Family Systems and Fertility

Fertility Behaviour in Europe from a Network Perspective

Bastian Mönkediek

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Thesis

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Dedicated to my children
Leon and Lukas

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List of acronyms

SHARE - Survey of Health Aging and Retirement in Europe
GGS - Generations and Gender Survey
KASS - Project on Kinship and Social Security
NUTS - European Nomenclature of Units for Territorial Statistics
EU - European Union
GDP - Gross Domestic Product
PPS - Purchasing Power Standard
TFR - Total Fertility Rate
FDT - First Demographic Transition
SDT - Second Demographic Transition
TPB - Theory of Planned Behaviour
DF - Degrees of Freedom
N - Number of cases
Cons - Constant Term
SD - Standard Deviation
BIC - Bayesian Information Criterion.

Chapter 1: Introduction - Family systems and fertility behaviour in Europe

Abstract: The family is one of the most studied institutions of society, examined by, amongst others, psychologists, anthropologists, historians, economists and sociologists. While researchers regard the role of families and kin relationships for individual's lives and for societal outcomes, such as regional socio-economic development, the underlying cultural principles that lead to different patterns of family organization affecting fertility have received little attention. In how far are there different patterns of family organization in Europe? Why is it important to recognize these patterns, and to what extent do they explain regional variations in people's demographic behaviour? The following chapter addresses these questions to introduce the topic of this thesis, in which I study the effects of regional patterns of family organization, or family systems, on people's fertility.

1.1 Introduction: A tale of two families

> *"Whatever its biological inheritance from its parents and other ancestors, the child receives also from them a heritage of attitudes, sentiments, and ideals which may be termed the family tradition, or the family culture."*
>
> (Ernest Burgess 1931: 188)

My two sons sometimes have a difficult life. Having two parents with different cultural backgrounds, they grow up between two cultural heritages. These heritages sometimes conflict each other - especially when it concerns my sons' upbringing. Most of these conflicts derive from the childhood experiences my wife and I had in our families of origin. Both of us had a good childhood and we have close relationships with our parents, which continue to play an important role in our lives. However, there are some significant differences in the ways our families are organized, and I would like to highlight these differences between my wife's and my own family of origin as example of the topic of this thesis.

In my family, in Germany, I grew up with growing responsibilities to organize my life myself. From a certain time point onwards, my parents only guided my decisions. They respected whatever direction my decisions would take, although they sometimes disagreed with them. My parents always supported me, and continued to do so after I left the parental home Next to my parents, my two brothers supported me in many ways. They helped my wife and me, for example, moving to different places and helped us renovating our flat. Beyond this nuclear family unit, consisting of my parents, my brothers and me, I only had relatively frequent contact with my mother's sister's family, my grandmother, and one of my uncles. They all lived in visiting range and we met them several times a month. Contact to other kin was limited, and we normally met them only during annual family gatherings. I sometimes did not see my cousins for years, and sometimes hardly recognized them. Several years ago I once met one of my cousins at the swimming pool in Osnabrück. I had not seen her for about five years or so. We met by coincidence and stopped for a moment since we both had the feeling that we met before. After we introduced ourselves, we were quite surprised that we actually were cousins.

In my wife's family, in China, this was very different. With respect to many matters, my wife's parents organized her life for a long time. They decided to which school my wife had to go, which hobbies she had to follow and which

subject she had to study when she entered university. My parents-in-law tried to provide my wife with the best opportunities for her future. This seemed necessary, because getting a good education and entering a good job depended on who they knew[1]. In this context, my wife's kin and their social networks were a valuable source of support. In many cases, my wife's older kin members were the first ones to approach when 'help' was needed. Their social networks often contained valuable contacts which were able to help with tasks, such as administrative duties or information seeking, or any activities, such as getting a haircut or renting a car[2]. My wife and her kin have good and close relationships, and most of their families lived a few kilometres away from each other. My wife always refers to, for example, her cousins as their sisters and brothers, although she is the only child in her family. We always stayed at one of my wife's cousin's places when we visited her relatives in China and we always easily found someone that supported us and provided us with a place to stay.

My wife's and my relationships to our cousins were influenced by how we grew up together. In my family, it was mainly my mother who cared for me and my brothers. In my wife's family, her grandmother often took care of her and her cousins when they were young. Accordingly, my wife and her cousins spend a lot of time together at their grandmother's place, while my wife's grandmother highlighted the role of the family and the need to support your kin. My wife's widowed grandmother occupies the highest position in my wife's family. In case of conflicts between kin members, typically my wife's grandmother or her oldest living daughter tried to sort things out, often by highlighting the importance of the family as a unit.

All my parents-in-law's support was not without consequences for my wife. In many cases, her parents' ideals, wishes and aspirations for the future lay on my wife's shoulders. This included their ideas about marriage and having children. After my wife finished her university entrance diploma and entered a Chinese university, my mother-in-law started to ask her about her future plans to find a husband and to have children. This bothered my wife a lot and it even

[1] For the Chinese case, the importance of "guanxi" (relationships) for finding a good job has been described by Bian (1997).
[2] For China, kinship has been identified to perform important functions, such as economic exchange and life support, while father's and mother's relatives became more egalitarian through the socialist revolution (Sheng 2005: 115).

continued after my wife came to Germany. In China, women still tend to marry at a comparatively young age and are expected to have a child soon after marriage (Jones and Yeung 2014: 1570; Ji and Yeung 2014: 1667). In this context, grandparents would support parents with childrearing (Goh 2006; Sheng 2005: 115), and lack of time or resources is traditionally not regarded as an argument against having children.

My mother-in-law often told me that I should not worry about having children. She and my father-in-law would always be there to support us – since they regarded this as their duty. It is interesting to notice that my wife and her parents do not distinguish between their owned properties. Even today, all of my wife's and her parent's properties are regarded as their common and shared assets. For a long time my wife had difficulties in understanding that this is very different in my family. My parents, my brothers and I, we always had our own money – although there were important resource flows and we always supported each other. My parents, on the other hand, always told me to wait with having children at least until I finished my educational career and earned enough money to sustain my family. Influenced by my parents, my wife and I postponed the birth of our first son till six years after we married, while my parents-in-law always wondered about what we actually waited for.

1.2 Family systems and demographic behaviours

The stories about my wife's family and that of mine highlight the fact that families can be organized quite differently. In my wife's family, kin relationships are on average pretty close and the family is frequently emphasized as a unit. Help and support relationships between kin are widely spread and include individuals beyond the nuclear family unit (defined as parents and their children). In my family, kin relationships beyond the nuclear family are loose and individualism is pronounced. Social support is limited to my parents and my brothers. The ways how our two families are organized are not random phenomena. In fact, they relate to more universal principles of family organization anchored in regional family cultures, so called family or kinship systems (Lorimer 1954; Goody 1996; Reher 1998: 215; Oppenheim Mason 2001). Family systems can be defined as sets "of beliefs and norms, common practices, and associated sanctions through which kinship and the rights and

obligations of particular kin relationships are defined" (Oppenheim Mason 2001: 160). In this respect, family systems reflect the customary, normative manner in which family processes, such as pattern of family practices and household dynamics, unfold (Skinner 1997: 54). Ecological systems theory would refer to family systems as a part of the "blueprints" of overarching institutional patterns of the culture or subculture that influence individual's developments and behaviours (Bronfenbrenner 1977: 515). For China, different researchers describe normative manners that relate to the importance of 'extended families', where parents and their married children often live together in the same household (Chen 2005: 127-129, 134). In China, based on these norms, rights and obligations between kin, kin relationships are much wider spread, and the family group often has priority over the individual or the couple (Das Gupta 1999: 177; Chen, Liu and Mair 2011: 574-575). Accordingly, China can be described as a 'strong family' country with close kin relationships (Reher 1998: 203). For most parts of Germany, researchers traditionally observe comparatively loose relationships between kin, while the nuclear family is highlighted. The 'extended family' only exists in the form of a family ideal (Thelen and Baerwolf 2010: 245). Respectively, Germany has been described as a more or less 'weak family' country, where the individual and individual values have priority over everything else (Reher 1998: 203; Alesina and Giuliano 2014: 188).

Besides this, the two family systems in which my wife and I grew up had implications for our demographic behaviours, in particular our marriage timing and the timing of our children. Again, this seems to be more than a coincidence. There are good reasons to assume that family systems frame people's demographic behaviours, such as the timing and spacing of birth events or their completed fertility, by structuring people's social relationships and their family experience (Davis 1955; Das Gupta 1997, 1999). First of all, as argued by Hrdy (2005: 15), humans are costly to produce. Humans mature slowly, and reach nutritional independence only after many years (Kaplan et al. 2000: 158; Hrdy 2005: 15, 27). Respectively, raising children provides a problem, because they depend on parental support for a comparatively long time span and require serious time and resource investment (DiPrete et al. 2003). Concerning the time parents invest in their children, it strongly increased over the last decades, suggesting a growing pressure for parents to combine work with caring for their offspring (Joshi 1998: 174; Gauthier, Smeedeng and Furstenberg 2004: 657,

664). This pressure often forces parents to rebalance their life domains, such as work and family, leading to serious opportunity costs of having children, such as career gaps and the loss of income (DiPrete et al. 2003). Previous research demonstrates that especially women stop working or reduce working hours after childbirth[3], while men sometimes turn down a job promotion due to family responsibilities (Milkie and Peltola 1999: 483; McInnes 2005: 285).

Given the high opportunity costs for parents, having multiple children provides a serious problem from an individual's or couple's perspective. However, extending the perspective towards the inclusion of kin provides a solution. Within kinship groups the burden of childrearing can be distributed to many shoulders, which allows for higher fertility (Davis 1955: 34-35; Turke 1989: 66-67; Hrdy 2005; Kaptijn et al. 2010). Correspondingly, different researchers claim that humans developed as 'cooperative breeders' (Hamilton 1964a, 1964b; Hrdy 2005), meaning that we originally depend on helpers, such as kin, to effectively raise children[4] (Sear and Mace 2008; Sear and Coall 2011). As cooperative breeders, facing ecological constraints (in both the physical and the social environment), kin support is needed to secure the kinship group's survival (Newson and Richerson 2009: 8; Newson 2009: 464). In this context, researchers argue that close kin support each other because they are interested each other's 'reproductive success' (Alexander 1974: 330-331, 337-338, 372-376). Kin not only passes on information stimulating fertility to raise the kinship groups' 'genetic fitness'[5] (Hamilton 1964a, 1964b: 19-23; Newson et al. 2005: 369), they also lower the opportunity costs of having children via the provision of social support (Smith, Kish and Crawford 1987; Turke 1989: 64-69; Newson et al. 2005: 370). With the expectation that childbirth may open up new social

[3] Although couples in several European countries, such as Germany or the UK, favour two-earner ideals, in many of these countries a large share of individuals disapproves that women with young children (< age 3) work full time (Alwin, Braun and Scott 1992: 18-19; McInnes 2005: 279-280; Eicher et al. 2015: 8). Interestingly, the share of respondents that agrees that young children would suffer from a working mother is higher in countries where fertility levels appear to be lower and ties between kin are weaker (Billari 2008: 7).

[4] The first pattern of family organization in which humans of hunter-gathering societies lived was probably family clans (Reher 1998: 213; Hrdy 2005: 16-17). In these clans, young couples often lived bi-locally, either with the males or female's kin (Alvarez 2004: 436; Hrdy 1999: 192-193).

[5] As demonstrated by Mathews and Sear (2013a, 2013b: 330) positive communication about fertility, by close kin who were frequently contacted, is of high importance for people's fertility behaviour.

relations that entail resources and facilitate relations between generations, kin support not only increases chances for higher fertility, but may also lead to earlier childbearing (Coleman 1988: 101; Schoen et al. 1997: 337, 346-349; for an example see Burton 1990).

Nonetheless, kin support not automatically leads humans to maximize their fertility. In most societies, children's reproductive success is affected by their social and economic achievements (Turke 1989: 65, 71; Low 1991: 427; Hopcroft 2006). These achievements are linked to the social placement of children (Voland 1998), which influences children's socio-economic resources and thereby, for example, impact their union formation (Voland 1990; Jalovaara 2012). Based on their preferences for partners with specific characteristics, the socio-economic placement of children impacts on their access to the 'marriage market', and partly determines children's chances to find adequate partners (Becker 1974; Mortensen 1988; Blossfeld and Timm 2003; for a literature overview see Schwartz 2013). With the social placement and the costs of children becoming more important, it becomes reasonable for parents to concentrate resources on a smaller number of children and invest into the child's quality, for example through higher education[6] (Simon 1955; Becker and Lewis 1974; Blake 1981; Voland 1990: 69-70). This is especially the case in societies where children compete for resources and child mortality rates are low – such as contemporary European ones (Bernstam 1986; Turke 1989: 65, 71; for an overview on ecological factors influencing fertility see Voland 1998: 356-357). In these societies, the concentration of resources on a few children has been said to improve the quality of the offspring and raise their reproductive success[7] (Turke 1989; Voland 1990, 1998). Accordingly, regarding children's reproductive success it makes sense for parents to balance their quantity and the quality of their children. This insight can be also extended to the influence of more distant kin on fertility. Also more distant kin can be expected to only encourage fertility when the context supports the reproductive success of children (Mathews and Sear

[6] For several societies an inverse relationship between sibship size and educational performance of children or economic resources of children has been observed (Blake 1985; Downey 1995).

[7] The importance of a quality-quantity trade-off for human reproduction has been described in evolutionary (Turke 1989; Voland 1998), economic and demographic theories of fertility (Becker and Lewis 1974; Bernstam 1986; Becker and Barro 1988; Robinson 1997).

2013b: 316-317).

As demonstrated by previous research, at least since the beginning of the 19th century, parents in different European countries were probably aware of these circumstances, trying to adapt their fertility and that of the offspring generation to the socio-economic conditions. In several countries, such as the Netherlands, parents actively controlled their own fertility in relation to household economics (Knodel 1988: 288-291, 317; Van Bavel 2004: 103–4; Dalla-Zuanna 2007: 444, 448–51; Dribe and Scalone 2010; Amialchuck and Dimitrova 2012). Moreover, they often controlled their offspring's procreation, for example, by restricting marriage and its preconditions[8]. Norms, rules and customs[9] regarding marriage were used to limit the reproductive age span of the offspring's generation, regulating fertility (Das Gupta 1999: 181, 1995: 487-490, 492-493; Van Bavel and Reher 2013: 271-276). As discussed by Hajnal (1982: 481), in the North-Western parts of Europe this was possible, because "the institution of service was probably an essential part of the mechanism by which marriage could be delayed". It allowed children to leave their parental household while remaining unmarried. Although historical demographic research suggests that marriage restrictions were effective as 'preventive checks' during the 19th century (Knodel 1988: 448-449), marriage restrictions were not in all cases a sufficient mechanism to control fertility (Delger 2003: 133-135, 141, 143). Moreover, its effects weakened and became less important with the onset of deliberate fertility limitation (Knodel 1988: 361-362, 390, 449). Alternatively, as discussed by Knodel and Van der Walle (1979: 231), it seems that in 19th century Europe societies "negligent childrearing practices and the resulting infant and child deaths served as a[nother] way to limit family size".[10]

What about today? Looking at today's societies, humans still often need

[8] In many societies, marriage has been and often still is a precondition for starting a family, while this does not preclude that pregnancies often triggered marriages as well (Dribe and Lundh 2014: 229-232; Skinner 1997: 63-64; Knodel 1988: 221-222; Murdock 1949: 265). Examples of such societies where marriage is a precondition for fertility are China (Li and Lavely 1995), Ireland (Lorimer 1954: 173-175), and Italy, where extra-marital births are still more uncommon (Guerrero and Naldini 1996: 51-53; Livi-Bacci 2001).

[9] For example, marriage customs influenced the timing of the marriage during specific seasons of the year (Knodel 1988: 144-152).

[10] For a discussion on the roles of child neglect and child abandonment see Derosas et al. (2010). Studying the number and the sex of surviving children in three European localities, they find no clear evidence for postnatal child control (p. 149-152).

'helpers' to raise their children effectively. These helpers frequently support parents with balancing work and family, and reduce the increased costs of having children (Tomlinson 2006: 369-370; Mills et al. 2008: 17). In many cases, these helpers consist of close kin, such as grandparents and siblings, to whom social relationships often strengthen after a childbirth and who often provide social support to the new parents (Gameiro et al. 2010). This support is often not only expected, but also needed (Ghodsee and Bernardi 2012: 451). The fact that in many European societies close kin are even regarded as the most 'favourable' helpers with respect to childcare highlights the importance of these relationships (Herlofson and Hagestad 2012: 37, 40-41; Geurts et al. 2015: 1320; Hilevych 2015a: 18-19). Regardless of state child care services the share of kin that provides childcare is high in most European societies. In 2004 the share of, for example, grandparents that provided some kind of childcare varied between 42% and 74% among different European countries (Hank and Buber 2009: 61).

When we acknowledge that humans are cooperative breeders and that kin is needed to lower the opportunity costs of having children (Turke 1989: 64-69), we have to recognize that cooperative breeding is not without requirements and consequences. Cooperative breeders need to be social and empathic to successfully organize themselves into groups, and effectively care for each other's children (Cosmides and Tooby 1989: 63-71). Cooperative breeding requires reoccurring support over a long time span, while helpers can be assumed to expect support in return. In addition, helpers need to be in close distance to be able to support each other (Hrdy 1999: 270-277, 528-529). As a consequence of the social interaction between cooperative breeders, cooperative breeding relates to questions of 'group' or 'family' organization, in which norms and values that structure patterns of co-residence and obligations between individuals are likely to develop. Especially the need for reoccurring interactions between helpers to secure the offspring's well-being results in regular behavioural pattern s(habits) and expectations about support that might easily translate into social norms regarding behaviours (Opp 2001: 111-116, 118; Horne 2001: 5-14).

Knowing this, it does not surprise that family systems often include norms that influence support arrangements, such as household formation rules

(marriage), and norms that structure kin obligations, such as elderly care[11] (Hajnal 1982; Gaunt 1983: 251-258; Goody 1996; Das Gupta 1999: 181; Reher 1998: 207-211). Reoccurring habits of kin interactions probably formed the basis on which regional family systems evolved. Influenced by ecological features, such as climate, type of agriculture and local economy, that affected the organization of labour and rules of residence within families, these reoccurring habits most likely differentiated into different patterns of family organization among European regions[12] (Murdock 1965: 201-211; Reher 1998: 212-214; Mitterauer 2004: 143; Alesina and Giuliano 2014: 193-195). Agricultural systems such as cattle-raising, for example, required regular farmhands year round, whereas other agricultural systems, such as grain-cultivation, required the support of labourers primarily during the main season (Mitterauer 1995: 37-38). In cattle-raising areas, this increased the likelihood for children to stay in their parental households to support their families. In grain-cultivating areas children more often left home to work elsewhere and to provide an additional income. These two examples demonstrate how in agrarian societies regional agricultural systems influence families as a work group and thereby influence household structures, resulting in more complex patterns of household organization in cattle-raising areas (Mitterauer 1995: 37-38). However, agricultural systems are only one example of ecological features that seem important here. Other features which impact on people's opportunities to work outside agriculture and to reside outside the parental households are degrees of urbanization and industrialization (Adams 1968; Van de Kaa 2001: 301-302). Besides this, technological developments, such as the introduction of new crops, like the potato (Connell 1950: 285-286), or land fragmentation (Smith 1980: 99), influenced the family as a working unit, its productivity and patterns of co-residence and inheritance (see Lorimer 1954: 172-176 for an example).

By relating to questions about cooperation and residence, 'cooperative breeding' creates spheres of social influence. Growing up in kinship groups provides family experiences that socialize children in particular habits and

[11] One example of norms that translated into institutions is historical retirement contracts that specified rules of inheritance and the rights and obligations of the elderly generation after retirement (Gaunt 1983: 258-261; Reher 1998: 211-212).
[12] Boyd and Richerson (1985: 152-163, 290-291) provide a more detailed reasoning on how especially ecological features lead to variations in human cultures and behaviours.

attitudes towards the family, which they will later reproduce (Davis 1955; Reher 1998: 215; Alesina and Giuliano 2014: 207-210; Lois and Becker 2014: 125-126, 130-131). In this context, close kin provides behavioural examples to each other and thereby influence each other's life course decisions (Axinn, Clarkberg and Thornton 1994: 68; Barber 2000; Bühler and Fratczak 2007; Balbo 2012). In addition, based on social norms, values and social support, kin may exert social pressure to influence and control each other's behaviour and guide it towards a certain direction (Wu and Martinson 1993; Bernardi 2003: 538; Lois and Becker 2014: 131). These are only some of the mechanisms through which kin could influence each other's fertility behaviour, while especially social learning has been described as one of the most robust mechanisms – sometimes without people being totally aware of it (Lois and Becker 2014: 131).

While there is a lot of empirical evidence charting the effects of family and social relationships on fertility (for an overview see Bernardi and Klärner 2014), contextual factors framing social relationships, such as family systems, have received little attention (Davis 1955; Hajnal 1982; Das Gupta 1997, 1999; Skinner 1997; Micheli 2000; Veleti 2001). Instead, many empirical studies address the importance of certain kin relationships, such as grandparents (Kaptijn et al. 2010), parents (Schaffnit and Sear 2014) or siblings (Lyngstad and Prskawetz 2010), for people's fertility behaviour, without including underlying patterns that structured these kinship ties and provide them with a certain meaning. In addition, many existing studies focus only on macro-indicators of fertility, such as the Total Fertility Rate (TFR), and its differences among regions (Das Gupta 1997, Skinner 1997; Micheli 2000; Van de Kaa 2001: 306; Dalla-Zuanna and Micheli 2005, Gruber and Heady 2010a), while only few researchers tested for associations between family systems and fertility using statistical models (Kok 2009; Rotering and Bras 2015).

1.3 Aims and research questions

Recent research calls for greater attention to macro-level influences and for micro–macro analyses to explain differences in fertility behaviours (Morgan and Bachrach 2011; Harknett, Billari and Medalia 2014: 3; Philipov, Klobas and Liefbroer 2015; Liefbroer et al. 2015b). This thesis addresses this research gap and studies the effects of regional family systems on individuals' fertility behaviour across Europe using a micro-macro analysis. In particular, this thesis

examines to what extent regional family systems lead to differences in people's timing and spacing of fertility, and to variations in the net number of children born (completed fertility) in different parts of Europe. I do not study the historical origins of family systems, because it would go beyond the scope of this research. Instead, this thesis has two main aims that guide my research questions: The *first aim* is to describe regional family systems as cultural normative contexts across regions in Europe. The *second aim* of this thesis is to analyse the effects of regional family systems on people's completed fertility and their timing of children. In the following two paragraphs I describe these two research aims in more detail.

1.3.1 A description of European regional family systems

European families systems have been described by previous research. Many of these studies measured family system based on regional patterns of types of households (including kin composition, headship, etc.), patterns of household formation (through marriage[13]), and patterns of inheritance (Le Play 1884; Murdock 1949; Laslett and Wall 1972; Goody 1976, 1996; Hajnal 1982; Laslett 1983; Wall 1983, 1998; Moring 1998; Todd 1990, 2011; Polla 2006; Iacovou and Skew 2011). However, the household focus of these measurements can be criticised for different reasons (for an overview see Hareven 1991). One major critique is that household structures change over time (Wall 1983: 4, 7-9, 34-36; Skinner 1997: 57-58; Wall 1998, 2001: 220-229). Accordingly, household forms and types are highly variable over the household life cycle and the data we use often provides only a snapshot of specific moments in a household's life (Hareven 1991:104; Skinner 1997: 57-58). Making it even more complicated, there are multiple characteristics of households that can be used for constructing a typology of family systems, such as types of headship, or share of adult members (Wall 1983: 36-45). This makes it necessary to not only adequately define but also assess "assumptions about [the household's] value as a unit of analysis" (Wall 1983: 7). The answer to the question whether households should be the unit of analysis to describe family systems is not straight forward.

[13] Since some years there are also studies regarding remarriage, which has been discussed as a missing variable in older descriptions of family systems, such as in Hajnal's (1982) framework (Saito 2005: 174; Pakot and Öri 2012: 106; Lundh and Kurosu 2014).

Households are part of family systems (Skinner 1997: 58). Nevertheless, it is necessary to regard their roles and functions within societal contexts, such as the production of welfare, to adequately define and assess their relevance (Medick 1976: 294-296). In this context, the function of households may vary across societies and over historical periods. Accordingly, not only the societal but also the historical context needs to be recognized to provide household structures with a certain meaning (Medick 1976; for a description on historical differences in family forms see Wall 1983: 7; Laslett 1983). Understanding these meanings allows us to separate to what extent certain aspects of household organization result from current socio-economic conditions and restrictions, such as lack of living or labour opportunities outside parental households[14], or out of shared family cultures. Most likely the two are closely intervened.

Even when we recognise the context in which households are embedded, the question remains to what extent different kinds of pre-defined household definitions are able to trace underlying sets of beliefs and norms that make up family systems in various European countries – especially in contemporary societies (Wall 1983: 34-36; Medick 1976). Answering this question seems difficult, because the importance of, for example, marriage, for defining patterns of household formation declined. In many European countries marriage became less universal and is no longer a pre-condition for setting up an own household or starting a family (Todorova 2000: 165-166; Elzinga and Liefbroer 2007: 241-243; Sobotka and Toulemon 2008; Jalovaara 2012). However, cohabitation did not simply replace marriage, and there are strong differences with respect to levels of cohabitation, marriage rates and the ages at marriage among European countries (Heuveline and Timberlake 2004; Kalmijn 2007: 249; Sobotka and Toulemon 2008). These continue to follow a north-south and east-west divide, with, for example, low levels of cohabitation in the Southern and Eastern European countries, and high levels of cohabitation in Northern Europe, France and Switzerland (Heuveline and Timberlake 2004: 1222; Kalmijn 2007: 254; Jalovaara 2012: 71, 75-76). Accordingly, marriage patterns and patterns of cohabitation continue to be fair indicators of family systems. Even facing the high

[14] One example of such a restriction was the unavailability of land in Ireland during the 18th century. Since obtaining land was a pre-condition for marriage and household formation, land scarcity lead to an increase in marriage ages (Connell 1950 284-285; Davis and Blake 1956: 216).

increase in divorce rates (Sobotka and Toulemon 2008: 111), the fact that divorce rates are especially high in countries of Eastern Europe where also early marriages take place (Kalmijn 2007: 249, 251), underpins the existence of strong cultural norms which structure the sequences of life events in these countries. As demonstrated by previous research, acting against such cultural norms may result in individuals experiencing discrimination (Todorova 2000: 158-159). Nevertheless, the link between marriage rates and family systems seems to have weakened, while the household focus of these measures ignores social relationships that reach beyond the co-residence unit that may have been of importance for individuals during specific point in a household's life[15] (Hareven 1991: 102-103, 108-111).

In response to the critique that households might not be an adequate unit of analysis, more recent studies on family systems concentrate on indicators that reflect the social relatedness between kin, such as kin rights and obligations (for example concerning elderly care)[16] or the age of leaving the parental home (Hareven 1991: 108-111; Reher 1998; Alter et al. 2002; Hank 2007; Heady and Kohli 2010: 21; Micheli 2012: 19; Viazzo 2010a, 2010b). These measures are linked to social ties between kin, and do not automatically relate to household definitions, or any other pre-defined system of social relations. Therefore, measures of social relatedness can be easily extended to include all kinds of relationships, even those that reach beyond the household. Moreover, indicators of social relatedness seem to be promising indicators of family systems of contemporary societies. They are not restricted to specific household formation patterns and seem to be better able to incorporate underlying changes. While, for example, marriage has lost its importance to determine patterns of household formation[17], there are continuing strong differences among European countries and regions concerning the age at leaving the parental home (Kiernan 1986: 180-183; Holdsworth 2000; Billari, Philipov and Baizán 2001; Giuliano 2007:

[15] Regarding, for example, the social networks of poor women in Paris during the nineteenth-century, Fuchs and Moch (1995) unravel significant relationships to female friends that influenced women's reproductive strategies through the provision of resources and information.
[16] Obligations between kin can be, for example, identified by looking at retirement contracts that reflect norms and attitudes towards the elderly displayed in laws and customs (Gaunt 1983; Wall 1983: 4).
[17] Still, being married and having children is in many cases the preferred living arrangement in European countries (Palomba and Moors 1998: 75-76).

935-936; Sobotka and Toulemon 2008: 88-91), and people's perceptions of age deadlines (norms) for leaving home (Aassve, Arpino and Billari 2013).

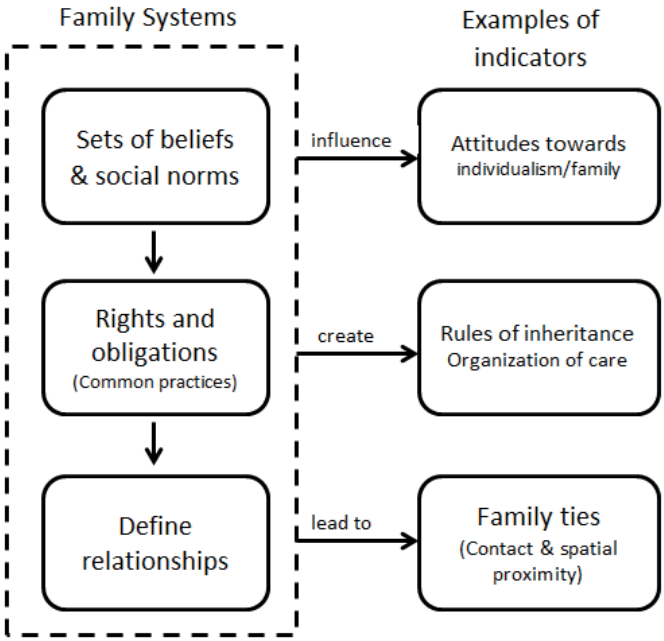

Figure 1.1: Family systems, its components and examples of indicators

Measures of social relatedness seem to be good indicators of the underlying norms, values and customs that define family systems (see Figure 1.1). Shared family norms and values form the basis on which customs of kinship rights and obligations, such as inheritance practices or the organization of elderly care, evolve (Oppenheim Mason 2001: 160). As described by, for example, Das Gupta (1999: 176), "[r]ules of residence and inheritance play [again] an important role in shaping intrafamily relations". Different organizational patterns of inheritance, for example, lead to variations in sibling's incentives to cooperate with each other. According to Das Gupta (1999), in family systems with mainly joint families, such as China, siblings have more incentives to cooperate for their mutual benefit, because they often inherit together. In family systems dominated by stem families, siblings have far less incentives "to cooperate, since each has to make their own way in life and has little claim on or obligation to another" (Das Gupta 1999: 177). Thereby, inheritance rules lead to differences in the relationships among siblings and between siblings and their parents, probably affecting degrees of social support and social interaction (Das Gupta 1999: 176-

177). Based on these assumptions, measures of social relatedness can be used to reflect family systems, because they relate to the customary, normative manners in which the family processes unfold (Skinner 1997: 54). Family ties seem to be good depictions of people's social relatedness, because they are directly influenced by the norms and customs that define kin relationships (Figure 1.1). When, for example, social norms and obligations between kin favour extended family structures, the spatial proximity between respondents and their kin should be close. Accordingly, measures of family ties, such as the frequency of contact and the spatial proximity between kin, are valuable indicators of the various dimensions that make up family systems (for a discussion on the multi-dimensionality of family systems see Reher 1998; Viazzo 2010a: 282/283; Viazzo 2010b: 148). While 'frequency of contact' reflects degrees of on-going social interactions between kin, the 'spatial proximity' between kin reflects opportunities to receive social support and possible degrees of experiencing social pressure. Especially proximity between kin has been observed to be related to patterns of kin support, such as parent-child help relationships (Dykstra and Fokkema 2011).

