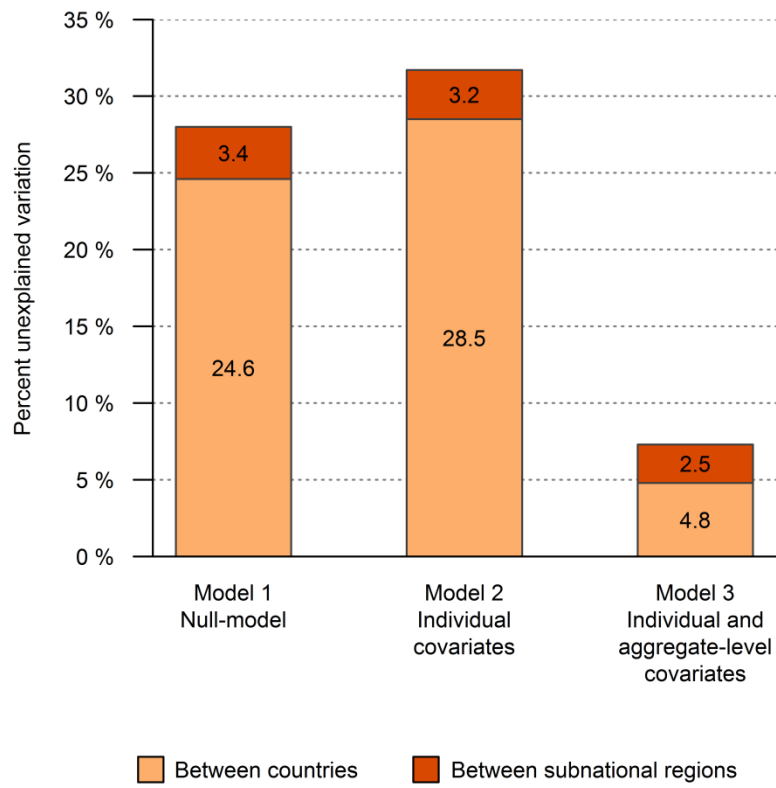
Figure 1: Regional variation in the share of first births within cohabitation among women living in a couple (2000-2007)



Note: The map is based on a standard deviation categorisation centred on the mean (mean: 32.06, standard deviation: 20.72). The histogram shows the density curve and the cut points of the chosen categories.

Base Map: MPIDR and CGG (2016), partly based on © Eurogeographics for the administrative boundaries; GADM (2012).

Figure 2: Unexplained regional variation in the share of first births within cohabitation among women living in a couple (2000-2007)



Note: The figure displays the intra-class correlation of the three models; namely, how much of the total unexplained variation is attributable to variation across regions.

Table 1: Descriptive statistics of the aggregate-level measures included in the model

Country (Share of first births within cohabitation among women living in a couple)	Social disapproval of cohabitation Index: 1 (low) - 5 (high)	Importance of religious norms Index: 0 (low) - 10 (high)	Women's economic autonomy Index: 1 (low) - 5 (high)	Structural economic conditions Adult unemployment rate (25-64 years)
Norway (60.0)	2.0 (1.8, 2.4, 0.17)	3.9 (3.6, 4.5, 0.29)	4.2 (4.1, 4.4 , 0.08)	3.0 (2.6, 3.3, 0.22)
Estonia (59.5)	2.3	3.6	3.6	8.7
France (54.9)	1.9 (1.8, 2.0, 0.09)	3.7 (3.3, 4.3, 0.29)	3.8 (3.5, 4.1, 0.20)	7.7 (6.1, 9.8, 1.43)
Austria (48.5)	2.0 (1.9, 2.1, 0.08)	5.1 (4.8, 5.6, 0.25)	3.7 (3.5, 3.8, 0.09)	3.9 (1.9 , 7.1, 1.51)
United Kingdom (46.9)	2.0 (1.9, 2.3, 0.16)	4.2 (3.9, 5.5, 0.47)	3.6 (3.5, 3.8, 0.10)	3.6 (2.4, 5.5, 0.91)
Belgium (45.8)	2.0 (2.0, 2.4, 0.21)	4.9 (4.8, 4.9, 0.06)	3.6 (3.4, 3.7, 0.12)	6.7 (4.5, 13.8, 4.66)
The Netherlands (31.7)	1.7	5.0	3.8	3.1
Bulgaria (30.4)	2.3 (2.2, 2.4, 0.09)	4.3 (3.7, 4.6, 0.36)	3.2 (3.0, 3.3, 0.13)	12.2 (9.7, 18.6, 3.21)
Germany (27.1)	2.1 (1.7, 2.2, 0.14)	4.3 (2.3 , 5.0, 1.05)	3.6 (3.3, 4.0, 0.19)	9.6 (5.5, 20.6, 5.63)
Spain (27.1)	1.7 (1.4 , 1.9, 0.16)	4.5 (4.3, 4.8, 0.24)	3.7 (3.2, 4.0, 0.25)	9.9 (6.2, 15.3, 3.02)
Hungary (21.5)	2.1 (2.0, 2.2, 0.07)	4.3 (3.7, 5.2, 0.50)	3.2 (2.9, 3.5, 0.18)	5.0 (3.4, 8.5, 1.83)
Russia (21.3)	2.7 (2.6, 2.9, 0.14)	4.3 (3.1, 4.9, 0.55)	3.0 (2.9, 3.2, 0.10)	7.9 (4.3, 12.5, 2.40)
Romania (16.8)	3.1 (2.9, 3.5 , 0.19)	6.8 (6.4, 7.1, 0.22)	3.1 (3.0, 3.3, 0.10)	5.4 (4.5, 7.0, 0.87)
Lithuania (16.6)	2.8	5.4	3.1	11.1
Poland (8.5)	2.5 (2.3, 2.7, 0.10)	6.5 (6.0, 7.3 , 0.36)	3.2 (2.8, 3.4, 0.14)	16.3 (12.9, 23.0 , 3.22)
Italy (2.0)	2.9 (2.6, 3.2, 0.26)	6.1 (5.5, 6.7, 0.46)	2.8 (2.3 , 3.0, 0.29)	6.8 (2.7, 15.4, 5.95)