However, the question to what extent family ties are good representations of family systems is an empirical one. Apart from cultural factors, family ties might as well be influenced by confounding factors, such as people's current socio-economic positions. Addressing this question, this research expands on earlier studies by looking at family ties as representations of family systems (for a detailed description see the Methodological Appendix M1). In this context, I evaluate these indicators using data reflecting family system norms (Methodological Appendix M2). My indicators are derived on regional levels – with regions defined as geographic units below national or country level. This expansion seems necessary, because many recent studies regarded family systems only at the macro level of countries, describing only "the bold strokes" (Reher 1998: 203/204; Iacovou and Skew 2011). There is little information about within-country differences and relationships beyond co-residence units (Wheaton 1975; Yorburg 1975; Kalmijn and Saraceno 2008: 503; Viazzo 2010b: 152). However, especially local and regional socio-economic contexts form the opportunity structures in which people's behaviours are embedded (Hank 2002: 285-286; Fiori, Graham and Feng 2014). In addition, there is much more diversity in these local and regional opportunity structures, such as regional

degrees of unemployment or urbanization, than at the country level, while differences in "[...] family types in Europe have a significant and strong association with current regional disparities in household size, educational attainment, social capital, labor participation, and […] wealth and inequality" (Duranton, Rodriguez-Pose and Sandall 2009: 37). Moreover, I include relationships outside households, because influential kin are not always co-residing as demonstrated by different researchers (Davis 1955; Wheaton 1975; Hareven 1994; Bonvalet and Lelièvre 2008: 377-383; Widmer and Jallinoja 2008: 397; Schaffnit and Sear 2014: 5; Geurts et al. 2015). Together, the regional approach and the inclusion of extra-household relationships may refine the picture of European family systems. Respectively, my first main research question is:

(1) *How can patterns of European family organization (family systems) be described, when we use regional measures of social relatedness and geographical proximity that go beyond households?*

1.3.2 Family systems and their effects on fertility

The *second aim* of this thesis is to analyse the effects of regional family systems on people's completed fertility and their timing of bearing children. There are significant differences in levels of fertility and fertility behaviours among European regions (Micheli 2000; Hank 2002: 284; Kulu, Vikat and Andersson 2007: 265-268; see Figure 1.2). These differences and their origins are not fully understood. To give an example: although fertility and marriage were correlated positively for a long time, nowadays fertility is higher in European countries where marriage rates are low and relationships between kin are weak, such as Sweden (Hoem 2005; Billari and Kohler 2004: 164; Reher 1998). Moreover, the differences in the levels of fertility among European regions are difficult to explain by socio-economic and cultural factors alone (Lesthaeghe and Neels 2002; Billari and Kohler 2004; Dalla-Zuanna 2007), because they occurred under diverse socioeconomic and demographic conditions (Lorimer 1954: 206-212; Knodel and Van der Walle 1979: 220-225). The first demographic transition[18] in

[18] The first (FDT) and second demographic (SDT) transitions refer to historical demographic changes in populations, characterized by the transitions from high birth and death rates to low birth and death rates. The FDT is characterized by a rise in the

France already started in the 18th century before urbanization and industrialization took place, while real incomes where growing (Lesthaeghe 2014: 18114). However, in Belgium the onset of fertility limitation started during the first decades of the 19th century during industrialization (Lesthaeghe and Neels 2002: 338, 342). According to Lesthaeghe and Neels (2002: 349-351), cultural changes affecting the social control of the reproductive behaviour played an important role in determining the historical developments of these demographic changes. European regions which faced cultural changes, such as individualization, early, were forefront with respect to the first and often more advanced concerning the second demographic transition. Together with shifts in partnership formation and shifts in value orientations, this led to a fertility decline in many European countries (Lesthaeghe 2014). Still, the mechanisms through which these cultural changes influenced fertility need to be described (Hirschman 1994: 223). Last but not least, the fact that fertility is rising in some parts of Europe, such as France and Sweden, but not in others, such as Germany or Austria (see Figure 1.2), needs explanation.

proportion of married individuals, a decline in age at marriage, a decline in marital fertility, and low childlessness among married couples. The SDT is characterized by a rise in age at marriage, lower marriage rates, a rise in pre-marital cohabitation and divorce, rising childlessness and rising extra-marital fertility (Lesthaeghe and Neels 2002: 331).

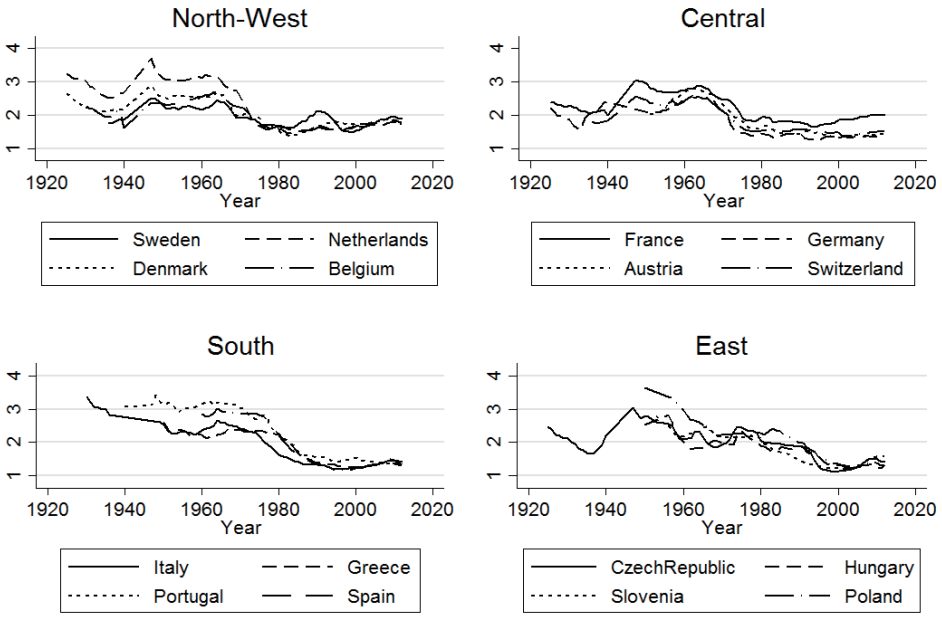

Figure 1.2: Total Fertility Rate in different European countries (1925 – 2010) *(Source: Eurostat[19], CICRED (1974), World Bank, United Nations (1948, 1954, 1955, 1959) and national statistics[20])*

At this point, the fact that there are regional family systems which frame kin relationships (family ties) and thereby influence the social environment in which fertility behaviour takes place, provides the missing link of how cultural changes impact on fertility. By influencing the formation of kin ties, family systems regulate the social control of the reproductive behaviour (Figure 1.3). This influence can be assumed to work through processes of social learning, social support[21] and social pressure (for an overview on how family ties influence fertility via these mechanisms see Bernardi and Klärner 2014: 649–652). In, for

[19] See Eurostat under: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_frate&lang=en (access date: 15.11.13)

[20] National statistics, CBS (Netherlands): http://statline.cbs.nl/StatWeb/publication/?DM=SLEN&PA=37556eng&D1=0-60,64&D2=a&LA=EN&HDR=G1&STB=T&VW=T (access date: 15.11.13); INSEE (France): http://www.insee.fr/en/themes/detail.asp?ref_id=ir-sd2005&page=irweb/sd2005/dd/sd2005_feclegit.htm (access date: 15.11.13); StatBank (Denmark): http://www.statbank.dk/FOD407 (access date: 15.11.13).

[21] In family systems which support extended family structures, for example a co-resident grandmother can support their offspring by taking care of the grandchildren and helping with housework (Reher 1998: 219–217; Sear, Mace and McGregor 2003; Tymicki 2004, 2008).

example, 'strong' family systems, close kin ties can be assumed to support fertility through the provision of social support which can be expected to lower the opportunity costs of having children (Schoen et al. 1997: 337, 346-349; Harknett, Billari and Medalia 2014: 5-6; Lorimer 1954: 199-201). Moreover, via processes of socialization close kin ties can be assumed to promote family values and diminish shifts in value orientations, leading to lower family size ideals[22].

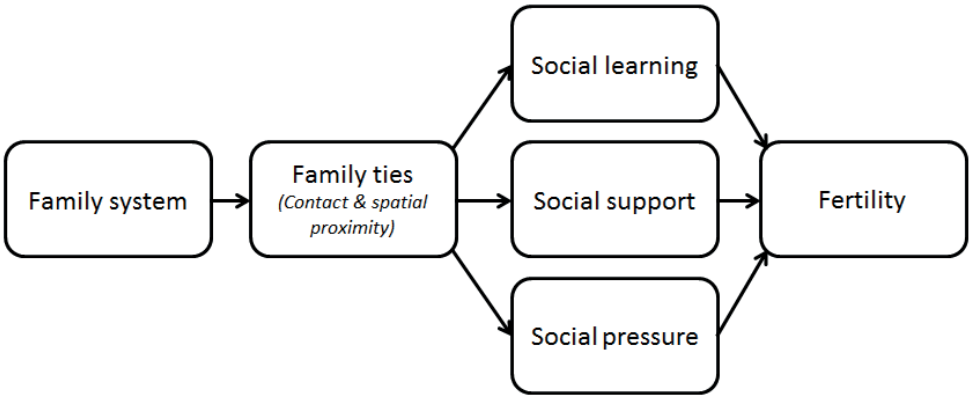

Figure 1.3: Family systems, Family ties and its effects on fertility

To recapitulate, there are significant differences in family organizational patterns among European countries (Reher 1998; Kalmijn and Saraceno 2008: 491-492; Heady and Kohli 2010: 21; Micheli 2012: 19). Moreover, European patterns in fertility decline are concentrated in three bands at different latitudes and overlapping with different family models, following a north-south gradient (MacFarlane 1980; Micheli 2000: 19). Accordingly, regional family systems may explain differences in fertility behaviours and levels of fertility among European regions. However, there is little empirical evidence charting the effects of family systems on fertility. Existing studies are frequently limited to the role of broad classes of family types (joint, stem, nuclear, intact, non-intact, instable or disrupted families), and often include only a few specific regions or countries (Burch and Gendell 1970; Hajnal 1982; Wu and Martinson 1993; Bereczkei 1998; Das Gupta 1997: 181; Veleti 2001; Hofferth and Goldscheider 2010). Family

[22] The fact that the difference between the realized and ideal number of children is greatest in the strong family Mediterranean countries can be regarded as an example of this socialization process (Goldstein, Lutz and Testa 2004: 487).

types are often identified based on co-residential units and ignore influential kin living outside the households (Sussman and Burchinal 1962; Madhavan, Adams and Simon 2003: 58). In addition, many empirical studies focus on developing societies (for an overview see Burch and Gendell 1970; Dyson and Moore 1983; Veleti 2001; Delger 2003) or base their analysis on correlation coefficients (Berkner and Mendels 1978). Although more and more researchers start to identify family systems using indicators of social relatedness and include extra-household relationships (Reher 1998; Heady and Kohli 2010: 21; Micheli 2012: 19; Viazzo 2010b), there is thus the need for testing the effects of family systems on fertility empirically. Addressing this research gap, my second main research question is:

(2) *To what extent can we explain differences in fertility behaviours among European regions by differences in family systems?*

1.4 Family systems and societal relevance

1.4.1 Kin effects and regional family systems

The question remains why we should care about the effects of regional family systems on fertility? In how far is this topic relevant for researchers and policy makers? There is a growing number of studies which chart the effects of kin and non-kin relationships on fertility (Bernardi 2003; Rijken and Liefbroer 2009; Lyngstad and Prskawetz 2010; Sear and Coall 2011; Keim 2011; Balbo 2012; Bernardi and Klärner 2014). Most of this research demonstrates that relationships to kin (and non-kin) play an important role in determining our fertility behaviour (for a literature overview see Bernardi and Klärner 2014). There is no doubt that kin relationships and their implications for people's fertility behaviours need to be studied. This thesis draws on previous research on kin relationships to theorize the effects of family systems on people's fertility. However, looking at the effects of kin relationships on fertility, such as the effect of a maternal grandmother, provides only part of the picture. This perspective only regards the product of social and cultural principles (contexts) that systematically structure people's social relationships (Murdock 1949: 91-101). These principles lead to the organization of individuals in kinship groups, and are important to understand, for several reasons.

First of all, family systems need to be acknowledged, because the effects

of kin on demographic processes, such as chances of child survival, depend on how families are organized and who else in the kinship network is available (Sear and Mace 2008: 11; Sear and Coall 2011: 91-93; Strassmann and Gerrard 2011; Snopkowski and Sear 2013: 134-135). In this context, family systems may also explain the mixed empirical evidence concerning kin influence on fertility (Sear and Coall 2011: 94-101; Mathews and Sear 2013a: 1; Fiori, Graham and Feng 2014: 163), because family systems' principles give the presence and absence of specific kin relationships specific meanings (Murdock 1949: 91-92; Rotering and Bras 2015: 103). In regions in which family system norms relate to certain patterns of co-residence, such as a co-residing grandmother, the absence of a relationship to a grandmother might be more important than her presence (Dong 2015: 2). Moreover, in some regions close kin relationships may offer opportunities for receiving support, regarding for example childcare (Herlofson and Hagestad 2012: 41), while in other regions the same relationships may relate to social burdens, such as care provision to elderly parents. Researchers, for example, demonstrated for the UK that the presence of mothers influenced their children's fertility positively, when they lived in close proximity. However, this effect turned negative when mothers co-resided with their children; this change was probably related to the meaning of these social relationships referring to mothers functioning as providers (close proximity) or receivers (co-residence) of social support (Schaffnit and Sear 2014: 5, 7).

Apart from the question *where* kin is located in terms of spatial distance, kin effects change depending on *who else* in the kinship network is available. Researchers frequently observe a positive effect of grandparental support on their children's and grandchildren's fertility (see for example Kaptijn et al. 2010). However, grandparental support is not always related to higher fertility. This effect can be negative, reducing adult offspring's fertility, for example when grandparents already support their adult offspring's siblings with the parenting young children (Aassve, Meroni and Pronzato 2012: 512-513, 515; Hilevych 2015a: 18). Respectively, kin relationships, such as grandparents and grandchildren, and their effects on people's demographic behaviours cannot be understood independently of one another. The frequency of interactions between grandparents and their grandchildren, for example, depends on grandparents relationships with their children (May, Mason and Clarke 2012:149-152). If these relationships are weak, or if they are disturbed by events such as children's

divorce, grandparents' bonds to their grandchildren are loosened (Mahne and Huxhold 2012: 238-239).

Secondly, family systems need to be acknowledged, because they seem to explain *variations* in kin effects on demographic outcomes across people's life course. One important concept of life course research is that of 'linked lives', which describes the interdependence of different people's life courses, their transitions, and life course decisions (Elder 1987: 184, 1994: 6). For example, the transition to parenthood not only influences a person's own life course, but frequently has implications for the life courses of the new grandparents, who may be inclined to provide child care (Geurts et al. 2015). This interdependency of people's life courses can sometimes lead to synchronization of life course events of family members or even friends (Elder 1994; 1998: 5-6; Pink, Leopold and Engelhardt 2014: 118; Balbo and Barban 2014: 422-427). While the life courses of kin, such as parents and their children, are often interdependent, previous research demonstrates that there are changes in the importance of these kin relationships at different points in people's lives (Bucx 2009: 175; Segalen et al. 2010: 178–179, 195–197, 202). These changes are likely to relate to changes in also the interdependence between people. Respectively, there is evidence that kin effects on demographic outcomes cannot be assumed uniform across the life course (Sear and Mace 2008: 10; Lois and Becker 2014: 126). For example, it has been confirmed that in some societies kin effects on fertility depend on people's age, which could be a mechanism to prevent teenage fertility (Madhavan, Adams and Simon 2003: 64; Aassve, Meroni and Pronzato 2012). Moreover, there are studies which demonstrate changes in the importance of kin, such as maternal and paternal grandparents, for grandchildren's survival over grandchildren's lives (for a literature overview see Sear and Mace 2008: 10).

Family systems provide a clue to understand and explain these changes. Family systems link to variations in kin effects by relating to, for example, norms and ideals about the life course – the 'normal life'[23] (Livi-Bacci 2001: 149; Plath 2009: 71). In addition, family systems often include rules concerning fertility

[23] In many societies, there are shared norms regarding age-appropriate behaviours and the timing of life course events (Neugarten, Moore and Lowe 1965: 711; Hagestad 1986; Plath 2009). Neugarten and Datan (1996: 104-105) refer to this as the 'social time clock', which is part of the social and cultural context in which the life course evolves. Examples of such norms are ideas about ages when females are regarded too old to have children (Mynarska 2010; Mills et al. 2011).

related behaviours, such as marriage and partnership (Reher 1998: 207-208), which vary markedly in accordance with fertility trends in Europe, such as patterns of low (fertility below replacement level) and lowest-low fertility (levels of fertility at or below 1.3) (Billari and Kohler 2004: 161). Changes in kin effects across people's lives relate to family system norms which structure kin roles, kin interactions and kin obligations at different life-course stages (Rossi and Rossi 1990: 186-187, 220 ff.; Bucx, Wel and Knijn 2012: 109). Consequently, to comprehend *when* and *why* kin becomes important for people's fertility behaviour, we need to include regional family systems as an underlying factor.

In conclusion, the study of kin relationships, being important and interesting in its own right, relates to only one side of the coin. To complete the picture, it seems necessary to extend earlier research and study the effects of regional family systems on fertility. Doing so, can provide additional insights into the explanations why we observe regional patterns in fertility behaviours and outcomes in different parts of Europe, which seem to partly relate to differences in demographic developments, such as low fertility and societal aging (Reher 2015).

1.4.2 Societal relevance and policy concerns

The study of family systems and their effects on people's demographic behaviours is not only interesting for researchers. Understanding and charting the principles which frame our kin relationships is societally relevant because many aspects of societal life are influenced by the institution of the family and its varied underlying organizational principles (Sussman and Burchinal 1962: 235-236; Alesina and Giuliano 2014). Within most societies the organizational pattern of families is linked to the organization of the welfare state (Grandits 2010; for an conceptual framework explaining this link see Bahle 2008: 102-104). In this context, family systems not only influence the evolution and historical development of the welfare state[24] (Galasso and Profeta 2015), but welfare regimes also facilitate kin relationships and kin support and cement existing

[24] For example Naldini (2003) described the interplay between welfare state development and pattern of family organization for the cases of Italy and Spain. Her research demonstrates that in both countries the introduction and reformation of family policies, concerning aspects such as family allowance maternity leave, were based on ideas about gender roles, labour divisions, and family systems (p. 150-157, 169-172, 203).

family systems (Naldini 2003: 202-203; Kalmijn and Saraceno 2008: 501-502; Grandits 2010: 31-33, 40-42; Herlofson and Hagestad 2012: 41-42). This interplay of regional family systems and welfare organization is reflected in a strong north-south gradient regarding the organization of welfare; with mixed help from state and family being greatest in the Northern European countries and help from family being most pronounced in strong family Southern Europe (Daatland and Lowenstein 2005: 179; Hank and Buber 2009: 61; Sear and Coall 2011: 101-102)). Surprisingly, the percentage of grandparents who care for their grandchildren is higher in the Northern European countries, as well as in the Netherlands and Britain, despite better childcare services and on average weaker family relationships there (Herlofson and Hagestad 2012: 41). In the Netherlands, the probability of grandparents caring for their grandchildren even increased between 1992 and 2006, influenced by factors such as higher female employment rates, reduced travel time and the decline in the number of adult children (Geurts et al. 2015: 1320). Many grandparents actively seek to live in close proximity to their children and grandchildren; the percentage of grandparents living within 20 minutes of travel time increased from 50% in 1992 to 61% in 2006 (Geurts et al. 2015: 1328). However, in these countries grandparental support is regarded as complementary to public services and occurs less frequent (Geurts et al. 2015: 1320; Hank and Buber 2009: 62-63). In the strong family Mediterranean countries, where child care services are lacking (McDonald 2006) and kin relationships are closer (Reher 1998), childcare is provided on a much more regular and frequent basis by grandparents, while it is often regarded as a grandparental duty (Hank and Buber 2009: 62-63). Due to insufficient childcare services regular and more intensive grandparenting becomes of mayor importance, when mothers enter the labour market (again) (Herlofson and Hagestad 2012: 37, 40-41).

Regarding only the effects of welfare regimes on fertility would ignore part of the context in which the decisions regarding fertility take place. Policy makers who directly or indirectly address the organization of childcare need to acknowledge that there are principles which frame kin relationships. These principles lead to differences in, for example, the role of grandparents in childcare provision -– sometimes being the favoured complementary source of flexible child-care assistance, and sometimes being the ‘saver’ of the mother, enabling her to have children and to follow a career (Weelock and Jones 2002:

458-461; Baker and Silverstein 2012: 54-55; Geurts et al. 2015: 1321). These roles will set different demands for child care facilities, sometimes asking for more flexible or for more universal engagement of the welfare state. In addition, they have implications for the organization of neighbourhoods, services in communities and the housing market, asking for accommodations for families as well as for older relatives[25].

Furthermore, social policies that address elderly care need to acknowledge family systems, because of family systems regulating degrees of kin support (Reher 1998: 218; Viazzo 2010b: 149-150). As discussed by Reher (1998), in strong family countries, such as Poland, policies addressing the organization of elderly care are able to rely on the family as welfare provider (Synak 1990). In weak family areas elderly care has to be based much more on individual savings, residential autonomy and public welfare, while loneliness and its consequences for people's well-being are an essential problem (Reher 1998: 217-218). Accordingly, social policies in weak family regions need to reflect the degree of possible kin support (Grandits 2010), the availability of public welfare and the role of non-kin as alternative welfare providers, sometimes taking in positions as 'voluntary kin' (Höllinger and Haller 1990: 118, 120; Braithwaite et al. 2010: 390/391).

Finally, social policies that directly or indirectly address people's fertility behaviour need to acknowledge family system norms to prevent unintended consequences, such as population aging and decline. Especially family system norms that limit the reproductive age span, such as policies on time spent in education (see Settersten and Hägestad 1996; Mynarska 2010; Liefbroer, Merz and Testa 2015a), will intensify these unintended consequences when they directly or indirectly lead to fertility postponement. Population aging and decline are major challenges in many European countries (United Nations 2013: 48-50), as demonstrated by the recent increase in the old-age dependency ratio[26]. The old-age dependency ratio reflects the number of elderly people divided by the

[25] The availability of adequate accommodations has been observed to permit different levels of spatial proximity between kin (Gruber and Heady 2010b: 131).
[26] This is also evident in the increase in the share of countries that perceive population aging and decline as a problem and implemented a policy to raise fertility (Kohler, Billari and Ortega 2006: 99; United Nations 2013: 48, 62). Between 1976 and 2013 the share of more developed countries with government policies to raise fertility increased from 21% to 69% (United Nations 2013: 62).

number of people of working age (Reher 2015: S62-S64). This ratio increased from around 20% in the Netherlands, 27% in Sweden and about 24% in Germany in 2001, to around 25% in the Netherlands, 30% in Sweden and nearly 30.4% in Germany in 2010 (compare Kotowska 2003: 69, with Reher 2015: S63). Although this ratio does not necessarily relate to any real increase in dependency, because elderly people might be healthier and increasingly work in the future (Kotowska 2003: 70; Bloom, Canning and Fink 2010: 599), a future increase in the dependency ratio still reflects serious changes in the composition of future European societies. These will be characterized by a larger share of older people who will have very different needs and behaviours to which future societies and social policies will have to adapt to (Bloom, Canning and Fink 2010: 588-589, 605). Due to low fertility, in such societies the number of relatives can be expected to decline, while the number of three and four generation families can be expected to increase. In general, this could increase the burdens of the middle generations to care for the elderly (Bonifazi and Kamarás 1998: 6). In addition, population aging has economic consequences, for example for the labour market. In aging societies, the chances of the younger generations to find a good job and the chances for job promotion will be affected by the age distribution of the population. Many advanced job positions will be occupied by the older generations. Due to a smaller number of job entrants relative to the number of older workers, the demand for the qualities of the younger workers rise, while there will be stronger competition for advanced positions at older age, and slower job promotion (for a discussion see Coale 1986: 210-211).

1.5 Outline of the book

To answer my main research questions **(1)** and **(2)**, and study the effects of regional family systems on people's fertility, this thesis includes different thematic chapters. In these chapters I relate my main research questions to more specific research problems which allow me to make my research questions feasible. In each of these thematic chapters the mechanisms through which family systems influence fertility are described and testable hypotheses are derived. Testing these hypotheses allows me to draw conclusions about the effects of family systems on people's fertility at the individual level. In the following paragraph, I introduce the different thematic chapters included in this

thesis and shortly describe their topics (see Table 1.1). Most of these chapters are based on articles which have been published, are currently under review or consideration for publication.

Table 1.1: Overview of the empirical chapters and the research questions

Chapter	Research Questions
Chapter 2: Strong and weak family ties revisited: Reconsidering European family structures from a network perspective	1) To what extent can we identify regional family systems based on measures of social relatedness and geographical proximity that reach beyond household borders?
Chapter 3: Family systems and fertility intentions	2a) To what extent can regional family systems explain people's fertility intentions?
Chapter 4: Family systems, social networks and family size of European cohorts born between 1920 and 1960	2b) Is people's family size shaped by regional family systems? 2c) To what extent do deviations from regional family system norms in terms of social network composition result in differences in completed fertility?
Chapter 5: Regional differences in the intergenerational transmission of family size in Europe	2d) To what extent can regional family systems explain geographical differences in intergenerational transmission of family size among European regions?
Chapter 6: Family systems and the timing and spacing of children	2e) To what extent can regional family systems explain differences in the timing and spacing of children?

This thesis first of all raises the question **(1)** *to what extent can we identify regional family systems based on measures of social relatedness and geographical proximity that reach beyond the household?* **Chapter two** addresses this question by revisiting and extending the work of Reher (1998). It provides an overview on family structures in different parts of Europe based on two measures of social relatedness. These two measures are derived from the 'Survey of Health, Aging and Retirement in Europe' (SHARE) and describe the 'frequency of contact' and 'spatial proximity' between respondents and their kin. Both measures are aggregated on NUTS levels to reflect regional family systems. These NUTS 2 regions divide the Europe Union into regions of comparable population size, orientated on the administrative division laid down by the EU member states[27]. In the Methodological Appendix (M1), I provide a detailed

[27] Source: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction;

description on how the two family system indicators were derived, highlighting the advantages and disadvantages of my indicators. In addition, I evaluate to what extent my indicators that reflect regional averages of family ties are able to measure regional family systems using the 'Generations and Gender Survey' (GGS) (Methodological Appendix M2).

Family systems shall influence people's fertility by regulating kin relationships and proving norms and values concerning the family (1.3.2). While researchers studied the effects of family systems on family size (Skinner 1997; Das Gupta 1997; Veleti 2001), in many empirical works the pathways through which family systems influence fertility have received little attention. Moreover, the role of family systems for people's fertility intentions has been largely ignored (an exception is Harknett, Billari and Medalia 2014). Addressing these research gaps, in **chapter three** I analyse **(2a)** *to what extent regional family systems explain differences in people's fertility intentions*. In this context, I study the pathways through which fertility intentions are framed by regional family systems for both the intentions to have a first child and the intentions to have a second or third child. Regional indicators of family system are again derived from the Survey of Health, Aging and Retirement in Europe (SHARE). These indicators again reflect the average contact frequency and spatial proximity between kin. I test the effects of my two indicators on the fertility intentions of respondents out of the Gender and Generations Survey (GGS) aged 20 to 35 years old.

In **chapter four**, I analyse **(2b)** *to what extent the derived indicators of regional family systems link to differences in people's family size*. In this context, the mechanisms through which regional family systems influence people's fertility are again described. Since regional family systems reflect shared ideals of how families should be organized, I also test **(2c)** *in how far deviations from regional family system norms in terms of social network composition result in differences in completed fertility*. The regional family systems indicators and the measures of individual's social network are based on the same data (the SHARE survey). To overcome problems of endogeneity I use an instrumental variables approach to answer my research questions. In addition, regarding my analysis in the third Chapter, in the Methodological Appendix (M3) I discuss in how far regional family

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http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/local_administrative_units; (access date: 14.11.14)

systems based on respondent's current place of residence can be used to explain their fertility retrospectively. In addition, I discuss the limitations in measuring completed fertility based on SHARE by comparing the fertility data in SHARE and GGS (Methodological Chapter M4).

In **chapter five**, I study **(2d)** *to what extent regional family systems explain differences in intergenerational childbearing continuities*[28] *among European regions*. In strong family systems, where relationships among kin are close, parental monitoring of their children's behaviour appears more authoritarian (Romero and Ruiz 2007). Weak family systems tend to promote individuality (Reher 1998). Accordingly, it seems logical to assume that family systems mediate the degree to which family size is transmitted over generations. In chapter four I test this assumption. I use different multi-level random coefficient models that allow for variation in the effects of parents' on offspring's fertility among European regions and analyse to what extent this variation is explained by regional family systems. To account for gender differences in the degree to which regional family systems influence people's fertility, I run this analysis separately for men and women.

Although fertility outcomes might be the same, there could be important differences in the timing and spacing of children among regions with different family systems. In addition, taking changes in the effects of kin over people's life course into account, it seems necessary to study the effects of regional family systems on people's fertility behaviour using a dynamic framework. To uncover differences in the occurrence of fertility events among regions with different family systems, in **chapter six** I test **(2e)** *to what extent regional family systems explain the timing of first birth and the transition to the second and third child*, using event history models. In the Methodological Appendix (M5) I provide additional arguments why the family systems derived for the parental generations can be used to explain their offspring's fertility behaviour.

Finally, in **chapter seven** I reflect all previous results and discuss them with respect to my two main questions **(1)** and **(2)**. Moreover, I describe the implications of my research, discuss its limitations and provide an outlook for future studies.

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[28] Childbearing continuities describe the intergenerational correlation in the sizes of family of origin and pro-creation.

Chapter 2: Strong and weak family ties revisited: Reconsidering European family structures from a network perspective[29]

Abstract: Family systems appear to be an important factor framing people's individual behaviour. Thus far, family systems have been primarily addressed on a macro regional level with indirect measures. Revisiting Reher (1998) and the family ties criterion, the main question of this chapter is to examine to what extent we perceive family structures differently in Europe by taking direct measures of the structures of people's broader social networks into consideration. Based on the Survey of Health, Aging and Retirement in Europe (SHARE), we derived two indicators of family systems based on individual-level data regarding the density of ego social networks: contact frequency and geographic proximity among network members. We aggregated these data and mapped them on the NUTS 2 level regions for various locations in Europe. The results of our analyses exhibit that based on these two network indicators, significant differences in family structures between European regions exist. These results confirm the classification of strong family southern and comparatively weaker family Northern European regions to a large extent, though substantial regional differences in and between countries are also revealed. Our findings demonstrate that the classification of European regions largely depends on which indicator of network density we consider. This is particularly obvious in the Eastern European regions where the classification markedly differs according to the type of network indicator. Intriguingly, social networks in Central European regions can be characterized as rather loose, often even looser than the 'traditional' weak ties in Scandinavia. Family systems can, therefore, be regarded as a construct of multiple dimensions of which one dimension may be classified as weak while the other can be strong at the same time.

[29] This chapter is based on:

Mönkediek, B. and Bras, H. (2014). Strong and weak family ties revisited: reconsidering European family structures from a network perspective. *The History of the Family*, 19(2), 235-259. Corrigendum (2014). *The History of the Family*, 19(4).

2.1 Introduction

There is a long-standing tradition of studying family structures and their systematic differences across Europe (for an overview, see Viazzo 2010a, 2010b). When considering the measurement of these structures, researchers are often confronted with the problem that there is no common definition of 'family' and what it comprises (Levin 1993; Viazzo 2010a: 281/283; Viazzo 2010b: 139; Wall 1983: 6). Comparative studies regarding the significance and importance of family relationships for individuals are, consequently, difficult to conduct. Thus, previous research has primarily focused on households or co-residential units. In order to identify differences in family systems, researchers have additionally relied upon indicators of family life which are relatively easy to compare such as household formation patterns, inheritance practices, and the age of leaving the parental home (Reher 1998; Todd 1990; Viazzo 2010a). Only over the last decade have these indicators shifted to those reflecting social relatedness such as family obligations or the organization of solidarity (Heady and Kohli 2010: 21; Micheli 2012: 19; Viazzo 2010b). In this context, the most influential work is an article by Reher (1998) in which he identified strong and weak family tie regions in Europe based upon the age at leaving the parental home and the organization of family solidarity in terms of the organization of care for the elderly. This chapter emphasized the myriad of family structures in Europe and demonstrated that the classical division of European regions based on co-residential units into nuclear and stem families is not clear. Instead, Reher contended that addressing family structures based on social relatedness through studying the strength of family relationships is a more fruitful approach; therefore, he employed the earlier described indirect measurements (Reher 1998). Moreover, the article demonstrated the relative persistent regional differences in family systems (Reher 1998: 203).

Reher's (1998) work has been cited extensively and continues to be popular fifteen years after its first publication (Viazzo 2010b: 144)[30]. His essay focused on the general picture of family structures in Europe (which he refers to

[30] Till the 05th of august 2013, 667 publications (including books and articles) cited Reher's (1998) work; with 70 citations alone in 2012 (see http://scholar.google.com/scholar?ie=utf-8&q=link:http://www.jstor.org/stable/10.2307/2807972).

as: "the bold strokes") and left significant margins for future researchers to replicate his work and to fill in certain gaps with additional detailed analyses (Reher 1998: 203/204). This current chapter would like to further study regional differences in family networks in different European countries and revisit Reher's findings on a more detailed level of analysis by utilizing individual data regarding ego-network structures. The reason is twofold: First, there is a need for additional detailed regional work because there is only little information about sub-regional differences in family systems, while internal differences of macro-regions bare the risk of misclassifying sub-regions using a macro-approach (Wall 1983; Kalmijn and Saraceno 2008: 503; Viazzo 2010b: 152). Moreover, people's behavior is not only influenced by structural factors (for example, welfare regimes); embedding into their local and regional social environments also influences behaviour (for an example on women's reproductive behavior, see Browner 2000). Secondly, there is a lack of studies which included social relationships beyond the household. Instead, researchers who further specified or extended Reher's research in various parts of Europe often limited their studies to only certain European regions (Micheli 2012; Szołtysek 2012), certain social relationships (for example, only parent-offspring pairs[31]; Hank 2007), and/or mainly to the study of households (Szołtysek 2012). However, it has been acknowledged that, in many cases, important economic and social interdependencies exist among family and kin residing outside the household (Georgas et al. 2001: 299; Jappens and Van Bavel 2012: 103-104; Lee 1985; Yorburg 1975). In accordance with the purpose of our chapter to, first and foremost, explore sub-regional differences in family systems, our research question is what different type of impression of European family structures will we derive once we consider sub-regional information and relationships beyond household borders. Empirical tests of the significance of regional variations in family systems, as well as factors explaining those, will be the goal of future investigations (for an overview on earlier studies on this topic, see Lee 1999).

This chapter is structured as follows: first, we provide a brief review of Reher's (1998) methods and his primary findings and contrast them with the findings from more recent studies. Next, we introduce a conceptual scheme

[31] Apart from parent-offspring co-residence and help relationships, Jappens and Van Bavel (2012) also include regional family norms (p. 99).

developed by Micheli (2000, 2005) and operationalize it in relationship to the measurement of family networks in order to extend the definition of family structures to social networks. Subsequently, we introduce our data set and describe our measurements of social networks. We then present descriptive results regarding family network structures in various European regions and compare them with local and regional differences in family structures ascertained in earlier research. Finally, in the conclusion of our chapter, we review our findings with respect to earlier derived hypotheses, compare them with Reher's (1998) study, and discuss the implications for future research.

2.2 Background

2.2.1 The family ties criterion revisited

Up to today, an extensive array of family typologies has been developed (Bott 1971; Laslett 1983; Laslett and Wall 1972; Le Play 1884; Murdock 1949; Todd 1990, 2011; Yorburg 1975; Wall 1983: 7). In some cases, these typologies are based on observed demographic outcomes including fertility, rate of births out of wedlock, or divorce rates (Kuijsten 1995: 55; Roussel 1992: 137). Other typologies are based on observed living arrangements of co-resident kin and refer to the structure of social relationships inside households (Le Play 1884; Todd 1990). Over the last few decades, researchers have increasingly included relationships beyond the household in these typologies (Reher 1998; Todd 2011; Yorburg 1975), recognizing that influential kin are not always residing within the co-residential unit but can also live in close proximity (Balbo 2012; Bonvalet and Lelièvre 2008: 377-383; Caldwell 1978; Chen 2006; Unger 1993; Widmer and Jallinoja 2008: 397). This extension is based on the fact that social influence and, hence, also influence of family and kin, requires "a network of communication through which information, influence, and innovation flow" (Coleman, Katz and Menzel 1966: 69–71; Carter 2001: 151) while such a network does not simply cease at the household borders (Yorburg 1975). Yet, not only kin outside the co-residential unit can act as providers of support and information[32] (Finkel and Finkel 1975: 256-257; Hareven 1994; Höllinger and

[32] Studying family relationships and the social support of the elderly in the US, Lee (1985), for example, demonstrated that strong family bonds and help relationships

Haller 1990; Montgomery and Casterline 1996: 153-154) or as behavioral examples[33] (Axinn, Clarkberg and Thornton 1994: 68; Balbo 2012; Bühler and Fratczak 2007). Friends and peers must also be taken into consideration as alternative providers of support or alternative role models as they sometimes take on positions as '*voluntary kin*'[34] (Höllinger and Haller 1990: 118, 120; Braithwaite et al. 2010: 390/391; Gondal 2012). Even affiliations with more distant non-kin may be valuable to include as innovative behaviors and new information (for example, regarding jobs, migration possibilities, etc.) are often transmitted through rather weak relationships due to the fact that they offer communication possibilities to more distant social networks (Granovetter 1983).

In many cases, detailed data regarding people's social relatedness to either kin or non-kin beyond the household is not available in historical registers and is even rare in sociological surveys and interview collections. Reher (1998) thus addressed this issue by studying family loyalties, allegiances, and authority and their differences between broader European regions (Reher 1998: 203). Employing data for age at leaving home and the organization of family solidarity (for example, elderly care) as indicators, he divided Europe into 'weak' and 'strong' family areas (Reher 1998: 209). Strong family regions were defined "as regions where, traditionally, the family group has had priority over the individual" while, in weak family regions, "the individual and individual values have had priority over everything else" (Reher 1998: 203). He concluded that the dividing line was, in fact, much less complicated than the classic division of Europe into stem family and nuclear family regions suggested by Hajnal (1982) or Laslett (1983) (Reher 1998: 203) whereby Central and Northern Europe (Scandinavia, the British Isles, the Low Countries, and much of Germany and Austria) would be characterized by weak family ties while strong ties are featured in the

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between approximate kin existed and continued to do so in a country which was assumed to be represented by rather 'isolated nuclear families' (Lee 1985: 34). Another example is the research conducted by Bernardi and Oppo (2008: 199/200) emphasizing the importance of, for example, aunts in Sardinian families as providers of assistance (as a source of financial support, caretaking of children, and networking to locate employment).

[33] Bernardi and Oppo (2008: 200) were able to demonstrate that the presence of maternal female kin alters women's fertility behavior by providing them with additional behavioral examples.

[34] Voluntary kin is described as non-kin perceived to be family but who are not consanguineous or united by law (Braithwaite et al. 2010: 390).

Mediterranean countries (Reher 1998: 203). Furthermore, he concluded that these systematic differences between family systems still prevail today and will continue to do so due to processes of path dependency (Reher 1998: 221).

Reher (1998) based his findings on historical and census data but did not incorporate direct measures of family structures that include relationships beyond the household. Strong family ties are not necessarily bound to co-residential units, and relationships beyond the household may remain strong, especially in regions where children traditionally leave the parental home at a young age but remain in close proximity (Rosenbaum and Timm 2010: 129; Jappens and Van Bavel 2012: 93; Micheli 2012: 28). Recent research by Aassve, Sironi, and Bassi (2013: 323, 330) on attitudes towards demographic behavior supports the significance of ties beyond the household. They discovered that North European so-called 'weak family' areas are not necessarily characterized by increased individualistic values. Moreover, leaving the parental home is, in many cases, a gradual process that is often piloted by the parents and guided by their support (Micheli 2012: 26, 27). In addition, as Tamara Hareven (1994) has indicated, in Western societies, intergenerational relationships have often developed into a form of "intimacy from a distance", indicating that generations cultivated intensive assistance and support relationships but did not necessarily live together under one roof (Lee 1985).

Moreover, Reher's results are rather broad and do not describe regional variations of family systems at lower levels than macro regions. This is partially due to the fact that he could only employ indirect measures of weak and strong family systems. *Family obligations* were measured, for example, by the existence of national laws and institutions pertaining to disadvantaged people, the share of elderly people co-residing with their offspring, and the number of publicly or privately funded nursing homes in different European countries and the US (Reher 1998: 209/210). Different researchers, on the other hand, have already discovered important regional deviations from the described general pattern of weak and strong family regions (Hank 2007; Jappens and Van Bavel 2012: 94, 108, 112; Micheli 2012; Szołtysek 2012). The need to more thoroughly examine family structures on a regional level was already stressed by Reher (1998) as a

future field of research[35] as he could not address it on the basis of his source material, and it was also not relevant to the intention of his paper (Micheli 2012: 29; Reher 1998: 203/204; Viazzo 2010a: 283).

In summary, Reher developed a meaningful and clear typology of family structures while facing the issue of data constraints that historians are often confronted with (Micheli 2012: 19). However, most of his indicators were measured on the country level while recent research suggests strong varieties in family systems within countries (see also Viazzo 2010a: 276, 277). Reher's indicators seem too crude to capture these differences. Consequently, does this signify that the 'bold strokes' Reher utilized to differentiate between strong and weak family systems are misleading?

2.2.2 From household to network: earlier research on regional and national differences in family structures

In addressing this question, we discover a relatively significant number of studies in which the attention is focused on differences in social networks across Europe. Georgas et al. (1997) studied family bonds and family structures in five different European countries. Interviews with 799 university students in Nicosia (Greek-Cyprus), Athens (Greece), Tilburg (Netherlands), Keele (Britain), and Bielefeld (Germany) regarding their emotional cohesiveness and geographical proximity to kin beyond the nuclear family, thus taking direct measurements of people's social relationships to their kin into consideration, revealed important differences in relationships to extended kin between the included countries. In the Mediterranean countries, emotional closeness, geographical proximity, and contact between kin (via meetings or on the telephone) were, on average, much more substantial or frequent (Georgas et al. 1997: 314). Additionally, in Greece and Greek-Cyprus, kinship networks were ascertained to be more extensive than in other countries and were not limited primarily to intergenerational networks (Georgas et al. 1997: 315). This study was later reproduced and extended to

[35]: "The specific boundaries of different family systems are often not crystal clear and there is much sub-regional difference. For example, in some respects Ireland does not fit well into northern European family patterns, there are indications that northern and southern France often walk divergent paths […]. This multiplicity of forms and behavior, however, does not negate the existence of more general regularities affecting large areas of Europe." (Reher 1998: 203)

other cultures and countries, and the results supported their earlier findings for Europe (Georgas et al. 2001).

The results of Georgas et al. (1997, 2001) support Reher's dividing line. Yet, they are based on interviews with only university students and, therefore, represent a selective sample (Georgas et al. 2001: 299). Using a more representative survey (the first wave of SHARE), Hank (2007) studied intergenerational relationships in Europe including relationships with kin beyond the household (Hank 2007: 157). His results confirm Reher's north-south divide but also exhibit important variations in spatial proximity and social contact between kin in different countries (Hank 2007: 162-163). Parent-offspring pairs were co-residing more frequently in Italy (63%) than in Greece (56.6%) or Spain (55%); while, in regard to living in close proximity (< 25km), Hank observed a contrary picture (30.9% in Italy, 33.9% in Greece, 36.5% in Spain) (p. 163). Unfortunately, Hank restricted his sample to parents and the child that lived nearest to and was most contacted by the parents (Hank 2007: 158). Thus, he did not take the broader network (including kin and non-kin) into consideration. Moreover, he only accounts for network differences on a country level. The same is true for most other studies in this field whereby they generally reaffirm Reher's findings but have similar disadvantages. Kohli, Künemund and Lüdicke (2005) and Kohli, Albertini and Künemund (2010), in studying the structure of family networks in Europe (2010: 231/232), for example, followed an approach similar to Hank (2007) and took the proximity of the nearest child into consideration. Dykstra and Fokkema (2011) created a family typology by applying latent-class-analysis based on: 1) whether parents had a child living within a five kilometer range; 2) while having contact with at least one of their children every week; 3) whether respondents felt responsible for caring for their children/grandchildren; and 4) the direction of intergenerational transfers. They restricted their sample to respondents with at least one child who did not co-reside (Dykstra and Fokkema 2011: 551-553).

The deficiency of adequate data containing comparable information on local and regional differences in family organization and kinship structures in Europe was one of the major reasons for conducting the interdisciplinary

research project on 'Kinship and Social Security' (KASS)[36]. One of its primary objectives was to chart kin and non-kin helping relationships both inside and beyond the household in various European urban and rural locations (Kohli, Albertini and Künemund 2010; Segalen 2010: 253). The project combined three approaches: (1) a macro-level approach by studying the history of family during the 20th century in eight European countries using existing sources; (2) an ethnographic approach producing a qualitative representation of family relationships and family practice in nineteen European locations; and (3) a micro-level approach by collecting data on people's genealogies and social relationships (Heady 2010a: 9-10). Thus, the KASS project is an important exception as they took into consideration the social embeddedness of respondents into their networks (Heady and Kohli 2010). Yet, regarding the analysis of the quantitative data (Heady, Gruber and Ou 2010a; Heady, Gruber and Bircan 2010), it must be noted that the number of included European regions is rather small (19 field sites with, in total, 570 respondents; Heady and Kohli 2010; Heady, Gruber and Bircan 2010). Still, although they demonstrated important intra-country variations in kinship networks between urban and rural localities, their results emphasize certain components of Reher's (1998) findings (Heady, Gruber and Ou 2010a: 42/43, Heady, Gruber and Ou 2010b: 210-213). Concerning, for example, the knowledge of the broader kinship network, Heady, Gruber and Bircan (2010) observed a clear pattern running from locations in Sweden having the most minimal knowledge to Italy having the greatest knowledge about kin. Concerning the mean proportion of named adult kin beyond the household (living within 10 km), the general north-south divide becomes even more evident with the least knowledge values again in the localities in Sweden, the Central European localities (in Austria, Germany, and France) ranging in between, and the southern and Eastern European localities having the highest mean proportions (compare Figure 2.3 in Heady, Gruber and Ou 2010a: 45). This pattern almost disappeared when studying only general knowledge about kin in urban localities (thus, excluding rural places from the analysis (Heady, Gruber and Bircan 2010: 70). Their results now indicated that the knowledge of kinship networks in urban Italy and urban (or even rural) Sweden was approximately the same (compare Figure 2.6 in Heady, Gruber and

[36] See: http://www.eth.mpg.de/kass/ (access date: 11.10.13)

Bircan 2010: 70). This result again indicates strong within-country variances in family systems as well as similarities between European macro regions.

Considering all of these earlier studies, we continue to wonder how much the 'bold strokes' described by Reher change when we take the broader network structure and even non-kin in social networks into account to describe family systems on a lower aggregate level.

2.2.3 Earlier studies on local and regional differences in family systems

Researchers from various disciplines have been interested in investigating local and regional kinship structures based on quantitative data or ethnographies (for an overview, see Heady 2010b; Bras and Van Tilburg 2007: 297). Most of this work was either limited to rural locations and did not take wider regional comparisons into account or studied kinship networks primarily within household structures - at least until recently. Studies on the broader structure of kinship networks continued to be sparse (for an overview, see Heady 2010b: 21, 34; Kertzer, 1991; Bras and Van Tilburg 2007: 297). Due to the lack of space, only certain, more recent studies that will expand on this topic will be recapitulated here. These demonstrate that strong regional differences in the role of kin and non-kin inside and beyond the household exist (Bras and Van Tilburg 2007; Hank 2007: 158/159; Höllinger and Haller 1990; Micheli 2000, 2012; Segalen 2010). Bras and Van Tilburg (2007), for example, studied kinship networks in three regions of the Netherlands employing a mixed-methods approach. Based on ethnographies, qualitative historical sources, and contemporary survey data (Living Arrangements and Social Networks of Dutch Older Adults in the Netherlands), they describe kinship patterns in North-Holland, Salland, and Northeast-Brabant. Their results demonstrated that the size and composition of kinship networks in these three regions substantially differ. In Salland, kinship networks were larger and included more siblings while kinship values supported strong family bonds. In Brabant, family values focused more on the nuclear family while social networks were comparatively small. Finally, in North-Holland, social networks encapsulated more non-kin while parent-child relationships were characterized with more liberal values (Bras and Van Tilburg 2007: 317).

Micheli (2012) addressed Reher's (1998) hypothesis of a specific pattern of 'strong' family systems in Southern Europe utilizing 150 in-depth interviews

conducted in 2005 in Lombardy and Sicily. In doing so, he differentiated between southern Continental and Mediterranean regions. The region of Lombardy is characterized by "an incomplete physical divide and an imperfect role discontinuity" between parents and children that often favors the stem-family model (Micheli 2012: 27, 30). Due to moral obligations, parent-child relationships remain strong even after a child has moved from the parental home and lives in close proximity. The family of origin remains in a central position within the kinship network, allowing the parents to continue to exert social control over their children's behavior and enforce the intergenerational pact of mutual support. This 'blood pact', as it is referred to by Micheli (2012), also exists in Sicily but is not restricted to parent-child pairs within this region. Moral obligations are distributed over a much wider range and include different types of kin, creating a cohesive network of family ties. At the same time, the living spheres of parents and children are much more divided in Sicily and favor the nuclear family. This leans towards "a clear-cut physical divide and a plain role discontinuity" between parents and their offspring, changing the focus of support from the intergenerational pact towards the kinship network (Micheli 2012: 30/ 31).

Comparing three locations based on ethnographies, Segalen et al. (2010) described differences in the organization of help relationships in kinship networks between central, Eastern, and Southern France. In all three sites[37], Segalen et al. (2010) observe interesting similarities: relatively significant kinship networks with an important share of dormant social relationships with kin (Segalen et al. 2010: 178/179, 195-197, 202). While social relationships with parents are, in most cases, binding, relationships with other kin gain in importance only at certain stages in life (for example: when children are born). Moreover, the strength of kin relationships is highly variable, and these ties weaken easily once the ancestral generation no longer exists (Segalen et al. 2010: 178/179, 181, 183, 190). Although mutual assistance between kin is the norm, granting support is based on love, pleasure, and confidence and thus based on earlier experiences within the kinship group. Concurrently, relationships to non-kin such as

[37] In Nanterre, a suburb located west of Paris, Segalen and Manceron (Segalen et al. 2010) interviewed the residents of a large building called "Le Liberté". Additionally, interviews were conducted in Dole, a medium-sized town in eastern France and in Monhiolas and Atignac, two small villages in the Pyrenees.

neighbors and friends, as alternative providers of support, are strong in all three places (Segalen et al. 2010: 183, 185, 190).

Thelen and Baerwolf (2010) described kinship patterns based on biographical interviews for Marzahn (Berlin) and Glindow, representing an urban and a rural locality in Eastern Germany. Despite a strong sense of family, Thelen and Baerwolf (2010) observe comparatively minimal active kinship networks that specifically emphasize the 'nuclear family' (p. 242, 263). At the same time, the 'extended family' primarily exists in the form of an ideal which significantly differs from reality (Thelen and Baerwolf 2010: 245). The strength of relationships to kin beyond the nuclear family unit (for example, uncles, cousins, etc.) is, in fact, variable and often based on emotional links and geographical proximity and can, therefore, become important for the organization of everyday life (Thelen and Baerwolf 2010: 244-246, 262). Salamon (1977) observed similar kinship structures in the German cities of Munich and Tübingen in 1975. Six women from middle-class families were interviewed and observed during an ordinary day; additionally, life histories and telephone logs (for two weeks) were collected (Salamon 1977: 811). In both localities, the nuclear family was emphasized as the essence of women's kinship networks (p. 815). Although relationships with non-kin existed, they were discouraged by social norms and ideals of the family as an integrated unit, resulting in smaller social networks and limiting meetings with non-kin to specific periods of time (p. 815/816). Uhlendorff (2004), who studied the effects of the "Wende" on parental attitudes of childrearing between 1990 and 1993 in East and West Berlin, exploited interviews with second grade pupils as well as parents. He ascertained a slightly more prominent share of relationships with kin and stronger intergenerational relationships with parents in East Berlin. In contrast to this, he observed smaller family networks with a greater share of relationships with friends in West Berlin (Uhlendorff 2004: 80).

In summary, although the review of earlier research results suggests that the general pattern described by Reher (1998) is supported (see 2.2), local and regional studies indicate important intra-country differences and regional deviations from the general pattern as described by Reher (1998) (Jappens and Van Bavel 2012: 94). We discern rather weak family relationships especially in Central European countries (e.g. Germany) while there are distinct patterns in the size of social networks between regions in, for example, France and Germany

which may be associated with differences of how families are distinguished from other social groups (Salamon 1977: 815; Segalen et al. 2010: 190). Thus, further studies are required to address family systems on a sub-country level of analysis including direct measurements of the broader structure of people's social networks (cf. Hank 2007: 171). Inspired by Micheli's (2000, 2005, 2012), Viazzo's (2010a, 2010b), and Hank's (2007) work and the recent findings of the KASS project (Heady 2010a), this chapter examines family structures on a more detailed, regional level via concrete measures of the wider structure of people's social networks reaching beyond the confines of the household. Based on the above described regional differences, we expect to find (1) *profound intra-country variations in family networks in North Western and Southern European countries*. Additionally, the review of the literature regarding France and Germany posit that (2) *Central European regions are dominated by rather 'weak' family networks and exhibit less variation in family systems compared to other parts of Europe.*

2.3. Data and measures

2.3.1 Data

We employ the first two waves of the Survey of Health, Aging and Retirement in Europe[38] (SHARE). The first wave of SHARE was conducted in 2004/05 in various European countries (Austria, Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden, and Switzerland) and Israel. The second wave, realized in 2006/07, contained a panel and a replication-part and added the countries including Ireland, Poland, and Czechia to the survey. Together, both waves contain 31,186 unique respondents that can be identified as anchor persons (ego's) of which 13,694 respondents belong to the panel part. In addition to information regarding health, well-being, and living conditions, the SHARE survey also comprises data on respondents' social-economic situation and social networks. The target population of the survey was 50 years and older, although the survey also includes a number of people younger than 50 years old.

[38] For an introduction to the SHARE survey see Börsch-Supan, Hank and Jürges (2005) and Börsch-Supan et al. (2013).

In this analysis, only anchor persons from European countries born between 1920 and 1960 are included (omitting 1,029 cases) - excluding Ireland[39] (844 cases) and Israel (1771 cases). Respondents residing in elderly homes (194 cases) with missing information on more than one third of their social relationships (234 cases) or respondents with no reported social relationships (777 cases) were also excluded from our analysis as we were not able to exactly determine the structure of their social networks. Finally, six European regions were excluded from the analysis since they contained less than 20 observations, and an additional 535 cases were omitted due to missing information on their NUTS belonging, reducing the number of cases to 25,752. For an overview on the number of cases per NUTS region, see Table A2.1 Appendix 2.1.

2.3.2 Measures

To develop a meaningful typology of family structures, we focus on people's social relationships with family and the overall, broader structure of people's social networks as well as the intensity of their social contacts (Hank 2007). Network structure, we assume, is a reasonable indicator of local family systems and their social practices as these structures are indicative of interactions, obligations, and emotional associations between people (Georgas et al. 1997, 2001; Viazzo 2010a: 282-283). The structure and intensity of help relationships, including emotional and practical support, demonstrate obligations between family and kin members or important others (Micheli 2012: 22). Different family systems can be identified based on the number, intensity, and type of social relationships within and beyond the household ranging from those primarily focused on family to networks dominated by non-kin (Micheli 2000: 12; Bott 1971: 61-63). To justify the structure and intensity of a respondent's social relationships, we measure geographical and social distance in the respondent's networks via two network characteristics available in the dataset: *frequency of social contact* and *spatial proximity* (Hank 2007). In this context, networks of respondents are defined as dense or family-centered (*'strong'*) when there is: 1) a significant proportion of relatively frequent social relationships to family and kin; and 2) when family members live spatially proximate. To derive these

[39] Ireland was excluded as there are no weights for Ireland in the data-set.

indicators, we exploit information regarding frequency of contact (by any means) and geographical proximity reported in SHARE on:

1. co-residential relationships, individuals residing in the respondents' households;
2. respondents' relationships with their parents (if alive);
3. respondents' relationships with their children (if existent)[40];
4. respondents' relationships with (up to three) persons to whom they provided any type of assistance within the last twelve months;
5. relationships with (up to three) persons who provided the respondents with any type of assistance during the last twelve months.

We include all of the above described relationships incorporating kin and non-kin. Duplicates of ties to certain kin or non-kin were excluded. We constructed two indicators that were indicative of the frequency of social contact and spatial proximity of all relationships (for a more detailed description and evaluation of these indicators see the Methodological Appendix M1 and M2). For the first indicator, *average contact*, we enumerated the number of all mentioned relationships to family and kin members, summarized the frequency of social contact, and divided the sum by the number of all social ties in the network; thus, creating a mean value reflecting the 'density' of the network in relationship to social contacts. The categories 'daily' and 'several times a week' were regarded as '*frequent*'; 'about once a week' and 'about every two weeks' as '*casual*'; and 'about once a month' or 'less than once a month' as '*rare*' with reference to contact. For co-resident relationships where no information regarding the *frequency of social contact* was provided, we assumed 'frequent' social contact. After adding the number one, the resulting score ranged from one ('*no contact'* with family and kin members at all) to four (frequent contact) with a higher score reflecting, on average, more frequent social contact. The European mean of this variable is 3.377 (which constitutes between *casual* and *frequent* social contact).

For the second score, *average spatial proximity*, we counted all family relationships (ties) for each respondent, summarized the spatial distances

[40] For children relationships, *frequency of social contact* was aggregated in the survey for the first four children, while information on the spatial proximity between parents and their offspring was gathered for all children.

between respondents and their counterparts and divided the sum by the number of all family ties in the respondent's network; thus creating a mean value reflecting the spatial density of the family network. Again, certain categories of the original variable were pooled: the categories 'in the same house' and 'in the same building' were regarded as '*very high*' spatial proximity; 'less than a kilometer' and 'between 1 and 5 kilometers' as '*high*' spatial proximity; 'between 5 and 25 kilometers' and 'between 25 and 100 kilometers' (indicating a distance up to one hour) as '*moderate*' spatial proximity; and 'between 100 and 500 kilometers' or more as '*low*' spatial proximity between respondent's and their counterparts. The second score ranges from one to four with a higher value indicating, on average, nearer spatial distance between family members and respondents. The European mean of this variable is 2.929 (which indicates *high* proximity).

2.3.3 Methods

We test our expectations (hypothesis) on the structure of the respondents' social networks by aggregating individual-level data on social networks to the regional NUTS 2 level in order to emphasize regional variations within family structures. A more detailed analysis was not plausible since the respondents' place of residence was not provided for many parts of Europe. For Germany and Denmark, where only information on the NUTS 1 levels was available, the respective NUTS level was employed. Although for these two countries our results will be less precise, the included NUTS level as well as the number of NUTS regions (16 regions for Germany) affords us the opportunity to describe significant within-country variances and borderlines between family systems.

All indicators were initially measured at an individual level and then aggregated to regional means. Concerning the proportion of different social relationships to either certain kin or non-kin, we enumerated all reported relationships, calculated the percentage of individual ties to kin and non-kin both inside and outside the household, and derived regional averages. We additionally calculated the percentage of relationships to kin outside the household with frequent social contact (at least approximately every two weeks) in order to gain further insights into the regional importance of proximate kin. To resolve the issue that different sampling methods were conducted in the different target

countries of SHARE, and thus to correct for sampling errors (including errors as a consequence of the study design as well as non-responds), weighted coefficients are presented[41]. In this aspect, we employed the calibrated weights supplied by SHARE which provide us with probability samples for the included European countries.

2.4 Results

2.4.1 Differences in European network structures

We begin our analysis with a closer inspection of the average network size in different European regions based on all mentioned relationships. We find large social networks primarily in Sweden, the Netherlands, and Poland (especially Podlaskie, Warmian-Masurian, Masovian, Lublin, Lubusz and Lesser Poland) as well as in some parts of Belgium (Flemish Brabant , Namur, Luxembourg), Switzerland (around Graubünden, Uri, Lucerne, Schwyz, Zurich), areas of Spain (Andalusia, Madrid, Catalonia, Navarre, Cantabria) and locations in southern Italy (Lazio, Campania, Basilicata, Calabria) (see Figure 2.1). The most extensive social networks were observed in Poland (Podlaskie, Warmian-Masurian, Masovian, Lublin, Lubusz) and in Spain (Cantabria) while we discover the smallest in areas of Greece (Crete, East Macedonia and Thrace, the North and South Aegean, Attica, and central Greece), northern Italy (Piedmont, Linguria, Tuscany), and in certain regions of the Czech Republic (Karlovy Vary, Plenz, South Bohemian, and the Moravian-Silesian Region). Additionally, we observed that the size of networks within countries is not homogeneous; instead, it often varies profoundly, suggesting important variance in social networks between individual households.

[41] In some countries, individuals were sampled randomly whereas in other countries household samples were drawn (Klevmarker, Swensson and Hesselius, 2005: 32-33). In the case of Austria, a simple random sample was assumed (Klevmarker, Swensson and Hesselius 2005: 39-40).

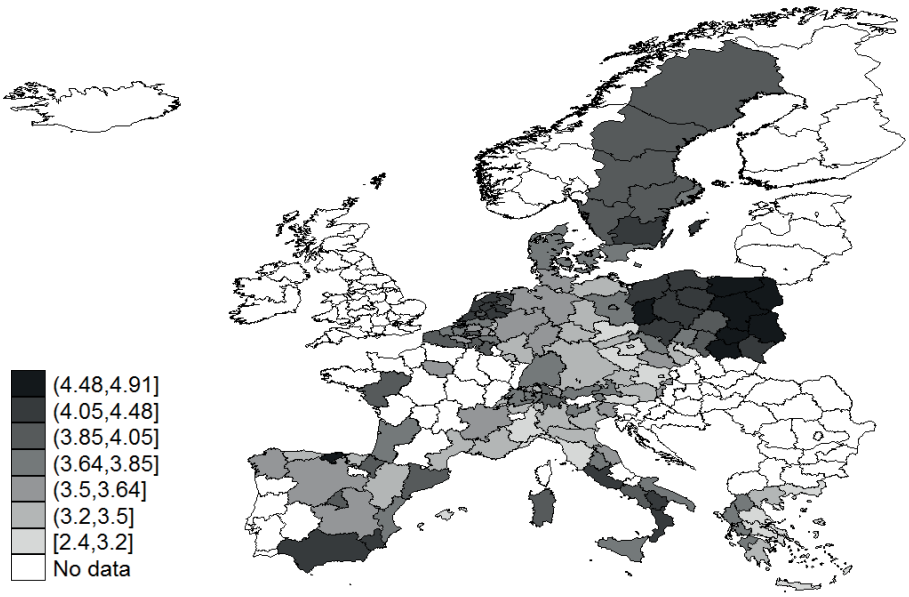

Figure 2.1: Average social network size per NUTS 2 region

When considering Reher's (1998) dividing line of strong and weak family regions, we examined the geographical dispersal of households and relationships to kin living in proximity with frequent (at least approximately every two weeks) to daily social contact (Figure 2.2 and Figure 2.3). First, concerning the regional percentages of household relationships, we ascertain a high incidence of kin and non-kin living in co-residence with respondents in southern and Eastern European regions (i.e. in Galicia, Cantabria, the Basque Country, Madrid, Valencia, Sardinia, Lazio, Central Macedonia, Lubusz, Greater Poland, Pomerania, and the eastern Polish regions). This is in accordance with previous findings of an approximate dividing line of household complexity between northern and Southern European regions; simple households in the north-western and more complex households in eastern and southern Europe (Heady, Gruber and Ou 2010a; Macfarlane 1980; Reher 1998). Cohesive relationships with kin beyond the household can be detected especially in Nordic and Central European regions; in Sweden (Stockholm, Middle, East, South and West Sweden, Middle and Upper Norrland, and Smaland), Denmark, parts of Germany (Saarland, Berlin, Brandenburg, Saxony-Anhalt, Saxony), areas of Austria (Carinthia, Upper and Lower Austria, Vienna), Belgium (Antwerp, Brussels, Flemish Brabant,

Limburg, West Flanders) and the Netherlands (Limburg, North Brabant, Overijssel, Groningen). Yet, these relationships also comprise important aspects of people's social networks in different regions of Spain (the Balearic Islands, Aragon, Castile-La Mancha) and parts of Greece (especially in Thessaly, the Ionian Islands, the Peloponnese, West Greece, Crete and the North and South Aegean). Again, there are strikingly strong within-country differences in the Mediterranean and Eastern European regions. These observed intra-country differences, however, do not always completely confirm earlier research results regarding regional differences in family systems. Networks in the southern Italian regions such as Calabria or Sicily, for example, are, in general, larger (Figure 2.2). Taking into consideration that the share of ties to household members is the same in most northern and southern Italian regions (Figure 2.3), we can conclude increased complex household structures in the southern Italian regions. These results, therefore, do not corroborate the regional family systems (for Sicily and Lombardy) such as described by Micheli (2012).

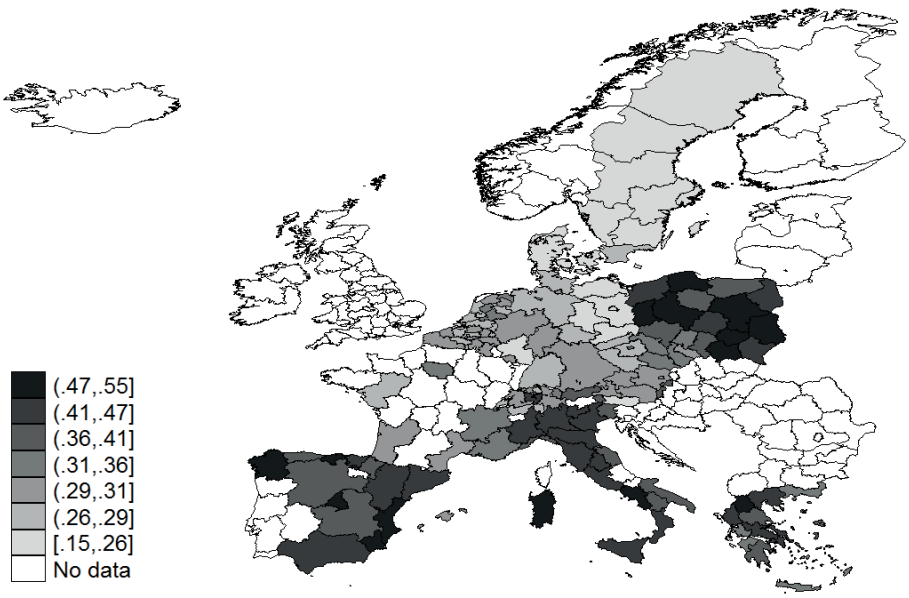

Figure 2.2: Percentage of household ties per NUTS 2 region

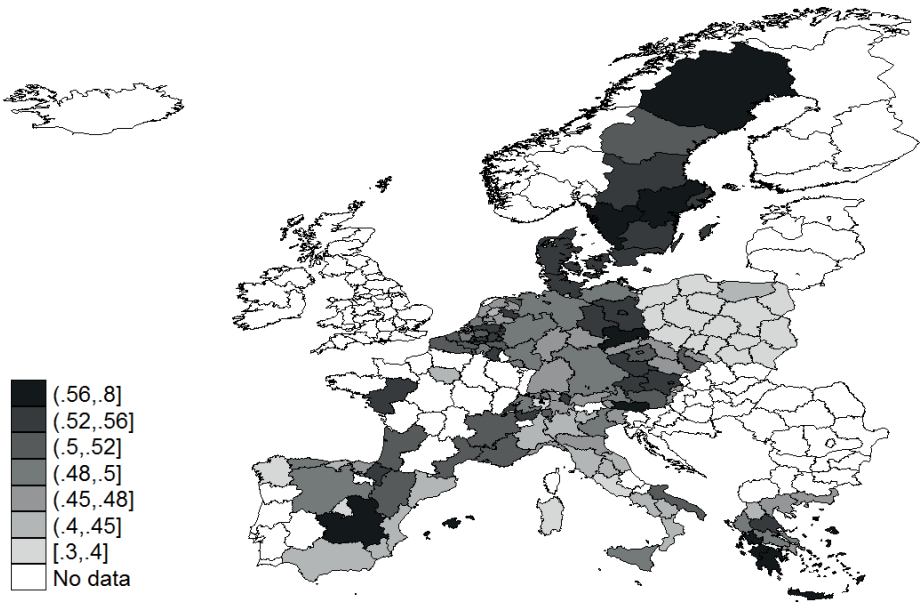

Figure 2.3: Percentage of ties with kin living in proximity with frequent social contact

In brief, the Mediterranean regions are characterized by cohesive family bonds to both co-resident kin and, in many cases (especially in Spain and Greece), to kin in close proximity (Micheli 2012: 23; Viazzo 2003) while the networks in the Eastern European regions are more often only centered on co-resident kin. Concerning the Northern and Central European regions, we ascertain the expected result that only a few of egos counterparts in the respondents' social networks live in co-residence (Figure 2.2).