National mean, in brackets: minimum, maximum, and standard deviation of regional values

Note: Countries are listed in descending order according to the share of first births in cohabitation vs. marriage among women in a couple registered in our sample. The bold numbers indicate min and max values at the national and/or regional level.

Table 2: Model outcomes (odds ratios)

	Model 1 Null-model	Model 2 Individual covariates	Model 3 Individual and aggregate-level covariates
Dependent variable			
<i>First births to women living in couples within: cohabitation (1) or marriage (0)</i>			
Individual-level covariates			
<i>Age of mother at first birth</i>			
15-19		3.05***	3.08***
20-24		1	1
25-29		0.56***	0.55***
30-34		0.55***	0.54***
35-39		0.76*	0.74*
40+		0.74	0.69
<i>Educational attainment of mother</i>			
High		0.48***	0.49***
Medium		0.68***	0.68***
Low		1	1
<i>Social background of mother (father's education)</i>			
High		0.92	0.88
Medium		1.03	1.01
Low		1	1
Aggregate-level covariates			
Between-country (country mean)			
<i>Social disapproval of cohabitation</i>			1.52
<i>Importance of religious norms</i>			0.64**
<i>Women's economic autonomy</i>			12.75***
<i>Structural economic conditions</i>			0.98
Within-country (deviation from country mean)			
<i>Social disapproval of cohabitation</i>			0.25**
<i>Importance of religious norms</i>			0.74*
<i>Women's economic autonomy</i>			1.08
<i>Structural economic conditions</i>			1.03#
Diagnostics			
Level 2: subnational regions (N: 116)			
Intra-class correlation	3.37	3.24	2.50
Level 3: countries (N: 16)			
Intra-class correlation	24.55	28.46	4.82
Number of observations (N)	7217	7217	7217

p<0.1 * p<0.05 ** p<0.01 *** p<0.001.

Note: Social disapproval of cohabitation is measured as an index between 1 (low) and 5 (high); importance of religious norms is measured as an index between 0 (low) and 10 (high); women's economic autonomy is measured as an index between 1 (low) and 5 (high); and structural economic conditions are measured as the unemployment rate for men and women aged 25-64 years.

ⁱ We use the data for Germany somewhat reluctantly due to concerns about the representativeness of the union and fertility history data in the German GGS (Kreyenfeld, Hornung, & Kubisch, 2013). However, these concerns relate primarily to the life histories of older cohorts, and not to those who were of childbearing age during our study period (Vergauwen, Wood, De Wachter, & Neels, 2015).

ⁱⁱ For example, in 2007 the population size of the 292 NUTS 2 regions (excluding Turkey) ranged from 26,923 to 11.6 million, with 24 per cent of the regions having populations below the 800,000 threshold used to differentiate between NUTS 2 and NUTS 3 regions.

ⁱⁱⁱ We also implemented sensitivity checks in which we added dummies for welfare regime context in the model. However, as some welfare regime types are represented by one or two countries only, the introduction of these dummies had a massive effect on the between-country variance and seems to have led to an over-specification of the model. We thus decided not to proceed with this robustness check.