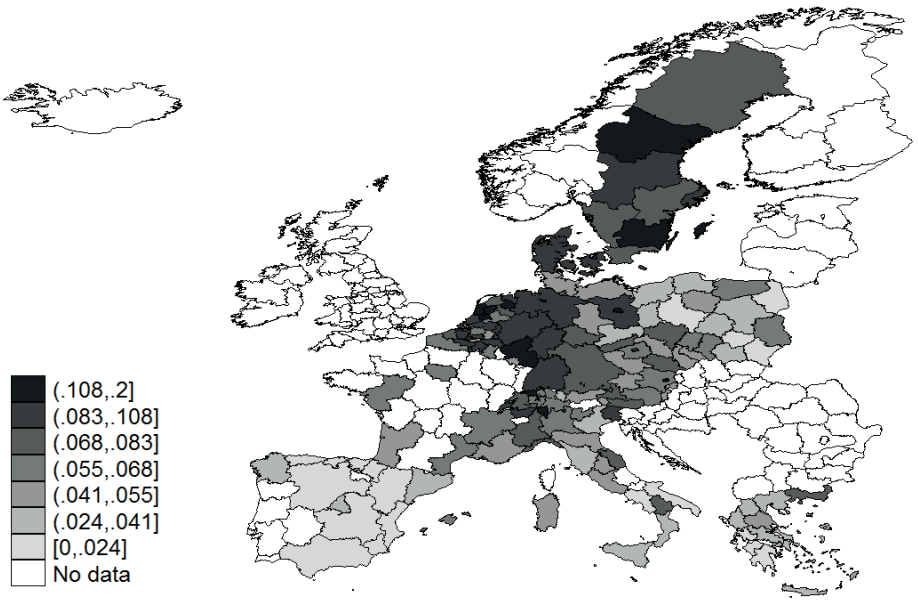

Figure 2.4: Percentage of ties to non-kin per NUTS 2 region

Figure 2.4 exhibits that relationships to non-kin beyond the household are important components of people's social networks, particularly in central and Northern Europe: Denmark, parts of Sweden (Middle Norrland, North Middle Sweden, Stockholm, Smaland and the islands), Germany (Bremen, Brandenburg, Rhine-Palatinate, Hesse, North Rhine-Westphalia, Lower Saxony), Belgium (Namur, Hainaut, Brussels), the Netherlands (Drenthe, Holland, South Holland, Flevoland, Utrecht, Zeeland), and Switzerland (Ticino, Basel, Aargau). Relationships to non-kin beyond the household are of negligible importance in most Mediterranean and Eastern European regions, although profound differences between, for example, northern and southern Italian regions still exist. This finding corroborates previous research results regarding non-kin associations (Hank 2007; Höllinger and Haller 1990).

Our results are in accordance with earlier findings that demonstrated that the number of friends in social networks is inversely proportional to the distance to kin (Höllinger and Haller 1990: 118; Heady, Gruber and Ou 2010a: 39, 51-53). The results, however, do not completely confirm the dividing line between weak and strong family regions depicted by Reher (1998). While the Southern European regions are dominated by co-resident family and kin members, in the

central and Northern European regions, we discover elevated proportions of people with kin residing in geographic proximity to which they have rather cohesive ties. Thus, our results also do not support Reher's (1998) assumption that "[t]he strength and resilience of family loyalties, allegiances, and authority can be seen most clearly within the co-residential domestic group and among persons from the same conjugal family" (Reher 1998: 203). In examining co-residence patterns, we also ascertain nuclearized families as being more dominant in the Northern European areas. Yet, especially in the Nordic areas of Europe, close kin and (non-kin) ties beyond the household must be taken into consideration as reflecting families' abilities and daily practices to organize *family solidarity.* This would corroborate Reher's (1998) assumption that welfare provision can also be organized in alternative ways, such as the circulation of the elderly among households of kin in proximity (Reher 1998: 209). Concerning Northern Europe, kin in proximity comprise a relatively significant portion of people's social networks (see Figure 2.3), revealing that these areas can be better described as being characterized by either modified nuclear[42] or modified extended families[43]. To what extent these regions can be described as being dominated by one or the other form can be assessed while investigating the intensity of the social relationships.

2.4.2 Regional differences in family network density

Thus far, we have only examined the structure of people's social relationships but did not address the relative strength of their network relationships and, hence, their significance. Figures 2.5 and 2.6 summarize the average regional family network density, reflecting the importance of family and kin ties based on our two network indicators, spatial proximity (Figure 2.5), and frequency of social contact (Figure 2.6). We observe certain interesting patterns which demonstrate that the structure of family networks is much more complex than previously assumed.

[42] The modified nuclear family is characterized as a rather (socially and economically) autonomous family with weak kin influence and regular, but not daily, contact with kin who live in easy visiting distance (but not in close proximity) (Yorburg 1975: 7).
[43] This family type can be characterized as a nuclear family unit with strong kin influence. Family units have independent resources, but goods and services are exchanged nearly daily while kin live in close proximity and have frequent social contact (Yorburg 1975: 8; Litwak 1960: 385).

First, both figures corroborate the impression of strong family-centered Southern European regions where we discover close spatial proximity and frequent social contact between kin though substantive regional differences in and between the Mediterranean countries are also revealed. In the Greek regions, we detect frequent social contact between family and kin members, though the average spatial proximity is slightly released. In many Italian regions, we observe a transposed scenario: close spatial proximity but comparatively less frequent social contact between kin as compared to, for example, the Greek regions. Finally, for Spain, we obtain a very mixed picture depending on the region we investigate: Galicia, for example, is characterized by close spatial proximity and comparatively very low contact frequency between kin, which is quite similar to certain Eastern European regions. Asturias, Aragon, and Castile-La Mancha, on the other hand, exhibit relatively lower spatial proximity but are marked, at the same time, by high frequency of contact between kin. In Cantabria, the Basque Country, Murcia, and especially Navarre, we ascertain both close spatial proximity and increased frequency of contact between kin, suggesting important regional differences in family structures between these and the earlier mentioned regions (compare Table A2.2 Appendix 2.1).

Thus, concerning the different Mediterranean countries, we get the impression of a more diverse and heterogeneous picture of family systems instead of one 'strong' family macro region such as described by Reher (1998) or Laslett (1983).

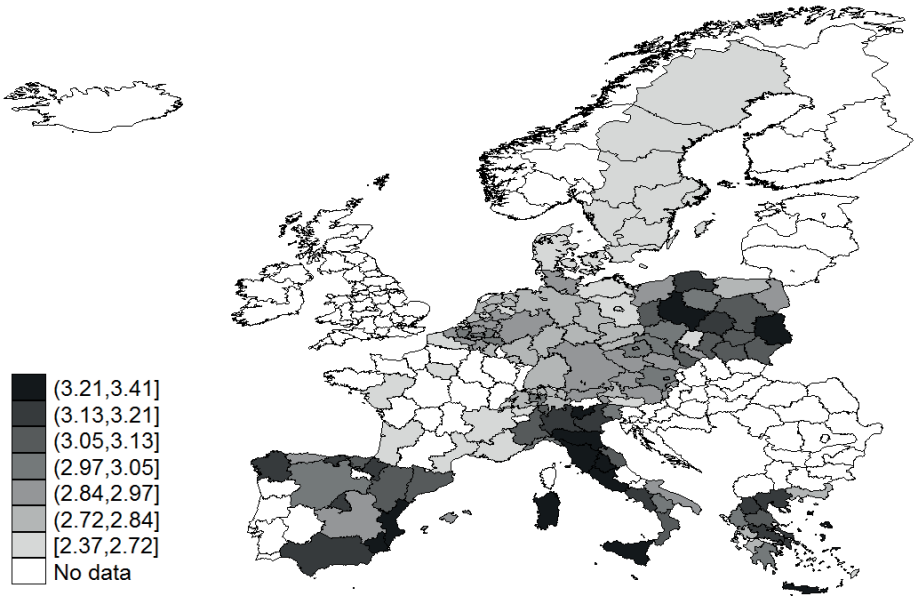

Figure 2.5: Average spatial proximity between kin per NUTS 2 region

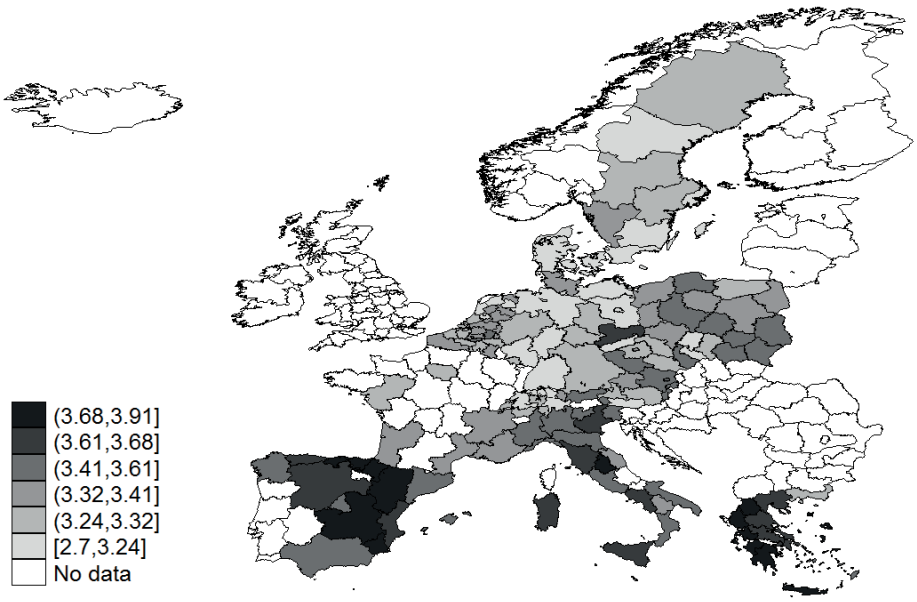

Figure 2.6: Average frequency of social contact between kin per NUTS 2 region

Second, the classification of Northern and Eastern European regions into strong and weak family regions depends on which indicator of network density we take into consideration (supporting the results of Hank 2007: 169). Relatively cohesive family bonds can be observed in the Northern European regions, as becomes evident from the average frequency of social contact between family and kin members (Figure 2.6). In some locations, the bonds are as strong as those in many Central European regions. On the other hand, we can describe most of the included Eastern European regions as strong family regions when we consider only spatial proximity; being as close, and sometimes even closer, than many Greek, Italian, or Spanish regions. The frequency of contact between kin is, however, surprisingly less intense in the included locations of Eastern Europe and sometimes even lower than in certain Northern European regions. Our results initially appear counterintuitive but are in accordance with recent research by Fokkema, De Jong Gierveld and Dykstra (2012) who ascertained elevated rates of loneliness in the elderly in Eastern Europe. Their study has demonstrated that the risk of loneliness of elderly people is strongly associated with the size and the composition of family networks (Fokkema, De Jong Gierveld and Dykstra 2012: 208/209). The risk of loneliness is especially elevated in Eastern European countries despite high rates of co-residence, suggesting limited social contact among kin, even among those residing together in the same household (De Jong Gierveld and Tesch-Römer 2012: 285).

Our results thus support the debate that family systems are a construct of various dimensions whereby one dimension can be weak and another strong (Bengtson 2001: 8-9; Viazzo 2010a: 282/283; Viazzo 2010b: 148). Additionally, when examining the structure of social networks and the two network indicators, we observe that the frequency of social contact with kin is not necessarily negatively affected by relaxed spatial proximity and that the relationship between these dimensions can thus vary (compare Figures 2.5 and 2.6 for Germany and Sweden).

Not only because of the dimensionality but also because of a qualitative difference in the type of relationship captured, it seemed important to differentiate family systems on the basis of both of the indicators 'social contact' and 'spatial proximity' as well as their different combinations. While social contact can be regarded as a direct indicator of social interaction between kin, spatial proximity can be regarded as an indicator of dormant kin relationships.

Both indicators are not necessarily associated with the other as current research on kinship networks in Poland revealed: As described by Kwiecinska-Zdrenka (2010), extended kin in Kurzetnik (Poland) often do not engage in social contact despite living spatially close because the provision of assistance is based on economic considerations regarding reciprocal support rather than on altruism[44]. In so far, these research results support the argument that, in the current case, kinship pattern and thus family systems are based on moral obligations and economic considerations (Micheli 2012: 22).

Taking this into consideration, the combination of both indicators (frequency of contact and spatial proximity) can constitute quite different family systems which provide different mechanisms and potentials to structure individuals' behavior. Therefore, we would contend that it appears important to combine both network indicators (and thus both dimensions) in order to classify family structures into either *strong* or *weak* simply because examining only one of them would reduce the diversity of the observed picture more than necessary. Too much diversity, on the other hand, makes it rather difficult to create a meaningful typology that simplifies the observed network structures to a more manageable complexity. To find an adequate balance, we consider various regional family structures using our two network indicators and classify European regions as being dominated by different family systems. Our classification depends on whether the average regional spatial proximity and the average regional frequency of social contact exceeds or is below the European average (for frequency of social contact: 3.377 (SE 0.007), and for spatial proximity: 2.929 (SE 0.007)) and thus quite simplifies the picture (for a more detailed overview, see Table A2.2 Appendix 2.1). The results are depicted in Figure 2.7.

[44] In this context, individuals from lower social classes tend to focus on their relationships with their immediate family members as they have difficulties maintaining relationships with wider kinship members based on reciprocal support (they cannot "afford" to pay their extended kin back; Kwiecinska-Zdrenka 2010: 381-383).

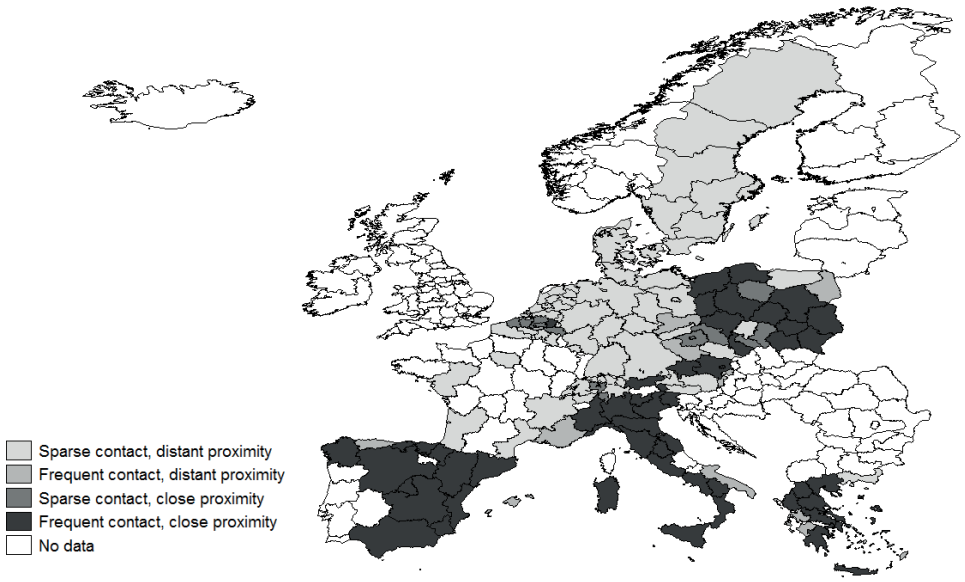

Figure 2.7: Dominant family system per NUTS 2 region

Examining the spatial distribution of the various family systems, we ascertain the previously described dividing lines reflected in that the Southern European regions are the most family-centered; the Nordic and central European regions are characterized by less spatial proximity and comparable sparse social contact between kin. Some Eastern European regions and parts of Belgium exhibit minimal social contact but close proximity between kin. Together with the earlier described results, we also discover important within-country differences, which we are now better able to locate. These are more profound in the Southern European regions as well as in the Netherlands, Belgium and Austria, which fulfills our earlier expectations. In the Netherlands, for example, respondents' networks in Gelderland (and especially the eastern part which has a stem family system) are strongly family-centered while respondent's networks in the provinces of North-Holland, Friesland, Flevoland, and Zeeland are the least family focused - the remaining provinces range in between. For the Netherlands, differences in inheritance practices combined with kinship values from the past, with the eastern parts of Gelderland and Overijssel having impartible inheritance and stem families and the remaining provinces practicing partible inheritance, might be a possible explanation as it leads to differences in supporting kin living

in co-residence (or close proximity) as well as influencing siblings obligations[45] (Bras and Van Tilburg 2007).

Thus, different from earlier descriptions by Reher's (1998), not only the Scandinavian regions are characterized by weak family ties but, in accordance to our results, also major portions of Central and Eastern Europe (including significant portions of Germany, Switzerland, France, and parts of the Czech Republic). We even ascertain that some of the Central European regions are characterized by weaker family ties than some of the Nordic regions. These results do not completely correspond with the results of the KASS project concerning Sweden where interviews posited a relatively minimal frequency of contact between kin (Marks and Gaunt 2010: 462). However, these differences in research results might be due to local variations in family structures in Sweden; the KASS interviews were only conducted in two localities in Sweden: Vällingby (Stockholm) and Härjedalen. Additionally, KASS results indicate that the recognition of kin in Sweden is highly variable and changes (expand and contract) over people's life course and is thus difficult to describe for a certain point in time (Marks and Gaunt 2010: 451, 468).

Our results thus extend Reher's findings and provide detailed information on which we can draw different dividing lines of family systems separating Europe into four different areas (based upon Figure 2.7):

(1) *South-Central-European divide*: separating the Mediterranean countries which are characterized by frequent social contact and close spatial proximity from those in Central Europe.

(2) *East-West-European divide*: separating the Eastern European regions of Poland and the eastern areas of the Czech Republic which are characterized by very high spatial proximity between kin and

[45] In the impartible inheritance regions, traditionally, one child inherited the parents' property while the others were rarely compensated but had the right to live on their sibling's land. This practice, still known and combined with the succession of the farm and also lineage survival in the 1940s, led to relatively strong family bonds. In the regions of North-Holland, all siblings had the right to inherit (in many cases, were compensated if one child inherited land), while property was passed on during the parents' lifetime during important family events (such as children's marriages). This inheritance practice resulted in weaker family bonds as children married comparatively early (Bras and Van Tilburg 2007: 305).

(comparatively) rather loose contact relationships from the North-Western and Southern European regions.

(3) *North/West-Central-European divide*: separating the Nordic European regions and the Benelux-countries which are characterized by relatively frequent social contact and spatially distant kin from the Central European regions (Western Germany, France and Denmark) which range in between the Southern and Northern European regions concerning the observed frequency of social contact between kin while spatial proximity between kin is often closer than in the Nordic regions.

Intriguingly, the spatial distribution of the derived family systems not only confirm, to a large extent, Reher's (1998) findings, but also coincide with Laslett's (1983) earlier partition of Europe into four regions: the north-western, central, southern, and eastern portions[46].

2.5 Discussion and conclusion

Revisiting Reher (1998) and the family ties criterion, the primary question of this chapter was to examine to what extent we perceive family structures differently in Europe by taking direct measures of the structures of people's broader social networks into consideration. Moreover, we intended to describe family networks on a more detailed regional level. Concerning the results of our analysis, we ascertained significant variances in family structures between European regions (measured on NUTS 2 levels) based upon our two social network indicators and the structures of respondents' social relationships. On the one hand, our results substantiate the classification of rather strong family-centered Southern and comparatively weaker family centered Northern European regions, though substantive regional differences in and between the Mediterranean countries are also revealed. Furthermore, the results support the conclusions of the classical studies and their dividing lines of European family systems (Laslett 1983; Macfarlane 1980; Reher 1998). On the other hand, our findings demonstrated

[46] A result which has been confirmed by the recent KASS project (Heady, Gruber and Ou 2010a) and other researchers (for example, Hank 2007). Heady, Gruber and Ou (2010a), for example, find the strongest degree of household complexity in southern and eastern European regions while they observed a decline in complexity following a north-south gradient (p. 45).

that the classification of European regions into strong and weak family ties areas significantly depends on which indicator of network density we take into consideration. We ascertained cohesive family bonds in the Northern European regions while examining average frequency of social contact between family and kin members especially outside the household (Figures 2.3 and 2.7); being often stronger than in the Central European countries. In so far, our results support the argument that family systems are a construct of multiple dimensions where a portion of them can be weak and the other strong at the same time (Bengtson 2001; Georgas et al. 1997: 315; Viazzo 2010a: 282/283; Viazzo 2010b: 148). This is particularly obvious in Eastern European regions in which the classification highly differs according to the type of network indicator. In this aspect, we often discover kin living in close proximity but having relative loose social contact (compare Figures 2.5 and 2.6). The observed close proximity between kin can be explained by strong norms regarding intergenerational co-residence as being crucial for supporting the elderly (reflecting strong family obligations) while the lack of social contact between kin might be the result of a greater risk of poverty leading to less social integration between kin or to the fact that social norms are only superficially adhered to and are no longer consistent with actual behavior (compare De Jong Gierveld and Tesch-Römer 2012: 289-291).

Thus, based on our results, dividing lines between so-called 'strong' and 'weak' family systems (especially while examining North and Central European regions) are difficult to clearly specify on a national or macro-regional level within a one-dimensional framework. Instead, as it became apparent through deviating towards a social network perspective, our approach provided us with additional information: for some parts of Europe, much more within-country variety exists than earlier expected. This is especially the case in Austria, Greece, Spain, the Czech Republic, Poland, Belgium and the Netherlands, suggesting that the earlier described macro-regions (north/west, central, east and south) are to crude to capture these differences as certain family systems sometimes even cross the described macro-regional borders (see Figure 2.7). This does not signify that within-country should be overestimated or that between-country differences are less important. As our results demonstrated, we also observed relatively strong within-country homogeneity in family systems for other European countries (for example in Germany, France, and Sweden).

Finally, our results demonstrate the importance of a meaningful typology

of family structures based on factors binding family and kin together (Micheli 2012: 19). The use of direct measures of the larger network structure as reflections of real family life (Reher 1998) has yielded a diverse picture of family structures in Europe, accounting for sub-regional differences. Being one of the major contributions of our chapter, this has afforded the possibility to further study even individual deviations in social networks in comparison to sub-regional family systems as well as their effects on individual behavior. Interestingly, our more detailed descriptive results revealed that not necessarily the Nordic parts of Europe but, in several cases, the Central and Eastern European regions classify as rather weak and also, sometimes (compared to the Nordic regions), even weaker family systems. This is a result which might be explained by the potentially underestimated kinship awareness in Northern European countries compared to Central Europe despite the dominance of rather nuclear households. In Sweden, this is reflected, for example, by a unique and extremely detailed naming system of kin (though not used in daily conversations) and the constant renegotiation of kin relationships having led to a selection process of kin resulting in a core kin group with shared emotional nearness (Marks and Gaunt 2010: 445-447, 468-469). In so far, our results – based on the structure of broader social networks - demonstrate the complexity of the geographical distribution of "weak" and "strong" family ties observed by earlier research. A future challenge will be to now explain the origin of the observed, rather complex picture. Although earlier research provides us with concepts regarding possible explanations for variations in family systems, these are, again, often based on debates about co-residence (for an overview, see Lee 1999). Concerning the explanation why contact frequency and spatial proximity between kin (including those beyond household borders) vary between different parts of Europe, our search has just begun. Testing how much the observed within- and between-country differences in family systems are of significance and in how much certain factors (such as economic considerations, moral obligations and the organization of welfare; Heady 2010b; Kwiecinska-Zdrenka 2010; Micheli 2012: 36; Reher 1998; Viazzo 2010b: 141-143) explain the observed pattern would go beyond the scope of this chapter and is, therefore, the goal of our future research. This endeavor should first occur on a sub-regional or regional level and combine regional and local characteristics (such as agricultural and economic systems, religious composition, the degree of urbanization; Lee 1999: 98-101) with

structural factors (welfare regimes and macro-regional-cultures) to understand within- and between country differences in family systems.

Appendix 2.1: Extra Tables

Table A2.1: Number of cases per included NUTS region

Code	Name	N	Code	Name	N	Code	Name	N	Code	Name	N
AT11	Burgenland	48	ES11	Galicia	96	ITC3	Liguria	89	PL41	Wielkopolskie	149
AT12	Niederoesterreich	291	ES12	Principado de Asturias	52	ITC4	Lombardia	279	PL42	Zachodniopomorskie	119
AT13	Wien	240	ES13	Cantabria	20	ITD2	Trentino - Alto Adige	38	PL43	Lubuskie	52
AT21	Kaernten	63	ES21	País Vasco	78	ITD3	Veneto	188	PL51	Dolnoslaskie	128
AT22	Steiermark	171	ES22	Comunidad Foral de Na	34	ITD4	Friuli - Venezia - Giulia	93	PL52	Opolskie	65
AT31	Oberoesterreich	242	ES24	Aragón	64	ITD5	Emilia - Romagna	152	PL61	Kujawsko-Pomorskie	99
AT32	Salzburg	69	ES30	Comunidad de Madrid	202	ITE1	Toscana	153	PL62	Warminsko-Mazurskie	89
AT33	Tirol	93	ES41	Castilla y León	127	ITE2	Umbria	106	PL63	Pomorskie	58
AT34	Vorarlberg	64	ES42	Castilla-La Mancha	100	ITE3	Marche	91	SE01	Stockholm	444
BE10	Brussels	114	ES51	Cataluna	194	ITE4	Lazio	156	SE02	Oestra Mellansverige	387
BE21	Antwerpen	477	ES52	Comunidad Valenciana	200	ITF3	Campania	166	SE04	Sydsverige	331
BE22	Limburg	192	ES53	Illes Balears	30	ITF4	Puglia	168	SE06	Norra Mellansverige	262
BE23	Oost-Vlaanderen	234	ES61	Andalucía	412	ITF5	Basilicata	66	SE07	Mellersta Norrland	112
BE24	Vlaams-Brabant	259	ES62	Región de Murcia	58	ITF6	Calabria	93	SE08	Oevre Norrland	161
BE25	West-Vlaanderen	421	ES70	Canarias	97	ITG1	Sicilia	183	SE09	Smaland med oearna	258
BE31	Brabant-Wallon	52	FR10	île de France	663	ITG2	Sardegna	59	SE0A	Vaestsverige	392
BE32	Hainaut	327	FR30	Nord - Pas-de-Calais	326	NL11	Groningen	100	DE1	Baden-Wuert.	287
BE33	Liège	265	FR51	Pays de la Loire	338	NL12	Friesland	164	DE2	Bayern	352
BE34	Luxembourg (b)	62	FR61	Aquitaine	262	NL13	Drenthe	83	DE3	Berlin	84
BE35	Namur	162	FR71	Rhône-Alpes	438	NL21	Overijssel	238	DE4	Brandenburg	80
CH01	Iemanique	212	FR81	Languedoc-Roussillon	233	NL22	Gelderland	126	DE5	Bremen	20
CH02	Espace Mittelland	254	FR82	Provence-Alpes-Côte d	244	NL23	Flevoland	45	DE6	Hamburg	52
CH03	Nordwestschweiz	133	GR11	Anatoliki Maked., Thral	64	NL31	Utrecht	203	DE7	Hessen	205
CH04	Zurich	182	GR12	Kentriki Makedonia	334	NL32	Noord-Holland	255	DE8	Mecklenburg-Vorp.	45
CH05	Ostschweiz	210	GR13	Dytiki Makedonia	30	NL33	Zuid-Holland	486	DE9	Niedersachsen	243
CH06	Zentralschweiz	102	GR14	Thessalia	148	NL34	Zeeland	72	DEA	Nordrhein-Westf.	513
CH07	Ticino	49	GR21	Ipeiros	48	NL41	Noord-Brabant	312	DEB	Rheinland-Pfalz	107
CZ01	Praha/Prague	198	GR22	Ionia Nisia	28	NL42	Limburg(NL)	175	DEC	Saarland	20
CZ02	Stredni Cechy	206	GR23	Dytiki Ellada	57	PL11	Lodzkie	151	DED	Sachsen	149
CZ03	Jihozapad/Southw.	255	GR24	Sterea Ellada	108	PL12	Mazowieckie	205	DEE	Sachsen-Anhalt	72
CZ04	Severozapad/Nothw	143	GR25	Peloponnisos	81	PL21	Malopolskie	57	DEF	Schleswig-Hollstein	115
CZ05	Severovychod/North	280	GR30	Attiki	764	PL22	Slaskie	206	DEG	Thueringen	82
CZ06	Jihovychod/Southea:	257	GR41	Voreio Aigaio	31	PL31	Lubelskie	59			
CZ07	Stredni Morava	262	GR42	Notio Aigaio	35	PL32	Podkarpackie	102			
CZ08	Moravskoslezsko	266	GR43	Kriti	62	PL33	Swietokrzyskie	80			
DK00	Danmark	1,864	ITC1	Piemonte	179	PL34	Podlaskie	65			
Total		**8719**	**Total**		**6237**	**Total**		**5264**	**Total**		**5532**

Table A2.2: Average frequency of contact and average spatial proximity between kin per NUTS region

Code	Name	Average frequency of contact	Average spatial proximity	Code	Name	Average frequency of contact	Average spatial proximity	Code	Name	Average frequency of contact	Average spatial proximity	Code	Name	Average frequency of contact	Average spatial proximity
AT11	Burgenland	3.431	2.900	ES11	Galicia	3.494	3.206	ITC3	Liguria	3.519	2.972	PL41	Wielkopolskie	3.487	3.229
AT12	Niederoesterreich	3.413	2.992	ES12	Principado de Asturias	3.640	2.917	ITC4	Lombardia	3.534	3.187	PL42	Zachodniopomorskie	3.388	2.956
AT13	Wien	3.165	2.821	ES13	Cantabria	3.784	3.133	ITD2	Trentino - Alto Adige	3.535	3.320	PL43	Lubuskie	3.389	3.093
AT21	Kaernten	3.232	2.631	ES21	País Vasco	3.788	3.073	ITD3	Veneto	3.616	3.206	PL51	Dolnoslaskie	3.378	3.050
AT22	Steiermark	3.305	2.920	ES22	Comunidad Foral de Nav.	3.716	3.137	ITD4	Friuli - Venezia - Giulia	3.428	3.004	PL52	Opolskie	3.155	2.715
AT31	Oberoesterreich	3.389	2.947	ES24	Aragón	3.789	3.101	ITD5	Emilia - Romagna	3.591	3.315	PL61	Kujawsko-Pomorskie	3.355	3.014
AT32	Salzburg	3.316	2.751	ES30	Comunidad de Madrid	3.606	3.204	ITE1	Toscana	3.652	3.317	PL62	Warminsko-Mazurskie	3.295	2.814
AT33	Tirol	3.426	2.953	ES41	Castilla y León	3.618	2.974	ITE2	Umbria	3.681	3.249	PL63	Pomorskie	3.415	3.169
AT34	Vorarlberg	3.369	2.814	ES42	Castilla-La Mancha	3.793	2.969	ITE3	Marche	3.397	3.051	SE01	Stockholm	3.236	2.526
BE10	Brussels	3.112	2.661	ES51	Cataluna	3.588	3.120	ITE4	Lazio	3.538	3.287	SE02	Oestra Mellansverige	3.319	2.516
BE21	Antwerpen	3.342	2.966	ES52	Comunidad Valenciana	3.651	3.240	ITF3	Campania	3.610	3.158	SE04	Sydsverige	3.212	2.572
BE22	Limburg	3.438	2.989	ES53	Illes Balears	3.520	2.883	ITF4	Puglia	3.565	2.891	SE06	Norra Mellansverige	3.267	2.496
BE23	Oost-Vlaanderen	3.258	3.017	ES61	Andalucía	3.563	3.134	ITF5	Basilicata	3.404	2.982	SE07	Mellersta Norrland	3.166	2.401
BE24	Vlaams-Brabant	3.322	3.003	ES62	Regíon de Murcia	3.751	3.298	ITF6	Calabria	3.427	3.094	SE08	Oevre Norrland	3.288	2.563
BE25	West-Vlaanderen	3.302	2.939	ES70	Canarias	3.726	3.224	ITG1	Sicilia	3.677	3.258	SE09	Smaland med oearna	3.092	2.371
BE31	Brabant-Wallon	3.412	2.852	FR10	île de France	3.288	2.698	ITG2	Sardegna	3.670	3.405	SE0A	Vaestsverige	3.324	2.463
BE32	Hainaut	3.241	2.891	FR30	Nord - Pas-de-Calais	3.325	2.652	NL11	Groningen	3.351	2.817	DE1	Baden-Wuert.	3.155	2.724
BE33	Liège	3.296	2.978	FR51	Pays de la Loire	3.260	2.543	NL12	Friesland	3.221	2.729	DE2	Bayern	3.268	2.877
BE34	Luxembourg (b)	3.357	2.826	FR61	Aquitaine	3.352	2.626	NL13	Drenthe	3.183	2.773	DE3	Berlin	2.961	2.549
BE35	Namur	3.291	2.919	FR71	Rhône-Alpes	3.343	2.667	NL21	Overijssel	3.348	2.704	DE4	Brandenburg	3.232	2.581
CH01	Iemanique	3.263	2.680	FR81	Languedoc-Roussillon	3.325	2.628	NL22	Gelderland	3.340	2.913	DE5	Bremen	2.706	2.542
CH02	Espace Mittelland	3.214	2.771	FR82	Provence-Alpes-Côte d'A.	3.405	2.631	NL23	Flevoland	3.366	2.824	DE6	Hamburg	3.173	2.734
CH03	Nordwestschweiz	3.172	2.797	GR11	Anatoliki Maked., Thraki	3.288	2.743	NL31	Utrecht	3.144	2.716	DE7	Hessen	3.125	2.792
CH04	Zurich	3.199	2.746	GR12	Kentriki Makedonia	3.673	3.138	NL32	Noord-Holland	3.110	2.782	DE8	Mecklenburg-Vorp.	3.093	2.665
CH05	Ostschweiz	3.199	2.747	GR13	Dytiki Makedonia	3.712	3.205	NL33	Zuid-Holland	3.252	2.825	DE9	Niedersachsen	3.199	2.736
CH06	Zentralschweiz	3.260	3.050	GR14	Thessalia	3.660	3.098	NL34	Zeeland	3.251	2.622	DEA	Nordrhein-Westf.	3.295	2.904
CH07	Ticino	3.276	3.094	GR21	Ipeiros	3.691	2.976	NL41	Noord-Brabant	3.356	2.891	DEB	Rheinland-Pfalz	3.121	2.752
CZ01	Praha/Prague	3.386	2.919	GR22	Ionia Nisia	3.902	2.730	NL42	Limburg(NL)	3.332	2.848	DEC	Saarland	3.637	2.800
CZ02	Stredni Cechy	3.318	2.986	GR23	Dytiki Ellada	3.713	2.722	PL11	Lodzkie	3.451	3.138	DED	Sachsen	3.249	2.741
CZ03	Jihozapad/Southw.	3.430	2.896	GR24	Sterea Ellada	3.616	3.133	PL12	Mazowieckie	3.395	3.106	DEE	Sachsen-Anhalt	3.365	2.881
CZ04	Severozapad/Nothw.	3.213	2.822	GR25	Peloponnisos	3.832	3.046	PL21	Malopolskie	3.425	3.107	DEF	Schleswig-Hollstein	3.248	2.816
CZ05	Severovychod/Northe.	3.313	2.979	GR30	Attiki	3.668	3.148	PL22	Slaskie	3.298	3.108	DEG	Thueringen	3.314	2.805
CZ06	Jihovychod/Southeast.	3.246	2.853	GR41	Voreio Aigaio	3.729	3.366	PL31	Lubelskie	3.471	3.260				
CZ07	Stredni Morava	3.416	3.056	GR42	Notio Aigaio	3.577	2.711	PL32	Podkarpackie	3.446	3.084				
CZ08	Moravskoslezsko	3.218	2.952	GR43	Kriti	3.728	3.212	PL33	Swietokrzyskie	3.537	3.087				
DK00	Danmark	3.182	2.564	ITC1	Piemonte	3.510	3.120	PL34	Podlaskie	3.402	2.883				

Chapter 3: Family systems and fertility intentions

Abstract: Family systems influence people's fertility by regulating kin relationships and providing norms and values concerning the family. While researchers studied the effects of family systems on family size, the pathways through which family systems influence fertility have received little attention. Moreover, the role of family systems for people's fertility intentions has largely been ignored. Studying the effects of family systems on fertility intentions, such as the intended number of children, seems important, because fertility intentions are not always realized. Although short term fertility intentions are highly predictive of future fertility behaviour, people often need to adjust their life course restrictions lowering fertility. Accordingly, people's completed family size and their intended number of children are not necessarily the same, and the effects of family systems on fertility might be less obvious when looking at realized fertility only.

Addressing this research gap, the following chapter studies the effects of regional family systems on people's fertility intentions. It considers the pathways through which these intentions are framed by regional family systems for both the intentions to have a first and the intentions to have a second or third child. Regional indicators of family systems are derived from the Survey of Health, Aging and Retirement in Europe (SHARE). These indicators reflect the average contact frequency and spatial proximity between kin. I test the effects of my two indicators on the fertility intentions of respondents from the Gender and Generations Survey (GGS) aged 20 to 35 years old. The results demonstrate an important link between regional family systems and people's fertility intentions, as family systems frame fertility intentions by influencing people's attitudes towards children and their subjective norms.

3.1 Introduction

While there is a growing interest in the effects of family systems on fertility behaviour (Micheli 2000, 2005; Dalla-Zuanna and Micheli 2005; Kok 2009; Rotering and Bras 2015), the pathways through which family systems influence fertility intentions have received little attention. Although many empirical studies regarded the effects of family types on fertility (Das Gupta 1997; Skinner 1997; Veleti 2001), it remains unclear to what extent these family types result from shared norms and values or given socio-economic conditions. In addition, the role of family systems for people's fertility intentions has mostly been ignored (for an exception see Harknett, Billari and Medalia 2014). However, studying the role of family systems for people's fertility intentions, such as the intended number of children, seems important, because people's fertility intentions are not always realized. Short term fertility intentions are highly predictive of future fertility behaviour (Schoen et al. 1999; Kuhnt and Trappe 2015). Nevertheless, people's completed fertility normally lies below their ideal or expected number of children, because it is frequently subject to life course restrictions, such as missing resources or the unavailability of a partner, while family size intentions have been observed to decline with age (Goldstein, Lutz and Testa 2004; Liefbroer 2009; Régnier-Loilier and Vignoli 2011; Spéder and Kapitány 2015). Accordingly, peoples' completed family size and their intended number of children are not necessarily the same. Assuming that part of the influence of family systems on fertility works via shared norms and values affecting peoples' attitudes towards children (Burgess 1931: 188; Reher 1998: 215; Lois and Becker 2014), the effects of family systems on fertility might be less obvious when looking at its effects on family size only.

Addressing this research gap, the following chapter studies the effects of regional family systems on people's short-term fertility intentions for both the intentions to have a first and the intentions to have a second or third child. Inspired by the work of Ajzen and Klobas (2013) and Harknett, Billari and Medalia (2014), I use the Theory of Planned behaviour to firstly theorize and secondly test the pathways through which family systems influence people's fertility intentions empirically. In this context, I use two different data-sets. Family system indicators are derived from the Survey of Health, Aging and

Retirement in Europe (SHARE) for European NUTS regions[47], using information on contact frequency and spatial proximity between respondents and their kin. People's fertility intentions and attitudes towards marriages are derived from the Gender and Generations Survey (GGS), which is used as the main data-source for this analysis.

This chapter is structured as follows: first, I introduce the Theory of Planned behaviour (Ajzen 1991) to conceptualize the influence of regional family systems on people's fertility intentions. Next, I introduce the two data-sets and describe my measurements of regional family systems and people's demographic attitudes. Subsequently, I test the influence of my regional family system variables on these opinions and attitudes and people's fertility intentions using multi-level regression models. Finally, in the conclusion of the chapter, I review my findings with respect to theoretical background of the chapter and discuss their implications for future research.

3.2 Theoretical background

3.2.1 The Theory of Planned Behaviour (TPB)

Family systems are sets of beliefs, norms, values, and practices associated with the organization of kinship ties that are shared within societies (Skinner 1997; Reher 1998: 215; Das Gupta 1999; Oppenheim Mason 2001: 160-161; Therborn 2004). Family systems have been argued to influence people's fertility by providing norms and values regarding the family, and by regulating kin relationships, influencing, for example, degrees of kin support (Davis 1955; Naldini 2003: 150-157, 169-172, 203; Mönkediek and Bras 2016). In addition, regional family systems often contain norms and rules concerning fertility related behaviours, such as marriage, that impact on opportunities for fertility control (Hajnal 1982: 478; Reher 1998). By framing the social environment in which people's fertility behaviours take place, the pathways through which family systems regulate people's fertility are manifold. As described above, these could

[47] NUTS regions based on administrative division laid down by the EU member states divide the European Union into areas of comparable population size. Source: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction; http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/local_administrative_units; (14.11.14)

work via processes of socialization, via means of fertility control, or via kin support. In addition, there are multifarious other factors, such as socio-economic conditions and welfare regimes, that could frame people's fertility (for an overview see Balbo, Billari and Mills 2013). To conceptualize and analyse the influence of regional family systems on people's fertility intentions, it seems useful to adapt a theory which allows me to include and control for various background factors and specify the pathways through which this influence could take place. One theory that provides these advantages and has been successfully used to study fertility intentions and differences between ideals and actual family size is the 'Theory of planned behaviour' (TPB) (Mönkediek 2010; Ajzen and Klobas 2013; Liefbroer et al. 2015b; Spéder and Kapitány 2015; Kuhnt and Trappe 2015).

The TPB was developed by Ajzen (1991) and differentiates between people's intentions and their behavioural outcomes. In this context, people's behavioural intentions are regarded as the causal explanation of an observable behaviour, such as leaving the parental home. According to the TPB, differences between intentions and behavioural outcomes are connected to inconsistencies between people's 'perceived' and 'actual behavioural control' (Ajzen 1991: 183). 'Perceived behavioural control' relates to people's beliefs about their capabilities to perform certain behaviour and is one of three background factors that determine people's intentions. 'Actual behavioural control' comprises people's real abilities, resources and given opportunities, and thus the socio-economic settings in which a behaviour occurs. Since people's perceptions regarding their opportunities might differ from their actual socio-economic conditions, differences between people's intentions and behaviours occur (Ajzen 1991). However, humans are able to deliberate the conditions in which their behaviour takes places. Accordingly, people's actual behavioural control is not only expected to moderate the effect of intentions on behavioural outcomes, but also to influence people's perceived behavioural control via a feedback loop (Ajzen and Klobas 2013: 206).

Next to their 'perceived behavioural control', people's behavioural intentions emerge out of two additional background factors: people's 'attitudes' and their 'subjective norms' (Figure 3.1). 'Attitudes' are based on people's assumptions about positive or negative consequences of performing a certain behaviour, such as their ideas about costs and utilities of having children (Ajzen

and Klobas 2013: 205). 'Subjective norms' describe people's perceived social pressure and their normative beliefs to engage or not to engage in certain behaviour (Ajzen 1991, Ajzen and Kobas 2013: 206).

In this chapter I reduce the TPB to the study of intentions (fertility intentions). Figure 3.1 provides an overview of my conceptual model. Within the context of studying fertility intentions, we have to acknowledge that fertility is often the result of many antecedent behaviours, such as finding a partner or having sexual intercourse (Birg 1992: 199; Huinink 1995: 157-158). Each of these behaviours could be studied within the TPB framework (Ajzen and Klobas 2013: 207). Accordingly, to fully understand people's fertility intentions, we would have to include the antecedent steps already taken by individuals, such as having a partner or being married. These influence people's behavioural intensions and may lay down future pathways of their fertility decision (path-dependency). Nevertheless, within the TPB these antecedent steps would reduce into another background factor framing people's attitudes, subjective norms and perceived behavioural control.

The TPB offers multiple opportunities to integrate and conceptualize the effects of different contextual factors, such as family systems, on people's fertility behaviours. These are integrated as factors which influence people's attitudes, subjective norms or behavioural controls. In the following paragraph, I will theorize about the pathways of this influence, partly through framing the perceived requirements of having children and family type (Figure 3.1).

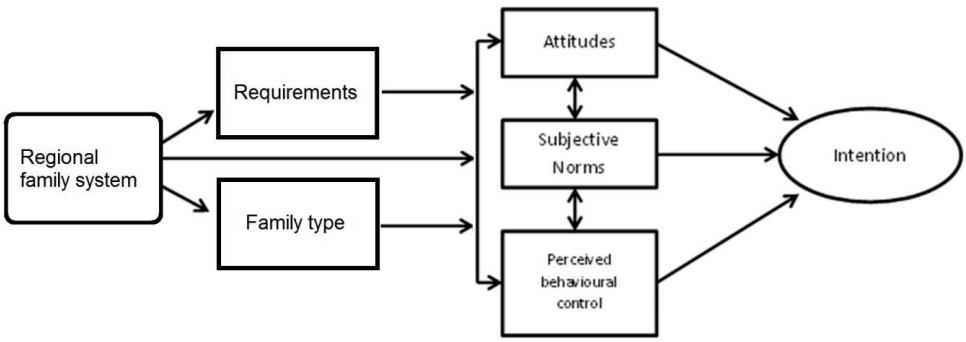

Figure 3.1: Conceptual model explaining fertility intentions by regional family systems, based on TPB (Ajzen 1991)

3.2.2 Family systems and pathways of influence

There is only little empirical evidence charting the effects of regional family systems on fertility. This evidence is frequently based on macro-indicators, such as total fertility rates (TFR) (Davis 1955; Burch and Gendell 1970; Hajnal 1982; Das Gupta 1997: 181; Veleti 2001; Micheli 2005). However, there is a growing body of literature which studies the effects of social relationships on demographic outcomes (for an overview see Bernardi and Klärner 2014). Since also research on family systems increasingly uses indicators of social relatedness to differentiate between regional family organization principles (Yorburg 1975; Reher 1998; Heady and Kohli 2010: 21; Viazzo 2010b: 144-148; Micheli 2012: 19), I use these earlier studies to theorize about the effects of family systems on people's fertility intentions, via different pathways (Figure 3.1).

First of all, regional family systems frame the social environment in which children grow up and in which their fertility behaviour takes places. By providing norms and values that regulate kin relationships, regional family systems govern obligations and social interactions between kin, and are associated with certain family types (De Vos and Palloni 1989: 177; Rossi and Rossi 1990: 156). Kin interactions and the family types in which children grow up influence their experiences within the family group and impact on children's socialization (Reher 1998: 215). Growing up in close-knit family networks has been said to influence children's attitudes towards the family and family-related values positively (Lorimer 1954: 199-203, 247), such as assigning higher values to family and having children (Figure 3.1). Therefore, I expect that living in **(H1)** *strong family systems has a positive influence on people's attitudes towards fertility*.

Secondly, regional family systems impact on the degree of parent's social control over their offspring's fertility behaviour. In strong family regions, the family often functions as provider of welfare and social support (Reher 1998: 208-209; Esping-Andersen 1999: 35, 47; Hilgeman and Butts 2009: 107; Balbo 2012: 100). Strong family regions are characterized by the family having priority over the individual (Reher 1998). In addition, in close-knit types of families parents control over their offspring's behaviour is more effective (Granovetter 2005: 34; Lorimer 1954: 247), while this control has been observed more authoritarian (Romero and Ruiz 2007). Based on differences in social relationships and parents' control over resources, strong and weak family

systems likely vary by the degree to which individuals perceive that their fertility behaviours are based on their own decisions. Therefore, I expect that people's assumptions about possible reactions of their kin members regarding their fertility behaviour, **(H2)** *their subjective norms, play a larger role for their fertility intentions in strong than in weak family regions*.

Thirdly, the requirements for starting a family or having another child seem more complex and more difficult to fulfil in contemporary strong family regions (Newson 2009: 470). In many strong family countries, such as Italy, Spain or the Czech Republic, being married and having established an own household are still often a precondition before having children (Ongaro 2001: 186-188; Livi-Bacci 2001; Billari et al. 2002: 30, 32-33; Možný and Katrňák 2005: 239). While in these countries housing autonomy is often reached after economic independence (Ongaro 2001: 187; Baizan 2001:288-289), in weak family countries, such as France or Finland, it is more and more common to leave home before or at the time of having a first job (Corijn 2001: 137). In Finland this is supported by a system of housing allowance (Forsberg 2005: 264-265). In many strong family countries economic uncertainties, based on high youth unemployment (Southern Europe) and due to economic transitions and housing shortages (Eastern Europe), provide hurdles for establishing an own household and/or starting a family (Možný and Katrňák 2005: 241; Billari et al. 2002: 18-19; Kohler, Billari and Ortega 2002: 645, 655; Guerrero and Naldini 1996: 48-53). At the same time, extramarital fertility is in many strong family countries more uncommon (Guerrero and Naldini 1996: 51-53; Sobotka, Zeman and Kantorová 2003: 266). Furthermore, the spatial proximity between kin is often much closer in these countries (Hank 2007). Differences in proximity between kin often also relates to different patterns of kin support. Based on whether kin lives in close proximity or in co-residence, proximity between kin may relate to resource gain or resource competition (Dykstra and Fokkema 2011). This has implications for people's fertility behaviour. The middle-generation in a three-generational household might face the burden to care for the children and the grandparental generation (Grundy and Henretta 2006: 708-710). Since the higher obligations lower their resources, individuals of the middle-generation might be more inclined to reduce their family intended size (Harknett, Billari and Medalia 2014: 6). Consequently, kin co-residence has been observed to influence people's childbearing negatively, leading to lower fertility

and fertility postponement (Schaffnit and Sear 2014: 5, 7; Harknett, Billari and Medalia 2014).

The interplay of kin co-residence (family type) and the perceived requirements for starting a family or having another child, likely influence people's actual behavioural control. However, according to Ajzen and Klobas (2013: 207), people's actual behavioural control is less important for the study of fertility intentions. According to the TPB, the actual behavioural control moderates the effects of intentions on people's behavioural outcomes, while fertility intentions reflect people's behavioural goals. Nevertheless, proximity between kin (and family type) may affect people's perceptions of their resources and could thus relate to the perceived requirements for having children. Thereby, regional family systems may still influence the degree to which individuals believe they are able to perform certain behaviour. Given the earlier observations of greater requirements for starting a family in strong family regions, I expect **(H3)** *strong family systems to influence people's perceived behavioural control negatively, by raising the perceived requirements for having children.*

3.2.3 Starting a family or having another child

While studying the effects of regional family systems on people's fertility intentions, we have to differentiate between people's intentions of starting a family (first child) and people's ideas about expanding their current family (having another child) (Harknett, Billari and Medalia 2014). Both cases provide different decision contexts and should thus be regarded separately. In the case of starting a family, people have no own experiences yet about having children. However, in the second case the decision process of having another child is likely influenced by earlier experiences, such as raising children, received support, or the previous reactions of kin. These experiences probably impact on people's attitudes towards children, their subjective norms, as well as their perceived behavioural control.

In addition, one can assume that the opportunity costs of having children, such as (at least temporarily) leaving the job, are especially high for the first child, while the utilities of having another child, such as reduced uncertainty over the future life course or increased marital solidarity (Friedman, Hechter and Kanazawa 1994: 394), seem to reduce with every childbirth. In this context,

facing resource constraints, parent's strive for status anxiety, indicating their aims that children at least maintain their parents social status (Steelman et al. 2002: 248ff; Dalla-Zuanna 2007), would provide good reasons to limit fertility instead of having another birth (Becker and Lewis 1974; Simon 1955).

Finally, research suggests that lowest-low fertility largely stemmed from a decrease in family size rather than childlessness (Harknett, Billari and Medalia 2014: 2; Billari and Kohler 2004: 168-169). Moreover, recent research by Harknett, Billari and Medalia (2014: 23) proposes that "higher order births are likely to be more responsive to policy and environmental changes compared with first births". Accordingly, it makes sense to study the effects of family systems for both decision contexts separately.

3.3 Data, measures and methods

To study the effects of regional family systems on people's short-term fertility intentions, I use two different data-sets which contain information on the same European regions and countries. These two data-sets are the Survey of Health, Aging and Retirement in Europe (SHARE), and the Gender and Generations Survey (GGS). The SHARE survey is used to derive regional indicators of family systems, because it provides detailed information on respondents' social relationships inside and outside their households. The GSS is used to derive individual data on people's fertility intentions, their attitudes towards children, their subjective norm, and their behavioral control - this data is not available in the SHARE survey. In addition, the GGS data-set includes young respondents without children and those who just started their fertility careers and is thus well-suited for my analysis.

3.3.1 The Survey of Health, Aging and Retirement in Europe (SHARE)

To derive my regional family system indicators, I use the first two and the fourth wave of the SHARE survey (Börsch-Supan et al. 2013)[48]. The first wave of SHARE was conducted in 2004/2005 in eleven European countries and Israel. The second (2006/2007) and the fourth wave (2010/2012) added more countries

[48] The third SHARE wave has a different set-up and does not include all variables that are needed to derive my family system indicators.

to the survey. Together, all waves contain 57,242 cases. Respondents in the SHARE survey were 50 years and older and had thus completed their fertility careers at the time point of the interview. Apart from respondents themselves, to a large extent also respondents' spouses got interviewed.

The SHARE survey is well suited to derive my family system indicators, because it provides detailed information on different kinds of respondents' social relationships. Besides the information on co-residential relationships, these include respondents' relationships with their parents (if alive), their children and relationships with up to three persons to whom respondents provided or from whom respondents received any kind of support within the last twelve months. For these relationships the data-set provided information on contact frequency and geographical (spatial) proximity between respondents and their alter-egos[49].

Following Mönkediek and Bras (2014), I utilize this information to derive my family system indicators. For the first indicator, average contact, of all family relationships the frequency of social contact was added up and divided by the sum of all social ties in the network (Mönkediek and Bras 2014: 243). After rescaling, the resulting score ranges from 1 ('no contact' to kin members) to 7 ('very frequent' contact). For the second indicator, average spatial proximity, all family relationships were counted, added up, and their sum divided by the number of all family ties (Mönkediek and Bras 2014: 243). The resulting variable ranges from 1 ('very distant') to 9 ('in the same household'), with a higher value indicating closer spatial proximity between kin.

Finally, I aggregate the two indicators on NUTS 1 levels to derive regional measures of the average social and geographical density of respondents' kinship networks in different European regions. These range from close-knit to loose-knit family networks. For a more detailed description and evaluation of the family system indicators, see the two Methodological Appendixes M1 and M2. As demonstrated in Appendix M2, the regional family indicators I derived correlates strongly with other regional indicators of family systems, such as attitudes towards individualism, marriage and divorce, as well as with household size.

[49] The values range from 1 ('no contact') to 8 ('very frequent contact') for frequency of contact to kin, and 1 ('500 kilometres and more') to 9 ('in the same house') for spatial proximity between kin. For co-residential relationships the frequency of contact between respondents and their alter-egos was often not provided. In these cases 'very frequent' contact was assumed.

3.3.2 The Gender and Generations Survey (GGS)

I use the first wave of the GGS to study the effects of my family system indicators on people's short-term fertility intentions (United Nations Economic Commission for Europe 2005; Vikat et al. 2007: 391). Short-term fertility intentions are highly predictive of future fertility behaviour (Schoen et al. 1999; Kuhnt and Trappe 2015). The GGS was conducted to study demographic and social developments in several European and some non-European countries (Vikat et al. 2007: 391). Depending on year when countries joined the survey, the first wave of the GGS was held between 2002 and 2013. Limiting the GGS to the countries included in the SHARE survey (Austria, Belgium, Czech Republic, Estonia, France, Germany, Hungary, Italy, Netherlands, Poland, and Sweden), the sample includes 100,380 cases. For these countries, I include childless respondents and respondents with one or two children, to study the effects of the family system indicators on people's intentions to start a family or to have another child. In addition, I limit my analysis to respondents aged 20 to 35 years old. I did not include respondents with more than two children, due to comparatively low case numbers in my later analysis. For the same reason I did not study the effects of family systems on fertility intentions per child parity. This reduces the N in my analysis to 25,974 cases, of whom 16,639 (64.1%) respondents are childless and 9,335 (35.9%) respondents have children.

Unfortunately, for Estonia, France, the Netherlands, Sweden and Hungary the GGS does not include all the variables needed for my analysis. In particular for the Netherlands and Hungary most variables are missing. However, during the path analysis, I could use the available data to still estimate sub-parts of my statistical models.

Fertility intentions

Within the GGS respondents' fertility intentions were charted differently in the survey countries. These differences resulted out of variations in the order and type of questions included in the questionnaires and disparities between response categories of the variables that asked about respondent's fertility intentions. For some countries, these differences resulted in high levels of missing information on respondents' intended family size (Beaujouan 2013:40-42). Since the level of missing information is much lower for the variables that chart respondents' short-term and long terms fertility realizations, I use these

two variables to study the effects of my family system indicators on people's fertility intentions.

The first variable asked whether respondents intended to have a(nother) child within the next three years (short term realization). On a scale from 1 (definitely not) to 4 (definitely yes) respondents were able to affirm or negate their intentions. If respondents did not intend a(nother) childbirth within the next three years, they were asked whether they intended a childbirth at all (after 3 years; long term realization). Again respondents could answer this question on a scale from 1 (definitely not) to 4 (definitely yes). Combining both questions, I am able to trace the share of respondents that at the time of the interview (1) intended a childbirth within the next three years, (2) that intended to have a childbirth after three years, and (3) that did not intend have any children, in a single variable. This new variable represents the dependent variable in my analysis (Beaujouan 2013: 38-39).

Table 3.1: Fertility intentions

	Fertility intentions			
Country	Not intended	after 3 years	within 3 years	N
Austria	447 (22.7%)	748 (38.0%)	772 (39.3%)	1,967
Belgium	399 (33.5%)	328 (27.5%)	464 (39.0%)	1,191
Czech Republic	568 (21.0%)	657 (24.2%)	1,484 (54.8%)	2,710
Estonia	183 (18.6%)	419 (42.5%)	383 (54.0%)	985
France	527 (27.5%)	482 (25.2%)	906 (47.3%)	1,915
Germany	381 (36.2%)	311 (29.6%)	360 (34.2%)	1,052
Hungary	392 (13.3%)	966 (32.7%)	1,597 (54.0%)	2,955
Italy	422 (18.5%)	1,006 (44.1%)	855 (37.5%)	2,283
Netherlands	308 (22.5%)	554 (40.4%)	509 (37.1%)	1,371
Poland	1,087 (32.7%)	704 (21.2%)	1,530 (46.1%)	3,321
Sweden	240 (14.4%)	713 (42.9%)	710 (42.7%)	1,663
Total	4,954 (23.1%)	6,888 (32.2%)	9,571 (44.7%)	21,413

Looking at the portion of respondents that intend a childbirth within the next three years for each European country, Table 3.1 demonstrates that this share is highest in the Czech Republic (54.8%), followed by Estonia (54.0%), Hungary (54.0%), France (47.3%), and Poland (46.1%). We observe the lowest proportions of respondents with explicit childbirth intentions in Italy (37.5%), the

Netherlands (37.1%) and Germany (34.2%). At the same time, the share of respondents that refused to have any fertility intentions is especially high in Germany (36.2%), Belgium (33.5%) and Poland (32.7%).

Table 3.2: Average age of respondents by their fertility intentions

	Average age by fertility intention					
	No children (N=13,447)			1-2 children (7,966)		
Country	Not intended	within 3 years	after 3 years	Not intended	within 3 years	after 3 years
Austria	26.4	27.7	24.2	31.3	29.7	29.7
Belgium	25.9	26.9	23.6	31.9	30.1	28.3
Czech Republic	27.6	26.1	24.4	31.3	29.4	29.0
Estonia	30.7	26.3	25.6	31.4	29.2	28.3
France	25.2	27.4	23.4	31.8	30.3	28.5
Germany	27.8	27.3	24.7	31.2	30.0	27.7
Hungary	26.9	27.5	24.6	30.4	29.5	27.9
Italy	28.2	29.5	25.8	32.4	31.4	30.1
Netherlands	29.5	29.3	26.2	32.7	30.7	29.3
Poland	27.5	27.3	23.6	31.3	29.3	28.1
Sweden	26.5	26.9	23.7	32.3	29.5	29.5

However, the extent to which respondents intend to have children seems to be influenced by respondents' age. Especially younger respondents aged 25 and below are likely to postpone their fertility, because they are still in education (Jackson and Berkowitz 2005: 57-59, 75; Cygan-Rehm and Maeder 2013). In this context, they are more likely to intend a childbirth later than within the next three years. I calculated the mean age of respondents for each category of my dependent variable per country for respondents with and without children, to chart these age variations. Looking at these mean ages per country, Table 3.2 shows that respondents who intend to postpone their fertility three or more years were on average younger than respondents who intended childbirth within the next three years, especially when they had no children yet. Respondents who did not intend any future childbirth were on average much older, particularly when they already had children. This might relate to the possibility that they already conceived their number of intended children. Finally, in some countries, such as Italy and the Netherlands, the mean age for childless respondents with

intentions to have a childbirth within the next three years is relatively high (Italy 29.5, the Netherlands 29.3 years) and close to the mean age of respondents with children. This could relate to fertility being in general postponed to higher ages in these countries, and then recuperated at a faster pace. To account for possible age differences explaining people's fertility intentions, I include respondent's age as a control variable into my analysis.

Attitudes

To chart respondents' attitudes towards children, I use nine items that measured respondent's opinions about the positive and negative effects of having a(nother) child on different aspects of their lives, on a scale from 1 (much better) to 5 (much worse). These items refer to, for example, respondents' employment opportunities, their financial situation, their sexual life, and their closeness to their parents. Combining these items in the new variable 'attitudes' (Figure 3.2), provides me with a reliable indicator of respondent's opinions about the costs and benefits of having a(nother) child (Cronbach's Alpha: 0.751). After rescaling, high values on this new variable reflect positive attitudes towards children (mean: 2.883, std. error: 0.003).

Subjective norms

Respondent's subjective norms were charted by three Items that referred to their opinions about most friends, parents, and most relatives think that they should have a(nother) child. Respondents could agree to this statement on a Likert-scale ranging from 1 (strongly agree) to 5 (strongly disagree). Rescaling the items so that high values reflect high values on subjective norms, the resulting variable 'subjective norms' is highly reliable[50] (Alpha: 0.911). I again rescale this variable so that high values reflect positive subjective norms about the reactions of people's social networks in case of a childbirth. Interestingly, respondents on average more often expect negative reactions of their social networks in case of fertility (mean: 2.706, std. error: 0.010). These expectations might be explained

[50] In Italy, respondents were asked about their opinions about the expectations of their parents concerning respondent's fertility using separate items, while their opinions about expectations of other relatives was not charted (Alpha for Italy: 0.876).

by the large share of young respondents which are often still in education (Figure 3.2).

Perceived behavioural control

As argued by Ajzen and Klobas (2013: 207) people's intentions to have a child within the next three years or any later can be explained by their perceived behavioural control. People's actual behavioural control only plays a minor role. Within the GGS respondents' perceived behavioural control was measured using five items that charted respondents' perceptions about their capabilities to control specific aspects of their lives within the next three years. These aspects included their financial situation, their work, their housing conditions, their health, and their family life. On a scale from 1 (not at all) to 4 (a great deal), respondents were able to indicate their perceptions of their future behavioural control. Combining these items within a new scale, the resulting variable 'behavioural control' seems reliable (Alpha: 0.785). As demonstrated by Figure 3.2, respondents tend to agree that they control most aspects of their future live 'quite a lot' (mean: 2.890, std. error: 0.4).

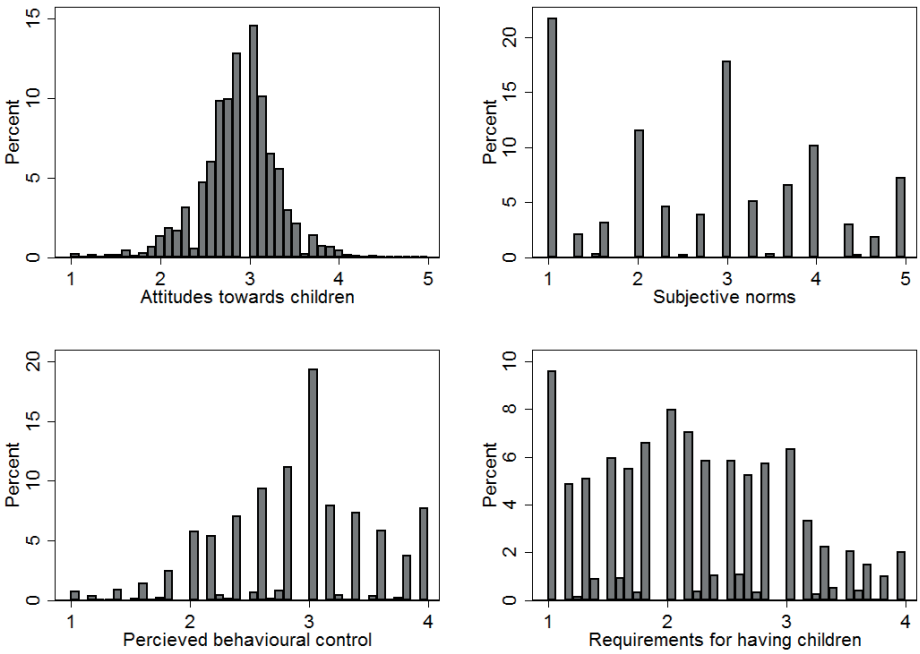

Figure 3.2: Distribution of people's attitudes, subjective norms, perceived behavioural controls and opinions about requirements for having children

Requirements for starting or expanding a family

Previous studies suggest that the requirements for starting a family are greater in strong family regions (Livi-Bacci 2001: 149; Dalla-Zuanna 2004: 111-115; Vignoli, Rinesi and Mussino 2013). In the GGS, these requirements were charted by asking respondents about their opinions to what extent their decisions about having a(another) child depends on different factors, including their financial situation, their work, their housing conditions, or the availability of childcare institutions. Respondents could indicate the importance of these factors for their fertility intentions on a scale ranging from 1 (not at all) to 4 (a great deal). I combined these items in the new variable 'requirements' (Alpha: 0.859). As demonstrated by Figure 3.2, the new variable 'requirements' is skewed towards lower values. Accordingly, a large share of respondents (about 47.8%) perceives only few (2) or no (1) requirements that need to be fulfilled before starting a family or having another child.

Household size

To chart respondents' family types, I used the variable 'household size'. Although this variable does neither differentiate between types of kin living in respondent's households, nor includes kin living in proximity, it is a useful indicator of household complexity, because it significantly relates to the strength and resilience of family loyalties and allegiances (Reher 1998: 203). As demonstrated by Table 3.3, respondents' household size is on average larger in Mediterranean (Italy 3.246) and Eastern European countries (Poland 3.293). As expected, it is smallest in weak family countries, including the Netherlands (2.345) and Sweden (2.291).

Control variables

My models control for different variables that could explain respondent's fertility intentions. These variables are:

Gender. Fertility intentions might differ according to gender. For example Schoen et al. (1999: 794) observe important differences in the percentages of men and women with actual birth intentions. To control for gender differences, I include respondents sex into my analysis.

Educational level. People normally try to postpone their fertility till after they finished education (Blossfeld and Huinink 1991: 161; Klein 2003: 521). Accordingly, people's fertility intentions might be explained by their educational degree. To control for such differences, I include respondents' highest educational degree in my analysis.

Birth cohort. I include respondent's year of birth into the analysis to control for cohort effects that could explain changes in fertility intentions. To limit the effect size, the variable was divided by the earliest year of birth observed in the data. The resulting variable ranges from 1 (born in 1967) to 27 (born in 1993).

Age. Previous studies demonstrate that expected family size declines with age (Liefbroer 2009). Accordingly, I included age as a factor explaining fertility intentions into my analysis.

Table 3.3: Descriptive statistics (control variables)

Country	N	Female	Mean Age*	Mean education (ISCED – 97)*	Mean household size*
Austria	2,107	58.8%	27.4 (0.100)	3.508 (0.020)	2.936 (0.029)
Belgium	1,523	52.3%	27.4 (0.119)	3.725 (0.031)	3.108 (0.031)
Czech Republic	2,743	48.4%	27.4 (0.084)	3.276 (0.020)	2.902 (0.024)
Estonia	1,879	59.9%	28.1 (0.095)	3.546 (0.026)	2.999 (0.027)
France	2,222	59.2%	27.6 (0.100)	4.034 (0.031)	2.431 (0.027)
Germany	1,537	52.1%	27.6 (0.118)	3.356 (0.026)	2.289 (0.031)
Hungary	3,178	48.4%	27.2 (0.068)	3.753 (0.016)	3.087 (0.022)
Italy	2,366	51.1%	28.5 (0.094)	2.959 (0.019)	3.246 (0.022)
Netherlands	1,763	59.7%	29.0 (0.101)	3.616 (0.029)	2.345 (0.028)
Poland	4,705	54.0%	27.8 (0.095)	3.671 (0.016)	3.293 (0.021)
Sweden	1,951	51.0%	26.8 (0.104)	3.749 (0.023)	2.291 (0.024)
Total	**25,974**	**53.7%**	**27.7 (0.028)**	**3.572 (0.007)**	**2.888 (0.008)**

Note: *standard deviations in brackets

Finally, instead of regional family systems also other regional characteristics, such as socio-economic conditions, might explain differences in observed family structures and ideas about requirements for having children. To accurately assess the impact of regional family systems on intergenerational

childbearing continuities, regional values (NUTS 2) of Gross Domestic Product (GDP) for the year 2000 were obtained from Eurostat.[51] Although GDP does not precisely measure regional socio-economic characteristics during the reproductive period of respondents, it is still a valuable approximation of often persistent socio-economic regional disparities. In the regression models we use the natural logarithm of GDP because this variable is unevenly distributed.

3.3.3 Methods

I test the effects of regional family systems on people's fertility intentions via the theorized pathways using path-analysis. Within path-analysis people's fertility intentions are estimated through several multiple regressions that are based on different pre-defined path (path models). These multiple regressions specify the effects of people's attitudes, subjective norms, and behavioural control, and my family system indicators on people's ideas about having a(nother) child. Since my variable that charts people's fertility intentions is based on two ordinal scales, the dependent variable in my path models is ordinal scaled, too. In this context, my path models assume that the observed distribution of the dependent variable is the result of an underlying continuous latent variable that follows a logit distribution.

To account for different selection probabilities and to correct for non-response, the GGS includes different types of weights. However, for some countries (the Netherlands, Sweden, Hungary and Poland) no weights are provided. In addition, comparing the weighted and unweighted results of my path-models reveals only minor differences in the results, while the significant effects stay the same. Accordingly, in this chapter I present the results of the unweighted models.

To account for the hierarchical structure of the data-set (individuals nested in regions, nested in countries), I account for clustered error terms at NUTS 2 level and include country dummies into my analysis. For Estonia, where the included NUTS level corresponds to the country dummy, I only account for clustered error terms.

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[51] GDP is measured in Purchasing Power Standard (PPS), per capita. Source: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_r_e2gdp&lang=en (19.03.15)

3.4 Results

According to my hypothesis, regional family systems influence people's fertility intentions, by **(H1)** framing their attitudes towards children, by **(H2)** mediating the effects of subjective norms on people's fertility intentions, and by **(H3)** affecting people's perceived behavioural control. These effects are likely to work directly, by framing social interactions and support between kin, and indirectly, by influencing household structures and the opinions about the requirements for having children (see Figure 3.1). I test these effects of regional family systems on people's fertility intentions via the described pathways using path-analysis as a method. The results are presented in Figures 3.3 and 3.4. While interpreting the results, we have to pay attention to the coefficients (**b**) that relate directly to the dependent variable. These display the increase in the log-odds of respondent's intentions to have a (another) child within the next three years.

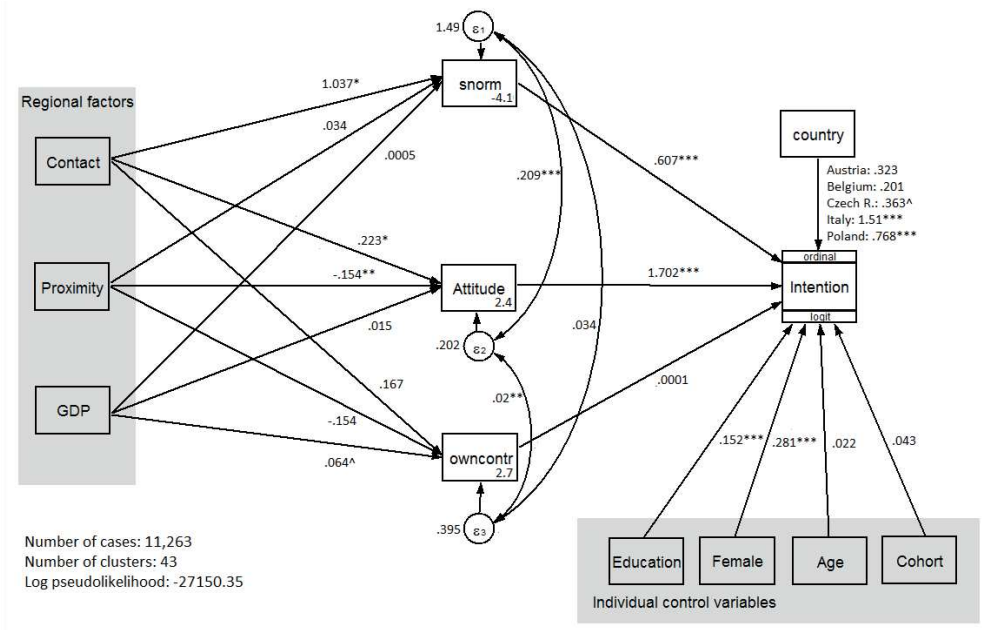

Figure 3.3: Path analysis explaining fertility intentions of childless respondents (aged 20 - 35)

I first of all examine the direct effects of my family system indicators on the three background factors included in TPB for childless respondents. As demonstrated by Figure 3.3, childless respondent's fertility intentions are significantly influenced by their attitudes towards children (b = 1.702, p = 0.000), their subjective norms concerning the reactions of others in their social

networks (b = 0.607, p = 0.000), their education (b = 0.152, p = 0.000) and whether they are male or female (b = 0.281, p = 0.000). Interestingly, perceived behavioural control does not seem to play a role as far as intentions to have a child within the next three years or later are concerned. However, I do find differences in fertility intentions among the included countries, with people in the Czech Republic, Italy and Poland intending an earlier childbirth than respondents in Germany (reference category). In addition, there are unobserved factors that explain similarities in people's subjective norms and attitudes (cov: 0.209, p. 0.000), and attitudes and perceived behavioural control (cov: 0.017, p = 0.002), as indicated by the significant covariance factors included in the model.

Concerning the pathways through which the family systems indicators influence fertility intentions, Figure 3.3 suggests that the overall degree of kin interactions, represented by the average frequency of contact between kin in a region, influences respondents subjective norms regarding their fertility behaviour (b = 1.037, p = 0.023). In addition, regional frequency of contact between kin had a positive effect on people's attitudes towards the utility (b = 0.223, p = 0.026), while regional spatial proximity between kin seemed to raise people's opinions about the costs of having children (b = -0.154, p = 0.004). These effects are controlled for the regional GDP, reflecting regional socio-economic conditions.

Regarding the effects of the background variables and regional family systems on people's intentions to have another child (Figure 3.4), the effects of people's subjective norms (b = 0.821, p = 0.000) and attitudes towards children (b = 3.002, p = 0.000) on their fertility intentions are even more pronounced. In addition, I observe the earlier described positive effects of a significant influence of contact frequency on people's subjective norms (b = 1.430, p = 0.000) and attitudes (b = 0.268, p = 0.012), and the observed negative effects of spatial proximity on attitudes towards children (b = -0.160, p = 0.008). This time also regional socio-economic conditions (GDP) frame attitudes towards children; these are more positive in regions with a higher GDP (b = 0.067, p = 0.000).

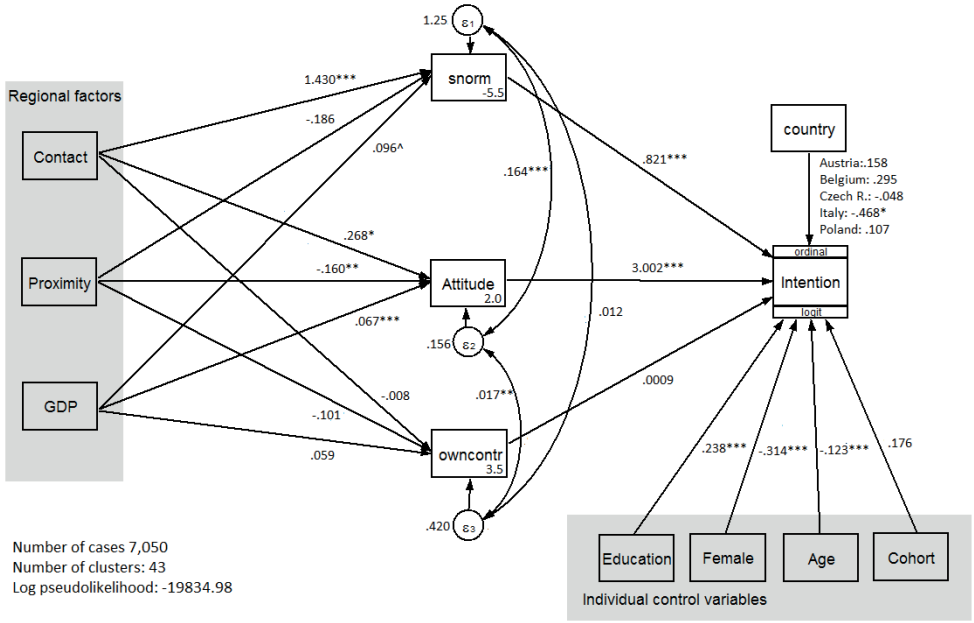

Figure 3.4: Path analysis explaining fertility intentions, for respondents with one or two children (aged 20- 35)

After I tested the direct effects of my family system indicators on people's attitudes, subjective norms and their perceived behavioural control, I increase the complexity and include the mediators specified in my conceptual model into my analysis (Figure 3.1). As described before, most of the effects of my family system indicators on the background variables included in the TPB likely work via these mediators. For simplicity Figures 3.5 and 3.6 only show the significant effects of the family systems indicators and GDP on the background factors included in the TPB. Full models are described in the Appendix 3.1.

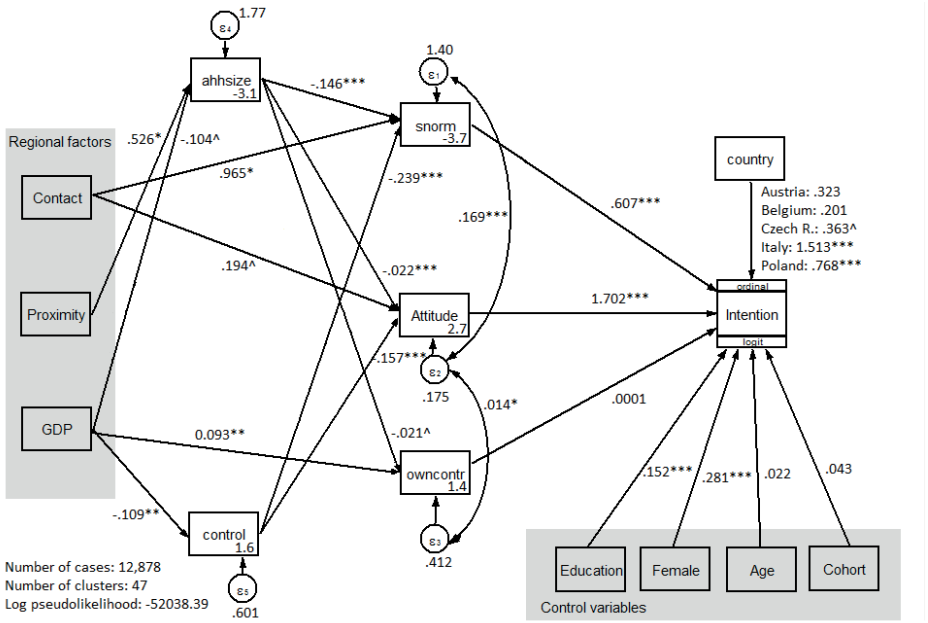

Figure 3.5: Path analysis explaining fertility intentions of childless respondents (aged 20 - 35) – extended model

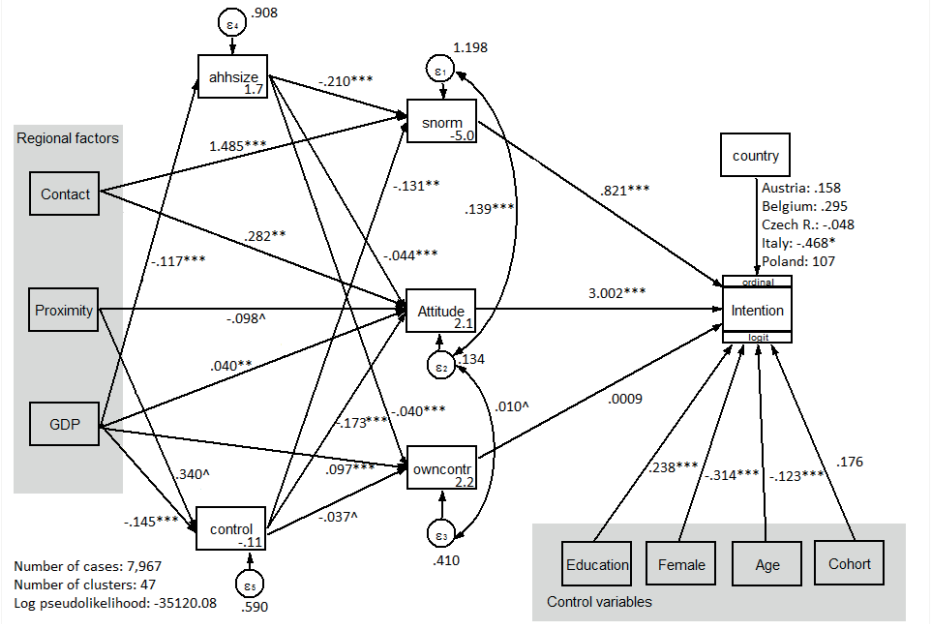

Figure 3.6: Path analysis explaining fertility intentions, for respondents with one or two children (aged 20- 35) – extended model

Looking at the results for childless respondents, Figure 3.5 demonstrates important changes in the effects of our family system indicators on the background variables specified in the TPB. Interestingly, the results suggest that contact frequency has only direct effects on subjective norms (b = .968, p = 0.032) and attitudes towards children (b = 194, p =0.054), while spatial proximity exerts only indirect effects. As expected the indirect effects of average spatial proximity among kin works via influencing respondent's household size (b = 0.526, p = 0.025). In regions with on average close spatial proximity between kin, indicating higher chances for kin in co-residence, respondents tend to live in larger households. Larger households decrease respondents' expected utilities of having children (b = -0.022, p = 0.000) and influence their subjective norms negatively (b = -0.146, p = 0.000). Accordingly, respondents more often expect negative reactions in their social networks in case of a childbirth.

Figure 3.6 presents the results for respondents who already have one or two children. As demonstrated by Figure 3.6, I still observe a direct effect of frequency of contact between kin on respondent's subjective norms (b = 1.485, p = 0.000) and attitudes towards children (b = 0.282, p = 0.001); the effects are nearly the same as in the reduced model (Figure 3.4). In addition, I observe a direct effect of regional family system norms regarding the spatial proximity between kin on respondents' attitudes towards children (b = -.098). This effect is close towards being significant (p = 0.063). Proximity between kin also has an indirect effect working through framing people's perceived requirements that need to be fulfilled before having children. In regions with on average close spatial proximity between kin, the perceived requirements are greater (b = 0.340, p = 0.069). Again, this effect is close to being significant. As expected, the perceived requirements then influence people's attitudes towards children, and their subjective norms negatively. The higher the perceived requirements, the less positive the attitudes towards children (b = -0.173, p = 0.000), and the more negative the expected reaction in respondent's social networks (b = -0.131, p = 0.001).

3.5 Discussion and conclusion

This chapter raised the question in how far regional family systems explain people's intentions to start a family or to have another child. Family systems are

said to influence fertility behaviours (Das Gupta 1997, 1999; Skinner 1997; Veleti 2001). However, the pathways through which this influence takes place have not been tested empirically. In addition, the effects of family systems on fertility intentions have largely been ignored. Inspired by the work of Ajzen and Klobas (2013) and Harknett, Billari and Medalia (2014), I study the associations between regional family systems and people's fertility intentions using path analysis as a tool to improve our understanding of the ways through which fertility behaviour is affected. These effects were expected to operate through influencing people's attitudes towards children, their subjective norms, and their perceived behavioural control. As demonstrated by the results, regional family systems play a role and frame the contexts in which fertility intentions are developed. However, their effects turned out to be more complex and partly different from what I had expected.

As demonstrated by the results, for both decision contexts (starting a family and having another child) the family system indicators significantly influence people's attitudes towards children and their subjective norms. While frequency of contact between kin influences people's subjective norms positively, supporting my second hypothesis **(H2)**, a negative effect of regional spatial proximity on people's attitudes towards children was observed, rejecting my first hypothesis **(H1)**. Although I assumed an opposite effect, based on a socialization hypothesis, my results support the finding that in countries and regions with frequent intergenerational exchange and co-resident mothers are less likely to be planning to have an additional child (Harknett, Billari and Medalia 2014: 19). Interestingly, I did not observe a significant effect of the two family system indicators on people's perceived behavioural control, rejecting my third hypothesis **(H3)**. However, in both analyses, people's perceived behavioural control did not play a role for their fertility intentions, either, while control variables that related to people's actual behavioural control, such as education, significantly influenced people's fertility intentions. Accordingly, people's own assumptions about their abilities to control their future might not be as important for framing their current fertility intentions. With fertility may be too far ahead in the future, factors such as education relate more directly to plans about the future life course. Moreover, this result might again relate to the fact that fertility intentions are not necessarily realized. There are many intervening factors, and fertility is a result of several antecedent behaviours, such as finding a partner or

having sexual intercourse (Birg 1992: 199; Huinink 1995: 157-158). In this context, perceptions about one's own behavioural control might gain of importance in determine fertility intentions with each decisional step taken.

Looking more closely at the pathways of the effects of family systems on fertility intentions, I observe that average frequency of contact representing social interaction with kin, influenced respondents' attitudes and subjective norms only directly. This effect seems plausible, because social interactions between kin relate to processes of socialization through which attitudes and ideas about the favoured behaviour in social networks are formed. Moreover, the direct effect of the regional average frequency of contact between kin, could relate to contagion effects of which respondents might not always be aware (compare Lois and Becker 2014: 131). Social contagion relates to an unconscious adoption of new attitudes or behaviours from others without perceiving potential sanctions ('getting used to'). It works most effectively through strong ties and close interactions (Keim 2011: 190-191). These processes seem to work independent of household size, which does neither include relations to kin in proximity, nor capture the type of kin living with respondents. Household size itself might not necessarily relate to different types of families, such as nuclear or extended households, because household size as such is also influenced by, for example, the number of siblings. In addition, the family system indicators might be more important in determining kin relationships that reach beyond the household, while influential kin is not necessarily limited to co-residential units (Hareven 1994). Last but not least, the shifts in residential patterns in strong family countries, such as Italy, from parents living in co-residence to parents living in close proximity (Viazzo and Zanotelli 2010: 73-75), suggest that the link between family systems and household structures has weakened. Respectively, regional family systems, as shared values by regional societies (Reher 1998: 215), might be more important in shaping people's social relationships in and beyond households. Accordingly, the variable 'household size' seems to be conceptualized too narrow to adequately chart differences in family types, while it is the mixture of different features of families which is probably influenced by the family system indicators.

This idea is supported by the pathways through which my second indicator, average spatial proximity, which is more directly related to patterns of kin residence, influences fertility intentions. Next to a significant direct effect on

attitudes in the case of having another child, possibly related to an increase in conflicts and competition between kin, the effect of average spatial proximity between kin indeed worked through the two mediating variables household size and requirements for having children. Regulating respondents' household size (in the case of starting a family) and framing the perceived preconditions for having children, such as a good financial situation (in the case of having another child), spatial proximity between kin exhibited negative effects on attitudes and subjective norms. In regions with, for example, close spatial proximity between kin requirements that needed to be fulfilled before having children occurred to be greater, supporting earlier research for example on Italy (Livi-Bacci 2001: 149; Dalla-Zuanna 2004: 111-115; Vignoli, Rinesi and Mussino 2013). These greater requirement lead to higher estimated costs of having children and expected negative reactions of others in respondents' social networks, and finally relates to the intention to postpone fertility. Again, these effects seem plausible, because in regions in which co-residence between kin is more common, also the degree of social support provided between kin is often greater (Reher 1998: 208-209; Esping-Andersen 1999: 35, 47; Hilgeman and Butts 2009: 107; Höllinger and Haller 1990: 115). Greater support obligations often result in an increase in resource competition between kin (Dykstra and Fokkema 2011). They, for example, raise the burdens of the middle-generations to care for both their parents and their children, who then probably expect higher costs and greater requirements for having children. Thereby, support obligations could lower the fertility intentions of individuals (Grundy and Henretta 2006: 708-710; Harknett, Billari and Medalia 2014: 6). In addition, facing these burdens, also close kin might be more willing to control fertility, since conditions favouring high levels of fertility are not given (Lorimer 1954: 201-202).

Although the pathways through which my family system indicators influenced people's fertility intentions turned out partly different from what I had expected, my results underline the importance of these organizational patterns of social relationships for people's fertility intentions. In addition, my results demonstrate that regional family systems relate to different fertility intentions through several pathways. These pathways gave us a better clue about the mechanisms through which family systems shape fertility. These have been often theorized, but not been tested empirically.

Appendix 3.1: Extra Figures

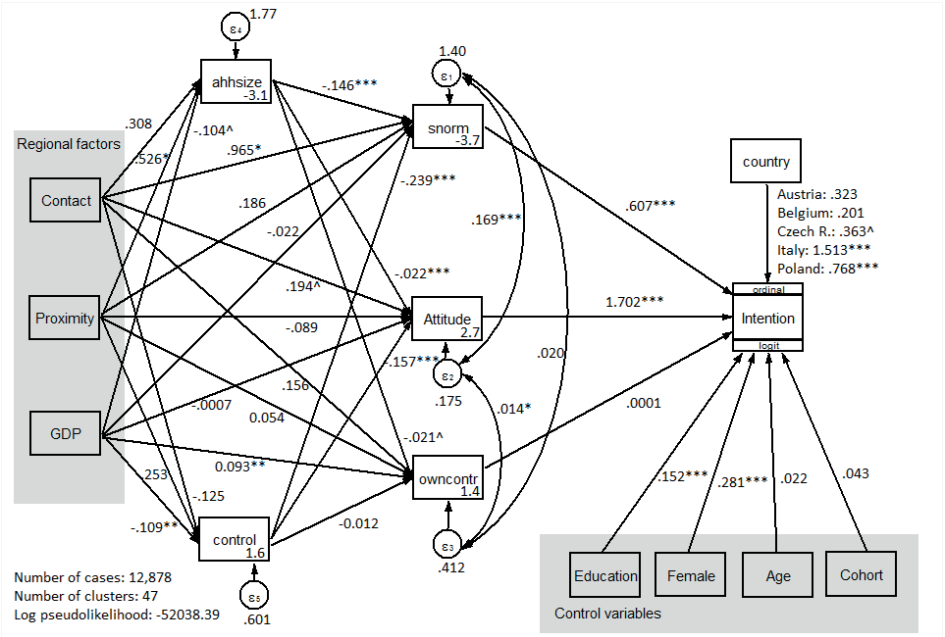

Figure A3.1: Path analysis explaining fertility intentions of childless respondents (aged 20 - 35) – full model

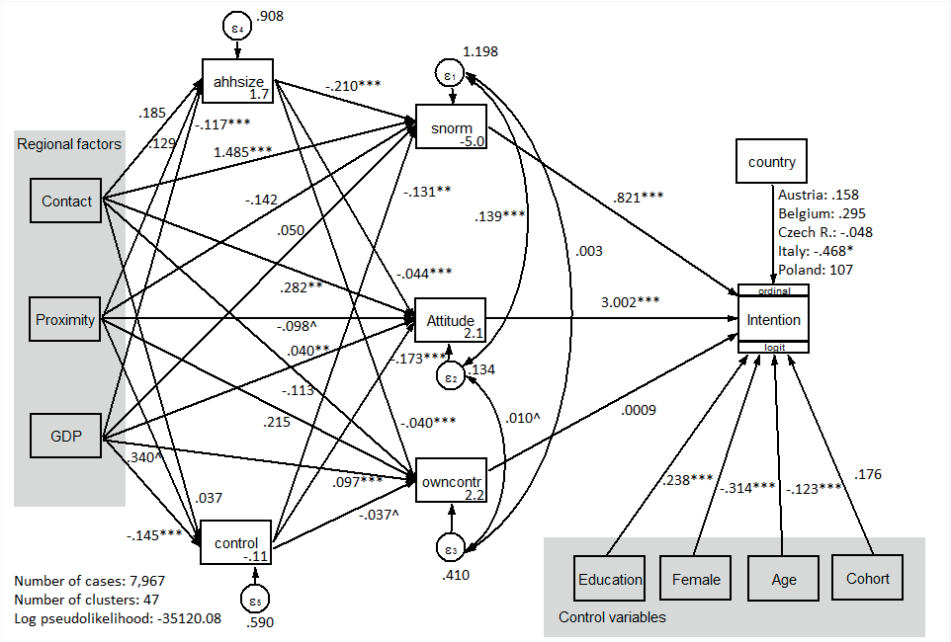

Figure A3.2: Path analysis explaining fertility intentions, for respondents with one or two children (aged 20- 35) – full model

Chapter 4: Family systems, social networks and family size of European cohorts born between 1920 and 1960[52]

Abstract: Despite important variations in regional family systems, little research has been done to assess the effects of these differences on fertility and thus on families economic status. Even less attention has been paid to the effects of deviating from these regionally embedded norms in terms of network compositions. People's social networks may not conform to the region's view of the ideal family, while this could have important implications for their fertility behaviour. To fill this knowledge gap, this chapter aims to answer two questions: to what extent do family systems shape family size, and to what extent do deviations from regional family system norms in terms of social network composition result in differences in completed fertility? To answer these questions, we use the first two waves of the 'Survey of Health, Aging and Retirement' and derive indicators describing regional family systems and people's social networks. We test the influence of these covariates on the completed fertility of cohorts born between 1920 and 1960 in 13 European countries. Our results show that family system norms, and deviations from them in terms of specific social networks, play an important role in determining family size.

[52] This chapter is based on:

Mönkediek, B. and Bras, H. (2016). Family systems, social networks and family size of European cohorts born between 1920 and 1960. *Economic History of Developing Regions*, 31(1): 136-166.

4.1 Introduction

Persistent regional differences in fertility can be observed across Europe. To explain the differences, researchers have drawn on economic factors (Becker and Barro 1988) and cultural factors (Lesthaeghe and Neels 2002: 349–351; Dalla-Zuanna 2007: 442) and also on differences in family systems (Macfarlane 1980; Micheli 2005: 80; Viazzo 2010a, 2010b). Studies of the effects of family systems on fertility are rare and often limited to broad classes of family systems and to specific regions or countries (Davis 1955; Burch and Gendell 1970; Hajnal 1982; Das Gupta 1999: 181; Veleti 2001; Micheli 2005). Some have used households or co-residential units to examine family systems and their influence on behaviour (Todd 1990; Madhavan, Adams and Simon 2003: 58), while especially more recent studies use indicators of social relatedness that extend beyond the household (Yorburg 1975; Reher 1998; Heady and Kohli 2010: 21; Viazzo 2010b: 144–148; Micheli 2012: 19). In these, and particularly in the influential study by Reher (1998), family systems are framed particularly in terms of geographical variation in strong ties (with family and kin) and weak ties (with friends and relatives).

Recent research on fertility emphasises social networks containing strong and weak ties that influence demographic behaviour (Chen 2006; Bühler and Fratczak 2007; Bernardi and White 2010: 181; Sear and Coall 2011; Keim 2011; Balbo 2012; Bernardi and Klärner 2014). These studies do not take family systems into account but focus rather on kin relations (for instance sibling ties) or are restricted to one region or country, limiting the possibility of comparing spatial variations in family systems (Ettrich, Mageda Anwer and Ettrich 1999, Kohler, Behrman and Watkins 2001; Madhaven, Adams and Simon 2003; Sear, Mace and McGregor 2003; Bühler 2004; Bühler and Philipov 2005; Bühler and Fratczak 2007; see Balbo 2012: 9).

In this article we combine both strands of research. We examine peoples' social networks, with either weak or strong ties, and look at the extent to which they conform to or deviate from the norms of the family system in their region and how this affects the peoples' fertility. Do the peoples have close-knit networks containing a lot of kin, or looser-knit networks with more friends than relatives, and how does this affect fertility? Do different regional views of the ideal network composition (i.e. different family systems) have different effects on

fertility? What are for instance the effects of living the same kind of social network in different family systems on the fertility? The basic research question is: If a person's social network composition differs from the organisation principles of the family system of their region, what effect does this have on their fertility? Studying the interplay between social networks and family systems and the effect of this interplay on fertility opens up a whole new perspective for understanding fertility differences in Europe.

In this chapter we base our analysis on the Survey of Health, Aging and Retirement (SHARE) and derive indicators to chart regional family systems and peoples' social networks and test their influence on the completed fertility of persons born between 1920 and 1960 in 13 European countries. For the purpose of my discussion, we define family systems as the regional culturally embedded norms, values and practices that frame people's kin relationships (Oppenheim Mason 2001: 160–161), and 'social network' as the network of people's social interactions and relationships with their kin.

4.2 Theoretical background

4.2.1 Family systems, households, and social networks

Family systems have long been studied on the basis of indicators that chart the organisation of households and, more recently, social networks (Todd 1990; Reher 1998; Viazzo 2010a). Important variations and changes in family systems in and between European countries have been observed (Höllinger and Haller 1990; Reher 1998; Micheli 2005; Santarelli and Cottone 2009; Viazzo and Zanotelli 2010: 75; Isengard 2013). In Italy, for instance, it has been found that traditional co-residence of parents and their children has steadily changed towards parents and children living in close proximity (Viazzo and Zanotelli 2010: 73–75). After leaving the parental home at a comparatively late age, children live not with but near their parents. Such developments mean that the social networks in which individuals of contemporary societies are living partly differ from the traditional notions of family systems that regard only households as being nuclear or extended. It is thus important when studying family systems to include relationships not only within but also beyond the household.

Empirical studies of the effect of social relationships and social networks on fertility show that kin beyond the household are important in structuring

people's demographic behaviour (Bonvalet and Lelièvre 2008: 377–383; Widmer and Jallinoja 2008: 397; Balbo 2012). Some of these studies also try to grasp the mechanisms by which family relationships may influence people's fertility, for instance through social learning, social support and social pressure (for an overview see Bernardi and Klärner 2014: 649–652).

'Social learning' refers to the way children adapt to family structures, behaviour and living strategies through socialisation (Barber 2000: 321–322; Bernardi, Keim and von der Lippe 2006: 359; Groppe 2007: 406–407). Siblings and other family members, especially those of roughly the same age, provide behavioural examples (Axinn, Clarkberg and Thornton 1994: 68; Bühler and Fratczak 2007; Balbo 2012) and are an important source of knowledge (Finkel and Finkel 1975: 256–257; Montgomery and Casterline 1996: 153–154). Knowledge about fertility will include such matters as gender roles or the preferred number, timing and spacing of children (Newson and Richardson 2009: 9). Some effects that have been shown are a stronger desire for children in people with many nephews and nieces (Axinn, Clarkberg and Thornton 1994: 77), a link between the fertility behaviour of siblings (Lyngstad and Prskawetz 2010), cross-sibling influence on the intention to have a first child (Balbo and Mills 2011), and substantial similarities between parents and their offspring in age of becoming a parent (Steenhof and Liefbroer 2008). Cross-sibling effects and similarities between parents and their children's fertility have been shown to be based partly on social and partly on genetic factors (Kohler et al. 2005; Bras, Van Bavel and Mandemakers 2013: 118).

'Social support' refers to the role of families as organizers of solidarity and providers of welfare (Reher 1998: 208–9; Esping-Andersen 1999: 35, 47). By providing or withholding resources and services, families can reduce the risk of life course decisions and influence other family members' fertility intentions and outcomes (Bühler and Frątczak 2007). The extent to which family can provide certain services is dependent on geographic distance. Some services, such as emotional support, can be provided from a distance with the help of modern communication technologies. Most services and types of help, however, can only be provided to family members co-residing in the household or living nearby (Litwak and Kulis 1987: 650; Höllinger and Haller 1990: 117). A co-resident grandmother, for example, can take care of the grandchildren, prepare food, help with housework, and so on (Reher 1998: 219–17; Sear, Mace and McGregor

2003; Tymicki 2004, 2008). Thereby, they can reduce the burden combining work with family. In social networks, where kin live in close proximity, they may feel more obligated to help each other, while the family is also more often used as the primary source of support (Caldwell 1978: 557–558; Höllinger and Haller 1990: 117, 120).

'Social pressure' refers to families' ability to control their members' behaviours, by pointing out norms and values and granting or withholding support. Norms may apply to such things as opportunities to meet with non-kin (Salamon 1977: 815–816), the use of media (Freedman, Takeshita and Sun 1964: 27), courting practices (Kok 2009: 15), or women's roles in the family (Moore 1990: 726–727; Oppenheim Mason 2001: 169, 169–70; Bernardi and Oppo 2008: 199–201). Already the possible reactions of other family members, and the risk of being sanctioned, can influence people's behaviour and prevent outcomes undesired by the family (Ajzen 1991: 183; Bernardi 2003: 538).

Parents can have a strong influence on their offspring's fertility. In pre-transitional and transitional societies[53] the motivation for controlling fertility was often linked to household economics (Van Bavel 2004: 103–104; Dalla-Zuanna 2007: 444, 448–451; Dribe and Scalone 2010; Amialchuck and Dimitrova 2012). Today, parental control over children's fertility is often linked to 'status anxiety', i.e. to maintain one's position on or climb the social ladder (Dalla-Zuanna 2007). A number of studies have demonstrated a negative effect of large family size on children's educational outcomes and chances of upward social mobility[54] (for an overview see Steelman et al. 2002: 248ff.). Among other reasons, this negative effect is explained by dilution of resources (time, material and non-material resources) among children of larger families (Blake 1981: 440; Steelman et al. 2002: 248; Bongaarts 2003; Micheli 2005; Dalla-Zuanna 2007: 450). Facing resource constraints, parents reduce fertility to increase the share of resources for each child, thereby improving their chances to move up the social ladder (Becker and Lewis 1974; Becker and Barro 1988).

Resource dilution and reduced opportunities for social upward mobility for children are a problem particularly in regions where public child care facilities are

[53] Pre-transitional and transitional societies are defined as societies before and during the modern fertility transition.
[54] This effect is more variable in pre-transitional societies or developing countries (Van Bavel et al. 2011; Lawson and Mace 2011: 334).

sparse and children's welfare is the responsibility of the family (Hilgeman and Butts 2009: 107; Balbo 2012: 100). In these regions, large family size more easily translates into a lower social status for the offspring generation since the burden of raising children is not moderated by the welfare state (Dalla-Zuanna 2007: 451). Regions without a well-developed welfare state are also often characterised by strong family systems, with close-knit social networks, through which parents more effectively control their offspring's fertility (Granovetter 2005: 34, 39–40; Dalla-Zuanna 2007: 452–453; Viazzo 2010b; Albertini and Kohli 2013). Although parents may rely on a pool of adult kin who could support and supervise children (Shavit and Pierce 1991: 328), social support is often limited to the co-residential unit (Albertini and Kohli 2013: 836), and is not necessarily linked to higher fertility (Jappens and Van Bavel 2012: 108–109).

4.2.2 Regional family systems and variance in social networks

The household organisation and the organisation of the wider family are associated with family systems (Reher 1998; Micheli 2005; Hank 2007). Since family systems are based on culturally embedded norms, values and practices and thus frame kin relationships and determine social duties and rights (Skinner 1997; Das Gupta 1999; Oppenheim Mason 2001: 160–161; Therborn 2004). They create ideals of the 'typical' family to which families may adhere, but from which they may also deviate to a certain degree. Bott (1971: 205–208, 212) demonstrated that the extent to which families were able to name such norms and how far they deviated from them depended on whether respondents lived in loose- or close-knit networks. Close-knit networks are characterised by large numbers of relatives, friends and neighbours who all know each other (p. 59). People in close-knit networks more often refer and consent to the norms, values and family ideals shared in their social networks (Bott 1971: 213). In loose-knit networks fewer members know each other, and this increases the variation in social norms in their social networks (p. 213-214).

According to Bott (2001: 295–296), relationships to kin are more likely to be close-knit and permanent than relationships to non-kin, which are more easily dissolved. Regions with strong family systems are thus more likely to be characterised by close-knit social networks, dominated by kin relationships, than those with weak family systems (Reher 1998; Micheli 2005; Viazzo 2010b). In

strong family regions, family members are more likely to share the same family norms and values and be able to enforce them more easily, which results in more commonly agreed upon family organisation principles. In weak family regions, social networks contain a greater variety of relationships with both kin and non-kin (Höllinger and Haller 1990; Mönkediek and Bras 2014) and a greater spatial dispersion between kin is observed (Viazzo 2010b: 147). This greater dispersion is often connected with a more generous welfare state, which allows for greater intergenerational transfers of resources and reduces the need for kin co-residence (Albertini and Kohli 2013). Since social norms are less coherent and less enforced in weak family regions, we expect a greater variety of social networks in these areas. Hence, we expect that *variation in families' social networks is greater in weak than in strong family regions* **(H1)**.

In line with hypothesis 1 above, we expect people's ideas about living strategies and family organisation to be more diverse in weak family regions, because their networks contain a greater share of non-kin. We assume that this also results in greater variability in fertility, since non-kin in social networks often link individuals to more distant networks parts, exposing them to different life concepts (as demonstrated by Newson et al. 2005, 2007). Accordingly, we expect that *differences in family size are more pronounced in weak family regions than in strong family regions* **(H2)**.

Family ideals and experiences that are transmitted from generation to generation will steer people's attitudes towards family organisation and children (Johnson and Stokes 1976: 176). Since social interactions between kin are closer and families are more highly valued in strong family regions, we would expect processes of socialisation to raise fertility in these regions. However, empirical research has shown that in societies in which group norms are more easily enforced, social norms 'overrule' the effects of socialisation (Van Bavel and Kok 2009: 357). In such societies, a positive socialisation effect seems to be counteracted by a higher burden of social support and by mismatches between family ideals and realities. This is the case, for example, in many Mediterranean countries. In these countries, public child care is sparse and the provision of welfare is seen as a family duty (Hilgeman and Butts 2009: 107; Balbo 2012: 100). At the same time, these countries favour family ideals and criteria for starting a family that are more complex and more difficult to conform to (Newson 2009: 470). For the case of Italy, Livi-Bacci (2001: 149) has shown that during

the mid-twentieth century certain life-course ideals developed that made setting up one's own household and acquiring a full-time job a precondition for getting married and having children. Nonetheless, many young Italians postponed setting up their own households because of the better economic circumstances in the parental household, the emotional closeness to their parents and the limited availability of independent living space on the housing market (Livi-Bacci 2001: 146–148; Dalla-Zuanna 2004: 111–115; Vignoli, Rinesi and Mussino 2013).

In strong family regions we expect socialisation effects to be counteracted by economic realities, since the welfare state facilities are insufficient to support the current family ideals and desired living styles. In weak family regions, by contrast, such effects may indeed play a role. The extensive public child care and welfare state provision reduces the burden of raising children, which limits the need to control offspring's fertility. Accordingly, a more generous welfare state allows for socialisation effects that increase people's desire for children. Finally, the more individualised family lifestyle not only fosters greater variety in the composition of families' social networks but also results in higher fertility. Our hypothesis for testing these assumptions is that *persons with close-knit networks have higher levels of completed fertility in weak than in strong family regions* **(H3)**.

4.3 Data, measures, and methods

4.3.1 Data

We used the first two waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) to answer our research questions and test our hypothesis. The first wave was conducted in 2004/05 in 11 European countries (Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden and Switzerland) and Israel. The second wave, conducted in 2006/07, contained a panel and a replication component, adding three more countries to the survey (Ireland, Poland and the Czech Republic). Together the two waves contain 31,168 respondents who can be identified as anchor persons (APs). Of these cases, 13,678 belong to the panel segment. Apart from the information on APs, the datasets contain information on members of the APs' households, and also modules that capture respondents' social relationships (for example, by asking

about help relationships). The target population of the survey was 50 years and older, allowing for the study of completed fertility histories.

The following analysis includes APs from only 13 European countries[55]. Persons born before 1920 and after 1960 had to be omitted from the analysis due to low case numbers (1,014 cases), limiting our analysis to cohorts born between 1920 and 1960. To make reliable statements about respondents' fertility and their location in Europe, we also excluded respondents with missing information on completed fertility (616 cases) or missing NUTS codes[56] (516 cases). Applying these selection criteria reduced N from 31,168 to 26,407 cases. In the regression analysis this number is even lower due to variable non-response. Moreover, some NUTS regions had to be excluded from the regression models because of very low case numbers[57] – leaving 15,252 cases. Table A4.1 of Appendix 4.1 shows the number of included cases per NUTS region.

4.3.2 Measures

Dependent variable

The dependent variable in our analysis is a person's completed fertility, which was charted by asking respondents about the number of living children. Table 4.1 lists the countries and cohorts. It shows that average completed fertility in the SHARE survey was 2.054. Austria, Germany, Italy and Greece lie clearly below this European average, while the Netherlands, Sweden, Spain, France and Denmark have higher values[58]. Fertility in the overall European cohort decreases over time, from 2.178 (birth cohort 1920–1930) to 1.914 (birth cohort 1951–1960). Looking at country-specific developments, we see a more complex

[55] Ireland had to be excluded from the analysis due to missing NUTS codes for some APs.
[56] NUTS (Nomenclature of Units for Territorial Statistics) is a hierarchical system dividing the Europe Union into clusters of comparable population size according to the administrative divisions laid down by the EU member states. Each country code starts with the international letter code for that country.
Source:
http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction;
http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/local_administrative_units; 14.11.14
[57] These were the Spanish regions of Cantabria, La Rioja and Ceuta, the French regions of Midi-Pyrenees and Corse, and the Polish regions of Lodzkie and Lubelskie (altogether 32 cases).
[58] The result for Spain is not surprising, because fertility decline in Spain started slightly later than in other Mediterranean countries (Peréz and Livi-Bacci 1992).

picture. In France and Austria, for example, cohort fertility fluctuates over birth cohorts. In some other countries, such as Germany and the Netherlands, we see an overall decrease in cohort fertility, while in other countries, such as France and Sweden, fertility even increases.

Table 4.1: Average completed fertility per country and cohort

Country (Nuts)	N (APs)	Average Fertility*	Average fertility Cohort 1920-30*	Average fertility Cohort 1931-40*	Average fertility Cohort 1941-50*	Average fertility Cohort 1951-60*
Austria (AT)	1351	1.907 (0.041)	1.876 (0.082)	1.994 (0.075)	1.854 (0.070)	1.916 (0.113)
Germany (DE)	2509	1.827 (0.031)	1.938 (0.078)	1.987 (0.055)	1.746 (0.050)	1.627 (0.067)
Sweden (SE)	2370	2.251 (0.033)	2.113 (0.074)	2.244 (0.063)	2.206 (0.049)	2.448 (0.086)
Netherlands (NL)	2351	2.314 (0.038)	2.696 (0.125)	2.589 (0.085)	2.136 (0.053)	2.081 (0.064)
Spain (ES)	1896	2.213 (0.042)	2.366 (0.102)	2.350 (0.083)	2.255 (0.073)	1.835 (0.084)
Italy (IT)	2326	1.932 (0.036)	2.273 (0.113)	2.036 (0.060)	1.768 (0.049)	1.637 (0.070)
France (FR)	2507	2.233 (0.040)	2.142 (0.082)	2.316 (0.081)	2.152 (0.064)	2.366 (0.101)
Denmark (DK)	1915	2.172 (0.032)	2.244 (0.086)	2.314 (0.069)	2.145 (0.051)	2.022 (0.060)
Greece (GR)	1840	1.841 (0.026)	1.962 (0.068)	1.894 (0.048)	1.726 (0.043)	1.818 (0.053)
Switzerland (CH)	1184	2.000 (0.042)	2.241 (0.107)	2.064 (0.088)	1.832 (0.067)	1.973 (0.080)
Belgium (BE)	2597	2.103 (0.032)	2.257 (0.087)	2.236 (0.062)	1.954 (0.047)	1.999 (0.061)
Czech Rep. (CZ)	1852	1.916 (0.031)	1.818 (0.082)	1.781 (0.052)	2.000 (0.055)	1.955 (0.062)
Poland (PL)	1709	2.453 (0.043)	2.626 (0.117)	2.627 (0.094)	2.518 (0.072)	2.179 (0.073)
Total N	**26,407**	**2.054 (0.014)**	**2.178 (0.037)**	**2.160 (0.027)**	**1.980 (0.022)**	**1.914 (0.031)**

Note: *weighted estimates with standard errors in brackets

Explanatory variables: Family systems and networks

Our main explanatory variables are two variables that take into account the geographical distance and the intensity of social relationships (frequency of social contact) between respondents and their kin. These variables, which reflect respondents' kinship networks, are also used to derive indicators of regional family systems.

The strength of kin relationships varies with the spatial and social distance (De Jong Gierveld and Fokkema 1998: 332; Heady, Gruber and Ou 2010a; Dykstra and Fokkema 2011: 549–550). Close kin relationships are likely to increase the effectiveness of mechanisms of social learning or social control due

to increased social interaction and increased social support (Granovetter 2005: 34, 39–40). To differentiate between different social networks, we derive two indicators that describe the geographical distance and the intensity of social relationships (frequency of social contact) between respondents and their kin. These indicators measure the social and geographical density of social networks on a continuum. This has the advantage of enabling us to identify a much broader variety of networks, since we do not use categories of predefined types. The indicators range from networks characterised by spatially and socially close relationships between kin (close-knit kinship networks) to networks that consist of very sparse connections between kin (loose-knit kinship networks) (Mönkediek and Bras 2014: 34-35).

To derive these indicators we use the information in the SHARE survey on the frequency of contact in and geographical proximity of respondents' current

1. co-residential relationships, i.e. individuals living in the respondents' households,
2. relationships to parents (if alive),
3. relationships to children (if they had any)[59],
4. relationships to (up to three) persons to whom they had provided any kind of help in the past 12 months,
5. relationships to (up to three) persons who provided the respondents with any kind of help during the past 12 months.

In contrast to earlier research on kinship networks based on geographical proximity and frequency of social contact, we include all the above described relationships and do not limit our study to specific family members or subsamples[60].

For the first indicator, average contact, for all kin relationships we add up

[59] For relationships to children, 'frequency of social contact' was gathered in the survey only for the first four children and information on 'spatial proximity of parents to their children' was gathered for all children.

[60] Hank (2007: 171) included *only the child* with the closest spatial or social contact in his analysis. Kohli et al. (2005) mostly did the same. Dykstra and Fokkema (2011) created their typology on the basis of (1) whether parents had a child living within a 5 km range, while having contact with at least one of their children every week, (2) whether respondents felt highly responsible for caring for their children or grandchildren and (3) the *direction of intergenerational transfers*, applying latent-class-analysis (LCA). They also restricted their sample to respondents with at least one child without parent-child co-residence (Dykstra and Fokkema 2011: 551–553).

the frequency of social contact and divided by the sum of all social ties in the network. In this way we create a personal mean value for each respondent, reflecting the density of the kinship network (Mönkediek and Bras 2014: 35). The variables capturing the frequency of contact between respondents and their alter-egos range from (1) 'daily' contact to (7) 'never' having contact[61]. For co-resident relationships, where no information on the frequency of social contact was provided, we assume 'frequent' social contact, as the probability of meeting each other every day was rather high. After rescaling our variable, a higher score of our family system indicator reflects on average more frequent social contact between kin. It now ranges from one ('no contact' with existing family and kin members) to seven ('very frequent' contact).

For the second indicator, average spatial proximity, we count all family relationships, added up the spatial proximity scores, and divide their sum by the number of all family ties in the network, thus creating a mean value reflecting the spatial density of the family network (Mönkediek and Bras 2014: 35-36). The original variables, which contain the information on spatial proximity between kin, range from (1) 'in the same household' to (9) 'more than 500 km away in another country'[62]. Our constructed variable ranges from one to nine, with a higher value indicating closer spatial proximity between individuals and their kin.

Aggregating our two network indicators to the regional level (NUTS 2), we derive two parameters of regional family systems (for a more detailed description see the Methodological Appendix M1). An evaluation of these two parameters suggests that they are well suited to identify regional differences in family systems (see Methodological Appendix M2). Figure 4.1 shows the mean values of our network indicators for the European countries – thus showing regional family systems per country. Looking more closely at the two parameters, we identify three clusters of European countries: the first consisting of France, Sweden and Denmark, the second of the Netherlands, Germany, Switzerland, Belgium, Austria and the Czech Republic, and the third of the

[61] The variables differentiate between the categories: (1) daily, (2) several times a week, (3) about once a week, (4) about every two weeks, (5) about once a month, (6) less than once a month, and (7) never having contact.
[62] The variables differentiate between the categories: (1 in the same household', (2) in the same building', (3) less than 1 km away, (4) between 1 and 5 km, (5) between 5 and 25 km, (6) between 25 and 100 km, (7) between 100 and 500 km, (8) more than 500 km, and (9) more than 500 km in another country.

Mediterranean countries (Greece, Spain and Italy). Poland seems to score in between the Mediterranean and the central European cluster. As higher values of both indicators reflect networks that are more family-centred, our results confirm other research findings of strong family bonds in the Mediterranean and weak family ties in the Nordic countries (Höllinger and Haller 1990; Reher 1998; Guerrero and Naldini 1996: 56-59).

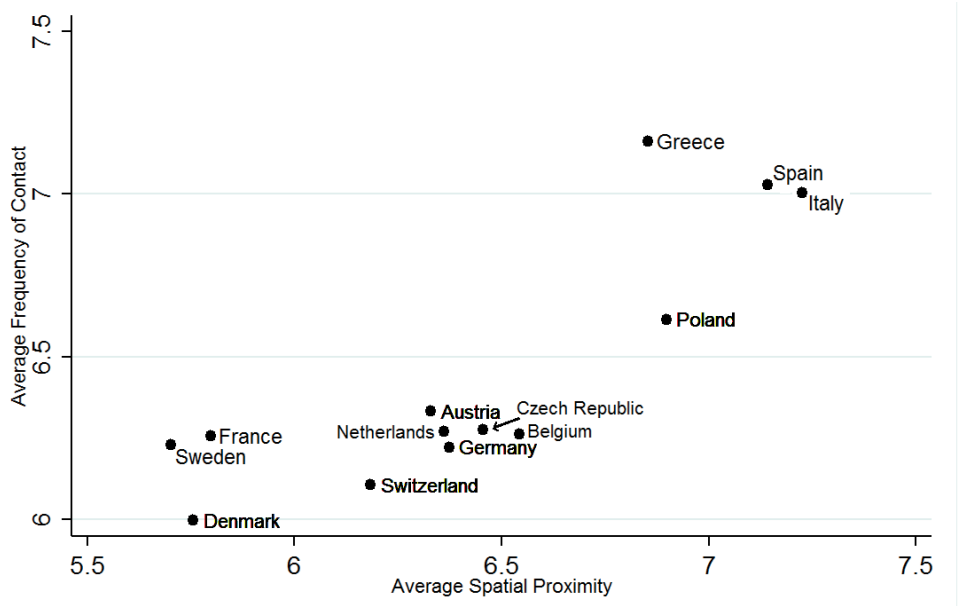

Figure 4.1: Average kinship network density in European countries (identifying family systems)

Control variables

As well as our main explanatory variables, we include several control variables in our analysis (see Table 4.2).

Birth cohort. Birth cohort is included to account for changing effects of family networks over time. We differentiate between the following birth cohort groups, with the youngest as the reference category: 1920–30, 1931–40, 1941–50, 1951–60. In the different countries, between 56% and 69% of the respondents were born between 1931 and 1950.

Country. Country dummies are included to control for national differences in fertility behaviour.

Degree of urbanisation. Previous research has shown that networks tend

to be more familial dense in rural areas (Höllinger and Haller 1990: 112, 119). To control for this, we construct a dummy variable measuring whether the respondent's current place of residence is urban or rural.

Educational level. Differences in completed fertility may also be the result of socio-economic status, as has been found in previous research (Danziger and Neuman 1989: 25; Anderton et al. 1987). To control for social status effects we include respondents' education, measured by the ISCED-97 classification[63]. The categories 'first stage tertiary' and 'second stage tertiary' are pooled because of low numbers. In our dataset about 30.7% of the respondents have pre-primary or primary education, about 48% have lower or upper secondary education, and 21.3% have tertiary education, reflecting the expected educational distribution for the included birth cohorts. Looking at country averages (weighted), we find differences in education between respondents in Denmark and Germany and those in the Mediterranean countries, with the former having a higher average level of education. This may be partly due to differences in the country-wise distribution of the included birth cohorts.

Regional socio-economic characteristics. Finally, variances in the fertility levels of respondents from different European regions may be the result of socio-economic characteristics of these regions. To control for such differences, we include in my models the regional Purchasing Power Standard per inhabitant (PPS) for the year 2000. These regional values are derived from Eurostat[64]. Although these data do not reflect the socio-economic characteristics of a region during the reproductive lifespan of the respondents, they are still a valuable indicator of socio-economic disparities, which appear to be relatively persistent.

[63] For more information on ISCED-97 see: http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm (access date: 18.02.15).
[64] Source: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en (20.06.14)

Table 4.2: Descriptive statistics (control variables)

Country	N	Mean education (ISCED - 97)*	N Birth cohort 1920-1930	N Birth cohort 1931-1940	N Birth cohort 1941-1950	N Birth cohort 1951-1960	N Urban
Austria	1351	2.982 (0.038)	284 (21.0%)	451 (33.4%)	467 (34.6%)	149 (11.0%)	1,205 (89.3%)
Germany	2509	3.322 (0.024)	427 (17.0%)	754 (30.1%)	841 (33.5%)	487 (19.4%)	1,715 (69.7%)
Sweden	2370	2.706 (0.034)	425 (17.9%)	668 (28.2%)	889 (37.5%)	388 (16.4%)	1,948 (83.5%)
Netherlands	2351	2.703 (0.032)	347 (14.8%)	540 (23.0%)	910 (38.7%)	554 (23.6%)	1,834 (79.2%)
Spain	1896	1.651 (0.040)	400 (21.1%)	550 (29.1%)	549 (29.0%)	397 (20.9%)	1,721 (93.5%)
Italy	2326	1.864 (0.029)	353 (15.2%)	787 (33.8%)	815 (35.0%)	371 (16.0%)	1,310 (56.8%)
France	2507	2.331 (0.041)	524 (20.9%)	622 (24.8%)	825 (32.9%)	536 (21.4%)	1,779 (71.8%)
Denmark	1915	3.259 (0.034)	337 (17.6%)	418 (21.8%)	690 (36.0%)	470 (24.5%)	1,502 (79.6%)
Greece	1840	2.055 (0.038)	343 (18.6%)	522 (28.4%)	606 (32.9%)	369 (20.5%)	1,585 (86.2%)
Switzerland	1184	2.824 (0.039)	205 (17.3%)	294 (24.8%)	390 (32.9%)	295 (24.9%)	596 (50.9%)
Belgium	2597	2.787 (0.034)	517 (19.9%)	659 (25.4%)	878 (33.8%)	543 (20.9%)	2,018 (78.2%)
Czech Republic	1852	2.700 (0.037)	284 (15.3%)	449 (24.2%)	700 (37.8%)	419 (22.6%)	1,235 (67.9%)
Poland	1709	2.240 (0.035)	270 (15.8%)	396 (23.2%)	590 (32.8%)	483 (28.3%)	912 (53.8%)
Total N	**26,407**	**25,945**	**4,716 (17.9%)**	**7,110 26.9%)**	**9,120 (35.5%)**	**5,461 (20.7%)**	**26,072 (74.3%)**

Note: *weighted means, standard deviations in brackets

4.3.3 Methods

Before we could test our hypotheses using regression analysis, we had to solve three problems. The first was the co-existence of different sampling methods in the target countries of the SHARE waves. We solved this problem by weighting our coefficients using the weights included in the SHARE survey (Klevmarker, Swensson and Hesselius 2005). The second problem was that the respondents' social relationships and family size were measured at the same point in time, after they had completed their fertility. In addition, respondents' social networks include relationships to their children. Both aspects lead to a problem possible reversed causality (endogeneity), represented by the form:

$$fertility = network\ indicator * \ y_{10} + X'\beta_{10} + \varepsilon_1$$
$$network\ indicators = fertility * \ y_{20} + X'\beta_{20} + \varepsilon_2$$

Earlier research has reported significant differences in parent-offspring relationships between regions with different family systems (Hank 2007). Parent-offspring relationships can thus be used to identify differences in regional family systems and, related to this, differences in kinship networks. Nevertheless, to deal with both issues we decided to use an instrumental variables (IV) regression, which is applicable when regressors are endogenous or mismeasured and standard inferential methods are invalid (Ebbes, Wedel and Böckenholt 2009: 446; Lewbel 2012: 67). In this study we use Lewbel's approach (LA) (Lewbel 2012), which can be applied when no instruments or only weak instruments are present. Using information on the heteroscedasticity in the data, instruments are generated out of existing variables by multiplying the heteroscedastic error terms from a first stage regression with the subset of mean-centred exogenous regressors (Z) (Lewbel 2012: 73; Brown 2014: 38). (See Appendix 4.2 for a more detailed description of Lewbel's approach (LA) and a test of its assumptions.)

The LA has one drawback: its estimates are less reliable than those of traditional IV models (Lewbel 2012: 67). Following Lewbel's suggestion (2012: 77), we therefore augment our approach by including one traditional instrument found in the dataset. This improves the model's estimation efficiency. In this study we use people's opinions about the provision of welfare. Respondents were asked to indicate, on a scale of one to five, whether the state, the family, or a mixture of the two should 'give financial support', 'help with household chores' and 'provide personal care' for older persons in need (Cronbach's alpha = 0.80). The resulting variable 'welfare orientation' is nearly normally distributed (mean 3.095, std. err. 0.009), and correlated with the network indicators but not with respondent's completed fertility. Unfortunately, a lot of values are missing from this variable, reducing the N in our analysis from 24,036 to 15,252 cases.

The third problem was that we had to take the hierarchical structure of the SHARE dataset into account. Individuals are nested in NUTS 2 regions, which are nested in countries. The LA is based on the specification that the number of instruments (including all exogenous regressors) is not larger than the number of clusters in the dataset – otherwise this would lead to problems in the identification of the model (Baum, Schaffer and Stillman 2007: 485). In our case, we only have 13 countries, which constitute the highest level of clustering. This number lies below the various rules of thumb for the number of clusters needed

to get consistent estimates of the standard errors within multi-level regression models (Stegmueller 2013; Cameron and Miller 2011). In addition, the number of instruments generated from our control variables exceeds the number of countries. To estimate our models successfully and reduce the number of clusters needed for model identification, we first partialed out the effects of the control variables in the regression models. To account for the clustered data structure, we included country fixed effects (Cameron and Miller 2011, 2015: 331-332). Since these effects do not completely capture all within-country correlation of the error term (Cameron and Miller 2015: 329-330), we also derived cluster robust error terms at NUTS 2 levels, to further correct the estimates.

4.4 Results

4.4.1 Descriptive results

In order to test our first hypothesis **(H1)**, that variation in families' social networks is greater in weak than in strong family regions, we created a variable to capture the variation (variance) in contact frequency and spatial proximity between kin in each NUTS 2 region[65]. Looking at the averages (see Figure 4.2), we find little variation in peoples' social networks in Sweden and in strong family countries such as Spain and Italy. There is more variation in spatial proximity between kin in Greece. Interestingly, we also observe large variation in frequency of contact between kin in Denmark, though the average variation in spatial proximity is comparatively low. Apart from that, the variation in network indicators is comparatively high in most central European countries, as represented by their country averages (Austria, Germany, France and Switzerland). Thus, in contrast to our expectation, variation in social networks is not necessarily higher in weak than in strong family countries, which already rejects our first hypothesis **(H1)**.

[65] For Germany information was only available on NUTS 1 levels. For Denmark, where the information was available on NUTS3 levels, we aggregated regions into three higher clusters (north, west, south and east Denmark).

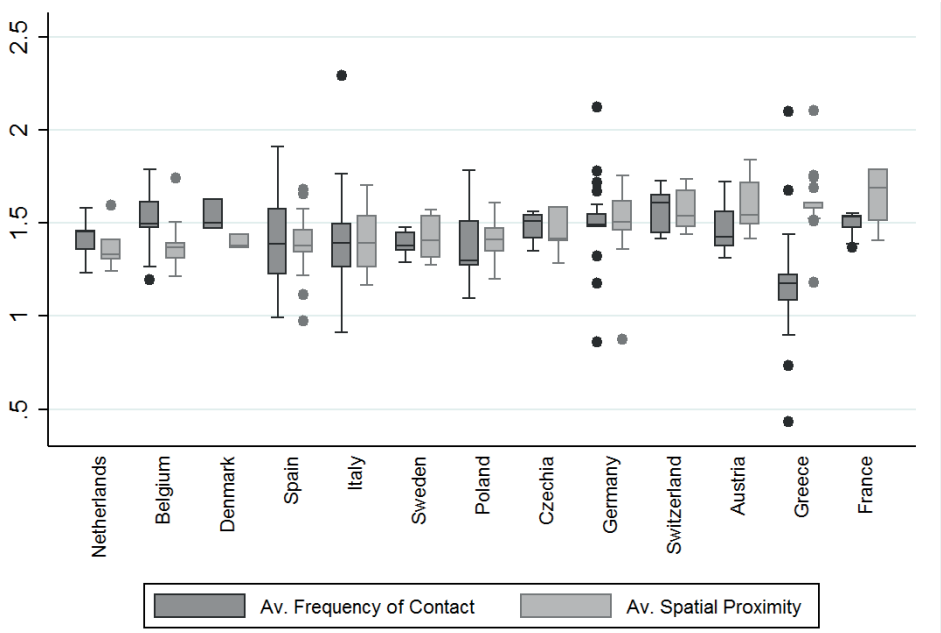

Figure 4.2: Regional variance in contact frequency and spatial proximity between kin (NUTS2), per country

Intriguingly, we observe strong regional differences within most European countries as described by the boxplots. While the differences in social networks among Swedish regions are rather small, in Italy, Poland, Spain, Greece, France and Germany they are quite large. Comparing regions, we observe many outliers in Germany, Greece and Spain, suggesting important regional differences in family systems. Mapping those differences (see Figure 4.3 and Figure 4.4), the divergences between Italian regions seem to follow the standard division of Italy into two Italian family systems, which has also been observed by several other researchers (for an overview see Micheli 2012: 30–31). In northern Italy, where the stem family model prevails (Micheli 2012: 30), we observe very little variation in spatial proximity among kin. At the same time, we observe large variation in proximity among kin in southern Italian regions, where children leave home and establish their own households earlier, but stay in close proximity to their parents (Santarelli and Cottone 2009: 6–8; Micheli 2012: 30). This result is less clear with respect to variations in frequency of contact among kin (see Figure 4.4). Looking at these two regions and comparing their fertility levels, we observe higher fertility in the southern Italian regions of Calabria (2.480), Campania (2.562) and Sicilia (2.211) and on average smaller family sizes in the

northern parts of Italy (Emilia-Romagna: 1.602, Liguria: 1.190, Lombardy: 1.670). Interestingly, these regional differences follow the diverse and persistent pattern of regional fertility decline, observed by Peréz and Livi-Bacci (1992: 164). While the regional pattern in Italy suggests that fertility levels are higher in regions with more variability in social networks, for Spain and Greece this picture is much less clear. For most parts of Spain, the picture is even reversed. Fertility is lower in regions with more variation in social networks (Galicia: 1.886, Castile and León: 1.901, Aragón: 1.850) and higher in regions with less variation (Andalucía: 2.830, Murcia: 2.754, Navarra: 2.537). Only in a few Spanish regions (Catalonia: 2.241, Valencia: 2.016) variability in social networks and fertility levels are high.

Finally, it is not only fertility that is lower in regions characterised by more variation in social networks; there is a significant negative association between regional variance in spatial proximity among kin and variation in family size (rho: -0.063; P = 0.000). This rejects my second hypothesis **(H2)**, that *differences in family size are more pronounced in weak family regions than in strong family regions*. The results show that variation in family size is not necessarily greater in weak family regions.

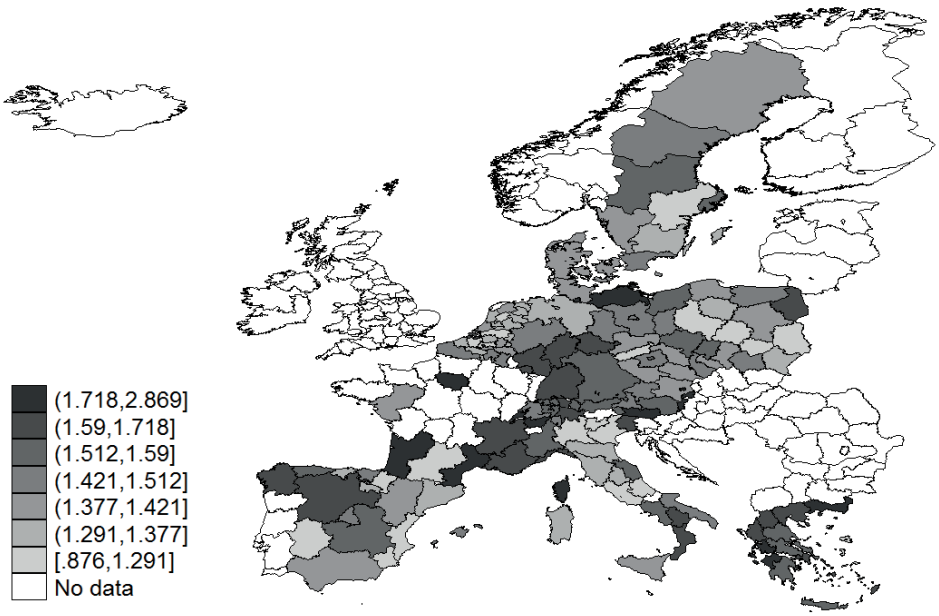

Figure 4.3: Regional variance in family systems based on spatial proximity between kin

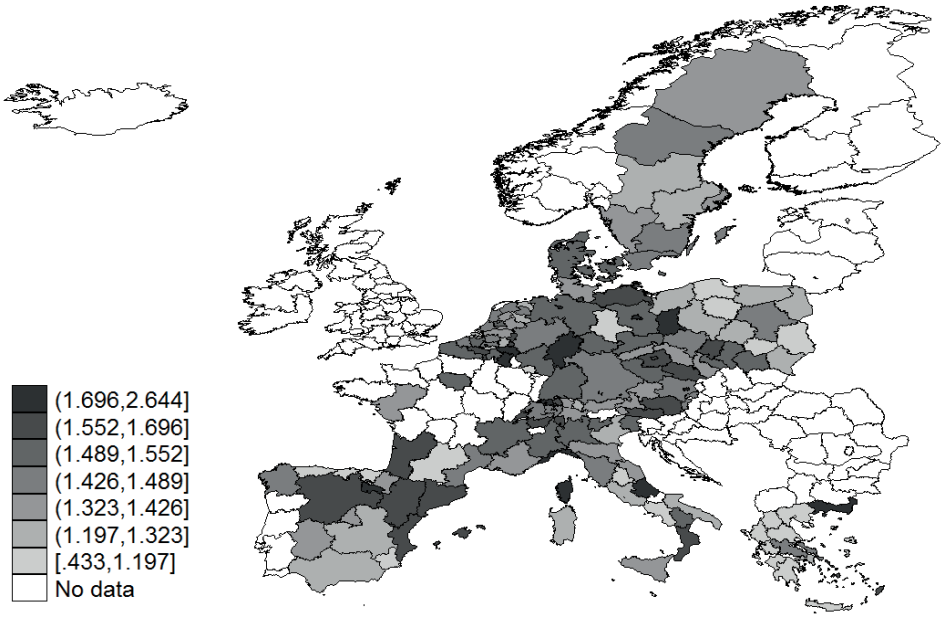

Figure 4.4: Regional variance in family systems based on frequency of contact between kin

4.4.2 Regression results

Tables 4.3 and 4.4 present the results of using the LA and the augmented LA (LA+) and also OLS estimates for each model for further comparison. In all models the effects of the control variables were partialed out to reduce the number of excluded instruments. The test of the model assumptions is described in Appendix 4.2. As reported, all model assumptions are fulfilled.

First of all, the effects of the network indicators on completed fertility (Table 4.3), suggest that deviations in social networks from the regional means (family systems) have a significant effect on people's fertility. Individuals whose networks are characterised by closer proximity between kin than the regional averages would suggest, have significantly lower fertility (models 3.2 and 3.3). Interestingly, we find no direct effects of the family systems variables on family size. Yet, as demonstrated by models 3.2 and 3.3, there is an effect of regional variance in social networks on fertility. In regions with more variation in social networks, fertility is lower, thus reducing possible variation in fertility, too. Hence, not only the degree to which individuals deviate from regional family systems matters, but also the regional coherence in social networks is of importance.

Table 4.3: Instrumental variables regression results, explaining regional fertility variation

	Model 3.1 OLS		Model 3.2 LA		Model 3.3 LA+	
Variables	***Coef.***	***P>***	***Coef.***	***P>***	***Coef.***	***P>***
	Individual Factors					
Contact freq. (mean centered)	0.052	*	0.045		0.046	
Spatial prox. (mean centered)	-0.191	***	-0.177	***	-0.177	***
	Regional Factors					
Av. regional contact frequency	-0.303		-0.306		-0.307	
Av. regional spatial prox.	-0.123		-0.111		-0.110	
Regional variance contact freq.	-0.630	*	-0.626	*	-0.626	*
Regional variance spatial pro.	-0.150		-0.144		-0.142	
Hansen J			115		116	
jdf			108		109	
jp			0.311		0.295	
N	15,252		15,252		15,252	
F Test (P > F)	25.05	***	12.24	***	12.15	***
Clusters	136		136		136	

Note: The effects of the control variables have been partialed out; weighted output
^p < 0.10, *p < 0.05, **p < 0.01, ***p< 0.001

To test our third hypothesis **(H3)**, that *persons with close-knit networks have higher levels of completed fertility in weak than in strong family regions*, we include two interaction terms in our models. These terms link deviations in social network composition with differences in the regional means (reflecting different family systems). The results (models 4.2 and 4.3 in Table 4.4) show that a network with spatially closer ties to kin than the regional average has a negative effect on peoples' fertility. This effect turns out to be different from what we expected. Since there is the possibility that this general effect is different between weak and strong family systems, we also test how far the effect varies between such regions. Looking at the interaction term suggests no significant changes in the effects. Hypothesis **H3** is therefore rejected.

Finally, we test how far there are changes in the effects of deviating from

regional family system norms in terms of social network composition between regions with more or less variation in social networks. We therefore include another interaction term. The results show (models 4.5 and 4.6 of Table 4.4) a positive interaction effect for differences in frequency of contact between kin and the regional variance in social networks. This effect is again significant (p = 0.015), suggesting that the negative direct effect of deviating from regional family system norms is absorbed by contact frequency to kin (p = 0.029) in regions characterised by more variation.

Table 4.4: Instrumental variables regression results, explaining completed fertility

	Model 4.1 OLS		**Model 4.2 LA**		**Model 4.3 LA+**		**Model 4.4 OLS**		**Model 4.5 LA**		**Model 4.6 LA+**	
Variables	***Coef.***	***P>***	***Coef.***	***P>***	***Coef.***	***P>***	***Coef.***	***P>***	***Coef.***	***P>***	***Coef.***	***P>***
					Individual Factors							
Contact freq. (mean centered)	0.051	*	0.043	^	0.043	^	-0.388	*	-0.483	*	-0.484	*
Spatial prox. (mean centered)	-0.191	***	-0.185	***	-0.185	***	-0.365	*	-0.308	^	-0.304	^
					Regional Factors							
Av. regional contact frequency	0.121		0.074		0.069							
Av. regional spatial prox.	-0.195		-0.153		-0.148							
Regional variance contact freq.							-0.404	*	-0.389	^	-0.390	^
Regional variance spatial pro.							-0.044		-0.042		-0.043	
					Interaction Terms							
Av. reg. contact x Contact freq. (mean centered)	-0.106	^	-0.087		-0.087							
Av. reg. prox. x Spatial prox. (mean centered)	-0.002		-0.009		-0.010							
Reg. variance contact freq. * Contact freq.							0.298	*	0.357	*	0.357	*
Reg. variance spatial prox. * Spatial prox.							0.115		0.084		0.082	
Hansen J			120		123				121		122	
jdf			108		109				108		109	
jp			0.209		0.172				0.179		0.194	
N	15,252		15,252		15,252		15,252		15,252		15,252	
F Test (P > F)	24.79	***	22.12	***	22.02	***	27.61	***	17.73	***	17.60	***
Clusters	136		136		136		136		136		136	

Note: The effects of the control variables have been partialed out; weighted output
^p < 0.10, *p < 0.05, **p < 0.01, ***p< 0.001

4.5 Discussion and conclusion

The central question of this article was: To what extent does the interplay of regional family systems and social networks shape the fertility behaviour of people born between 1920 and 1960? We measured the structure of social networks using two network indicators which reflect the average frequency of social contact and the average geographical proximity among respondents and their kin. Aggregating these measures on regional levels (NUTS 2) provided us with indicators reflecting regional family systems. Comparing social networks of individuals with the derived regional indicators, we were able to identify the degree to which individuals' networks deviated from regional family system norms and how this influenced their fertility. We tested the effects of regional family systems and family network indicators on fertility using the instrument free Lewbel's approach (LA) (Lewbel 2012). This approach is new to demographic studies, but its usefulness has been demonstrated in other disciplines (Rigobon 2003: 77; Rigobon and Rodrik 2005: 536; Emran and Shilpi 2012: 1136). The results of our regression models suggest that both regional family systems and peoples' social networks play a role, influencing completed fertility.

Regional family systems play a role in that they lay down the ideals of the 'normal' family from which peoples' social networks could differ. While the impact of the indicators (distance from and social contact with kin in social networks) measuring regional family systems on fertility turned out to be insignificant, our results demonstrated that deviations from these regional family system norms in terms of social network composition influenced people's fertility significantly. However, contradicting our expectations, closer ties to kin led to lower fertility in all family system regions and not only in strong family systems as we had expected. Although this result seems to confirm the negative effect of closer family bonds on fertility (Livi-Bacci 2001), it is puzzling to see that this effect was the same in weak and strong family regions.

Mapping the variance of the two network indicators in each NUTS region, we observed a greater variability in peoples' social networks according to distance from and contacts with kin) in the central and most southern European regions (Figures 4.3 and 4.4). This descriptive result is surprising too, because was the opposite of what we had expected. We expected to observe a greater variety in social networks, which would result in higher fertility in the weak family

regions. Surprisingly, in the weak family northern European regions the coherence in social networks turned out to be comparatively strong. The more individualised life concepts, together with the more generous welfare state of the Scandinavian countries (Reher 1998; Albertini and Kohli 2013), may in fact have reduced the range of family configurations. Together, these factors seem to support the extant norms of living separated from kin, which facilitates networks where kin tend to live outside the household, but in close proximity (Albertini and Kohli 2013).

At the same time, the steady nuclearization of for instance Italian families (Viazzo 2010b: 146), seems to result in less coherence in social networks. For the Mediterranean countries, we observed important regional differences in family systems and coherence in social networks. This corroborates the already observed variations in family organisation between, for example, Italian regions (Viazzo 2010b: 146; Viazzo and Zanotelli 2010; Micheli 2012). The lower fertility in the strong family regions and the greater variety in social networks can be linked again to the welfare state. Especially in the strong family Mediterranean countries, the welfare state increased the differences among regional family ideals and styles of living, leading to fertility postponement (Livi-Bacci 2001: 146–148; Vignoli, Rinesi and Mussino 2013).

The better fit between family norms and lifestyles in the weak family Nordic countries might explain why we observed a negative effect of stronger family ties on fertility. The better fit leads to higher fertility, while the misfit between family norms and lifestyles in the strong family Mediterranean countries reduces it. From this point of view, there seems to be no positive effect on fertility of living in close-knit family networks in weak family regions, as long as family in proximity provide practical and emotional support. Yet this could be different again in regions where family system norms allow for a greater variety in networks, such as in the central European ones (Albertini and Kohli 2013: 836).

Thus our results demonstrate that the negative effect of closer bonds (based on contact frequency) on fertility is weaker in regions characterised by less cohesion in social networks. Particularly in central European countries cohesion is rather weak. This result corroborates the idea that closer bonds in weak family regions support fertility when the context is right. This context seems to be the link between regional family norms, the welfare state which

frames peoples' socio-economic context and the actual family organisation. In the central European regions, the misfit between family ideals (family systems) and family organisation seems to be less pronounced than in the Mediterranean countries. At the same time, familial support does not stop at the household border, as it does in many Mediterranean countries (Albertini and Kohli 2013: 836). Given the traditional welfare state, there is thus still added value in living in close-knit family networks in these parts of Europe, which could increase fertility.

Our research contributes to understanding the persistent regional differences in fertility levels and fertility behaviour across Europe. To understand these spatial differences, our study related people's fertility decisions to the regional conceptions of family and kin as anchored in family systems and to people's actual social networks and the role family plays in them. The results show that we can improve on previous research into regional fertility differences by measuring people's complete social networks and not just their household composition. Our results show that family system norms, and deviations from them in terms of specific social networks, play an important role in determining family size. However, our findings also suggest that in order to better explain the interplay between family systems, social networks and fertility, we need also to take into consideration the national welfare state or organisation. This is an important alternative source of welfare which may mediate the interplay among family systems, social networks and fertility in important ways. Hence future research should investigate this issue further by theorising the possible linkages and testing them by including information on welfare organisation.

Appendix 4.1: Extra tables

Table A4.1: Cases per nuts regions

Code	Name	N	Incl.	Code	Name	N	Incl.	Code	Name	N	Incl.	Code	Name	N	Incl.	Code	Name	N	Incl.
AT11	Burgenland	49	39	CZ01	Praha/Prague	201	109	**FR62**	**Midi-Pyrénées**	**3**	**not**	ITF3	Campania	171	100	PL52	Opolskie	68	62
AT12	Niederoesterreich	315	266	CZ02	Stredni	204	110	FR71	Rhône-Alpes	425	191	ITF4	Puglia	173	87	**PL61**	**Kujawsko-Pomorskie**	**98**	**not**
AT13	Wien	261	202	CZ03	Jihozapad/Southwest	250	153	FR81	Languedoc-Roussillon	243	103	ITF5	Basilicata	68	47	PL62	Warminsko-Mazurskie	89	37
AT21	Kaernten	66	53	CZ04	Severozapad/Nothwest	142	72	FR82	Provence-Alpes-Côte d'A.	238	180	ITF6	Calabria	94	14	PL63	Pomorskie	58	39
AT22	Steiermark	176	131	CZ05	Severovychod/Northeast	272	171	**FR83**	**Corse**	**5**	**not**	ITG1	Sicilia	194	81	SE01	Stockholm	448	311
AT31	Oberoesterreich	247	194	CZ06	Jihovychod/Southeast	258	138	GR11	Anatoliki Maked., Thraki	68	57	ITG2	Sardegna	66	44	SE02	Oestra Mellansverige	381	219
AT32	Salzburg	70	56	CZ07	Stredni	256	130	GR12	Kentriki Makedonia	343	218	NL11	Groningen	102	71	SE04	Sydsverige	340	249
AT33	Tirol	98	72	CZ08	Moravskoslezsko/Morav.	269	157	GR13	Dytiki Makedonia	27	20	NL12	Friesland	165	102	SE06	Norra Mellansverige	261	165
AT34	Vorarlberg	69	56	ES11	Galicia	100	61	GR14	Thessalia	150	105	NL13	Drenthe	84	52	SE07	Mellersta Norrland	114	66
BE10	Brussels	121	48	ES12	Principado de Asturias	54	31	GR21	Ipeiros	48	43	NL21	Overijssel	256	150	SE08	Oevre Norrland	166	82
BE21	Antwerpen	485	340	**ES13**	**Cantabria**	**23**	**not**	GR22	Ionia Nisia	30	21	NL22	Gelderland	132	99	SE09	Smaland med oearna	261	145
BE22	Limburg	186	117	ES21	País Vasco	85	50	GR23	Dytiki Ellada	58	53	NL23	Flevoland	46	26	SE0A	Vaestsverige	399	206
BE23	Oost-Vlaanderen	239	137	ES22	Navarra	36	20	GR24	Sterea Ellada	114	74	NL31	Utrecht	221	143	DE1	Baden-Wuert.	295	167
BE24	Vlaams-Brabant	261	186	**ES23**	**La Rioja**	**20**	**not**	GR25	Peloponnisos	80	75	NL32	Noord-Holland	252	161	DE2	Bayern	377	160
BE25	West-Vlaanderen	424	246	ES24	Aragón	70	49	GR30	Attiki	796	406	NL33	Zuid-Holland	505	305	DE3	Berlin	85	49
BE31	Brabant-Wallon	54	29	ES30	Comunidad de Madrid	209	97	GR41	Voreio Aigaio	30	28	NL34	Zeeland	75	40	DE4	Brandenburg	84	44
BE32	Hainaut	334	186	ES41	Castilla y León	138	60	GR42	Notio Aigaio	36	32	NL41	Noord-Brabant	329	209	DE5	Bremen	25	10
BE33	Liège	268	160	ES42	Castilla-La Mancha	108	43	GR43	Kriti	60	51	NL42	Limburg(NL)	184	111	DE6	Hamburg	54	38
BE34	Luxembourg (b)	62	34	**ES43**	**Extremadura**	**13**	**not**	ITC1	Piemonte	182	116	**PL11**	**Lodzkie**	**155**	**not**	DE7	Hessen	206	109
BE35	Namur	163	105	ES51	Cataluna	200	120	ITC3	Liguria	93	44	PL12	Mazowieckie	205	172	DE8	Mecklenburg-Vorp.	50	28
CH01	Iemanique	219	156	ES52	Comunidad Valenciana	212	119	ITC4	Lombardia	284	147	PL21	Malopolskie	59	42	DE9	Niedersachsen	251	129
CH02	Espace Mittelland	264	202	ES53	Illes Balears	32	14	ITD2	Trentino - Alto Adige	41	17	PL22	Slaskie	202	178	DEA	Nordrhein-Westf.	527	298
CH03	Nordwestschweiz	138	97	ES61	Andalucía	427	250	ITD3	Veneto	196	107	**PL31**	**Lubelskie**	**62**	**not**	DEB	Rheinland-Pfalz	106	62
CH04	Zurich	199	137	ES62	Regíon de Murcia	60	47	ITD4	Friuli - Venezia - Giulia	95	62	PL32	Podkarpackie	107	97	DEC	Saarland	23	13
CH05	Ostschweiz	207	142	**ES63**	**Ciudad Autónoma de C.**	**8**	**not**	ITD5	Emilia - Romagna	153	103	PL33	Swietokrzyskie	80	62	DED	Sachsen	153	95
CH06	Zentralschweiz	104	84	ES70	Canarias	101	52	ITE1	Toscana	151	81	PL34	Podlaskie	67	59	DEE	Sachsen-Anhalt	73	43
CH07	Ticino	53	25	FR10	Ile de France	666	272	ITE2	Umbria	107	61	PL41	Wielkopolskie	154	145	DEF	Schleswig-Hollstein	117	76
DK	East	759	362	FR30	Nord - Pas-de-Calais	331	121	ITE3	Marche	91	59	PL42	Zachodniopomorskie	120	108	DEG	Thueringen	83	53
DK	South	509	201	FR51	Pays de la Loire	335	133	ITE4	Lazio	154	93	**PL43**	**Lubuskie**	**53**	**not**				
DK	North-West	647	289	FR61	Aquitaine	261	99	**ITF1**	**Abruzzo**	**13**	**not**	**PL51**	**Dolnoslaskie**	**132**	**not**				
Total		**7047**	**4352**	**Total**		**5341**	**2678**	**Total**		**4314**	**2547**	**Total**		**4513**	**2705**	**Total**		**5192**	**2955**

*Note: The first column shows the number of cases per NUTS regions. The second column shows the number of cases included in the regression analysis per NUTS region. For Germany information was only available on NUTS 1 levels. For Denmark, where the information was available on NUTS3 levels, we aggregated regions into three higher clusters (into North-West-, South- and East-Denmark).

Appendix 4.2: Explanation of the applied instrumental variables (IV) approach

Instrumental variables (IV) regression is applicable when regressors are endogenous or mismeasured. So far, several different IV methods have been developed (Ebbes, Wedel and Böckenholt 2009; Park and Gupta 2012: 568; Lewbel 2012: 67). One of these is the instrument free Lewbel's approach (LA) (Lewbel 1997, 2012). This approach has the advantage that it does not require any variables (instruments) replacing any endogenous covariates. This solves the problem of fulfilling the criteria for instruments (1) being exogenous, (2) having enough explanatory power to explain the endogenous variable, and (3) not being directly related to the dependent variable (Ebbes, Wedel and Böckenholt 2009: 448–449). In the LA, instruments are generated from the data by multiplying the heteroscedastic error terms from a first stage regression with the subset of mean centred exogenous regressors (Z) (Lewbel 2012: 73; Brown 2014: 38). These regressors can be any set of exogenous covariates so that no information outside the model is needed. In this context, the model relies on the assumptions that (Lewbel 2012: 69, 72):

$$(1)\ E(X\varepsilon_1) = 0, (2)\ E(X\varepsilon_2) = 0,\ (3)\ cov(Z, \varepsilon_1\varepsilon_2) = 0,$$

while a simultaneous equation system additionally requires that

$$(4) cov(Z, \varepsilon_2^2) \neq 0$$

for the model to be identified.

In this study we assume that unobserved regional family systems influence people's fertility and their observed social relationships which form our network indicators. In doing so I reduce the model's assumptions to an unobserved single factor model, assuming that (1) there are variables which are not correlated with the error terms, (2) the error term is heteroscedastic and (3) the covariance between the subset of regressors (Z) and the heteroscedastic error is zero (Lewbel 2012: 77). While assumption (1) requires the variables to be exogenous, we can test for assumption (2) using the Breusch-Pagan test. Assumption (3) can be tested by testing the exclusion restriction of the generated instruments. If the generated instruments do not satisfy the covariance restriction then they fail the exclusion restriction tests (Emran and Shilpi 2012: 1137). Yet Lewbel (2012) demonstrates that, even if the third assumption is not met, the model can be

used to identify the internal bounds of the model parameters for cases in which the covariance is relatively small (compared to the heteroscedasticity in the error terms; Lewbel 2012: 74). Unfortunately, estimates derived from Lewbel's (2012: 67) approach are less reliable than the results of traditional IV models. But the approach can be augmented by combining it with traditional instruments found in the dataset; this increases its estimation efficiency (p. 77).

The performance of the LA has been demonstrated by previous research in economics and health economics (Lewbel 1997, 2012; Ebbes, Wedel and Böckenholt 2009; Emran and Shilpi 2012; Denny and Oppedisano 2013; Huang and Xie 2013; for an overview see Brown 2014: 39). To estimate the LA models and test their underlying assumptions, we use the ivreg2h Stata-module, developed by Baum and Schaffer (2012). For model estimation we use the LIML estimator, which performs well under finite sample conditions (Baum, Schaffer and Stillman 2007: 478). Testing the model assumptions, we need to be sure that there is a subset of exogenous variables (Z) in our model. Among other factors, we include country dummies and respondent's birth cohort to explain respondent's fertility. These variables are clearly exogenous with respect to people's fertility and the structure of their social relationships. Moreover, these variables can be assumed to give rise to the heteroscedasticity in the data. Thus, we can accept the first model's assumption as being fulfilled. Applying the Breusch-Pagan test to a simplified OLS version of our model, which includes only our covariates, suggests that there is enough heteroscedasticity in the error term to fulfil the second model's requirement (Breusch-Pagan-Test: chi^2 = 1,229.59; P = 0.000). Finally, to test the exclusion restriction we apply the Hansen J test and report its results for each model at the end of the regression tables. Testing the null-hypothesis that the included instruments are valid, the observed strong rejection of null-hypothesis in most of our models suggests that the covariance restriction is fulfilled and the LA can be applied.

Chapter 5: Regional differences in the intergenerational transmission of family size in Europe[66]

Abstract: Many studies report positive correlations between family sizes of successive generations, but the degree of correlation varies between countries. However, the majority of these studies are limited in geographical scope and do not consider the role of regional family organization principles, i.e., family systems. In this chapter we investigate to what extent regional family systems explain geographical differences in intergenerational transmission of family size among European regions. Using the large-scale European SHARE survey, we derive indicators of regional family systems based on average frequency of contact and geographical distance between kin. We use a multilevel random coefficients model to test for differences in the transmission between European regions, as well as between sons and daughters. We find a complex regional pattern of family influences on childbearing continuities, with considerable within-country variation. We observe a direct effect of parental fertility on offspring fertility, although sons show more variance than daughters. This transmission of fertility can be attributed to regional family systems for sons, but not for daughters. Our results demonstrate the importance of using a regional approach - rather than the country level approach - to study intergenerational continuities in childbearing.

[66] This chapter is based on:

Mönkediek, B., Rotering, P. and Bras, H. (2015). Regional differences in the intergenerational transmission of family size in Europe. *Population, Space and Place*. doi: 10.1002/psp.2003.

5.1 Introduction

Many studies report positive correlations between family sizes of successive generations (for a systematic overview, see Murphy 1999, 2013). In addition, independent effects of family background factors, such as socio-economic status, and the influence of availability of kin on fertility have been observed (Fernández and Fogli 2006; Reher, Ortega and Sanz-Gimeno 2008: 24; Booth and Kee 2009; Kotte and Ludwig 2011; Kolk 2013: 3-4). However, the majority of these studies are limited in geographical scope and do not differentiate between regional family organization principles, i.e., 'family systems' (Skinner 1997). A family system is defined as "a set of beliefs and norms, common practices, and associated sanctions through which kinship and the rights and obligations of particular kin relationships are defined" (Oppenheim Mason 2001: 160). In a recent paper, Murphy (2013) demonstrates that there are indications of regional differences in childbearing continuities between countries with strong family ties and those with weak family ties. Countries with strong family ties, such as Italy, Spain and Hungary, demonstrate the largest correlations of family size over generations (Reher 1998), while countries with weaker family ties, such as the Nordic countries, show lower correlation coefficients (Murphy 2013: 111,118). Although Murphy (2013) does not assess the effects of family systems on childbearing continuities, his results suggest that the degree of intergenerational transmission of family size is mediated by the nature and strength of relationships between kin. In previous research, family systems have been shown to differ markedly among European regions (Reher 1998; Bras and Van Tilburg 2007; Jappens and Van Bavel 2012: 86; Mönkediek and Bras 2014) and to be correlated with demographic outcomes such as extra-marital fertility (Kok 2009), frequency of contact with kin (Bras and Van Tilburg 2007), and indicators of social and economic development (Alesina and Giuliano 2010; Duranton, Rodríguez-Pose and Sandall 2009). However, to properly assess geographical variation in childbearing continuities as demonstrated by Murphy (2013), a regional perspective needs to be considered in which attention is given to the role of family systems.

In this chapter we investigate whether family systems can explain regional disparities in the intergenerational transmission of family size in Europe. Using three waves of the large-scale European SHARE survey (Klevmarker, Swensson

and Hesselius 2005), we derive measures of regional family systems based on the average frequency of contact between family members and the geographical distance between them. Both frequency of contact and geographical distance form the basic opportunity structure for interaction between parents and children (Bongaarts and Watkins 1996: 660-661; Hank 2007: 158). Given the data's hierarchical nature, we use a multilevel model including random coefficients. This type of model allows us to test whether the effects of parental family size on children's family size varies between regions with different family systems.

In the following section, we briefly describe the mechanisms through which family size is transmitted from parents to children. We then develop our hypotheses concerning the effect of family systems on the degree of intergenerational transmission. After discussing our sample, measurements and methods, we present the results of our multilevel analysis on the intergenerational transmission of family size. In the final section, we discuss our findings in light of the recent literature, our hypotheses, and the data and methods used.

5.2 Family systems and fertility behaviour

5.2.1 Genes, shared environments and fertility

The literature on intergenerational associations in completed family size distinguishes between sociological and genetic factors. Sociological explanations pertain to the transmission of social status and transmitted norms and values related to childbearing preferences (Anderton et al. 1987: 468/469; Murphy and Wang 2001; Reher, Ortega and Sanz-Gimeno 2008: 25; Booth and Kee 2009). Considering this, a part of the intergenerationally transmitted fertility is explained by the chances of children entering the same social strata as their parents (Kravdal and Rindfuss 2008). Other explanations for transmission focus on norms and values concerning reproduction and the experiences of family life that are passed on from parent to child (Kantner and Potter 1954; Axinn, Clarkberg and Thornton 1994: 68; Montgomery and Casterline 1996; De Vries, Kalmijn and Liefbroer 2009). In this context, a growing body of literature recognizes the role of kin in explaining fertility behaviour (Rijken and Liefbroer 2009; Lyngstad and Prskawetz 2010; Sear and Coall 2011; Balbo 2012; Bernardi and Klärner 2014; Rotering and Bras 2015) and in shaping intergenerational

childbearing continuities (Kotte and Ludwig 2011: 210-211; Kolk 2013: 3). However, these studies are often limited to a few geographical areas.

Genetic explanations of intergenerational childbearing continuities concentrate either on reproductive fitness (Hamilton 1964a, 1964b; Pluzhnikov et al. 2007) or on the motivation and the desire to have children (Kohler et al. 2005). However, by studying the influence of both sociological and genetic factors on fertility over birth cohorts, Kohler, Rodgers and Christensen (1999: 268) demonstrate that "the genetic influence seems to be socially mediated". Childbearing continuities between generations seem weaker in societies with strong mechanisms to enforce compliance with group norms (Van Bavel and Kok 2009: 357) than in societies where the social control of group norms is weak. Where social control is weak, the effects of the shared family environment are reduced and more variation in fertility becomes visible as the genetic effects are less constrained (Kohler, Rodgers and Christensen 1999: 268; Bras, Van Bavel and Mandemakers 2013: 126, 130-131). Testing the importance of gene-environment interactions Tropf et al. (2015: 9-10) demonstrate important changes in the levels of heritability among cohorts that experienced different historical events, such as the Second World War or the sexual revolution.

5.2.2 Regional variation in family systems and the transmission of fertility

Previous research suggests that the effects of sociological and genetic factors on fertility transmission are mediated by kin relationships and societal control over fertility behaviour (Bras, Van Bavel and Mandemakers 2013; Kotte and Ludwig 2011: 210-211; Kolk 2013: 3). However, geographical differences in the organisation of family life, in particular how these differences affect childbearing continuities, have received little attention. Regional clusters of norms and values towards kin are described as family systems. Family systems differ in the way they configure social relationships and obligations between kin and have been shown to vary markedly among European regions (Skinner 1997: 57-58; Reher 1998; Bras and Van Tilburg 2007; Jappens and Van Bavel 2012: 86; Micheli 2012, 27, 30-31; Mönkediek and Bras 2014). Family systems have been associated with regional disparities in socio-economic outcomes and labour force participation (Duranton, Rodríguez-Pose and Sandall 2009: 36-37), gender roles and gender disparities (Alesina and Giuliano 2010: 99; Bertocchi and Bozzano

2014), and inheritance rules (Skinner 1997: 58-60). By setting norms and values concerning, for example, communication between kin and non-kin (Freedman, Takeshita and Sun 1964: 27; Salamon 1977: 815/816), sexual activity (Kok 2009: 15), or cohabitation (Skinner 1997: 63-64), family systems constrain opportunities for social relationships within and outside the family. Therefore, family systems determine the social framework in which people act, behave, and decide (Bernardi and Klärner 2014: 644; DiMaggio and Garip 2012).

Family systems can be classified by the configuration of social relationships between kin and non-kin. Non-kin constitute a significant element of social networks in weak family regions, where relationships with kin are fragmented and individualism is emphasized (Reher 1998). Socially, non-kin may function as alternative providers of norms, values, and behavioural examples (Mathews and Sear 2013b: 318; Newson et al. 2005: 369) and even adopt positions as 'voluntary kin' (Braithwaite et al. 2010: 390/391). Since weak family regions display less stringent social norms that could restrain children's reproductive choices, the effects of parental socialization and genetic influences in weak family regions are likely to be higher than those in strong family regions (Van Bavel and Kok 2009: 357; Udry 1996: 335).

In contrast, in strong family regions, such as Sicily in Italy, social bonds between kin members are close (Reher 1998: 203; Mönkediek and Bras 2014) and parental monitoring of children's behaviour appears more authoritarian (Romero and Ruiz 2007). Children often depend more and longer on familial support, and the production of welfare is generally regarded as a family obligation (Caldwell 1978: 557-558; Livi-Bacci 2001: 145-152; Aassve, Mazzuco and Mencarini 2005: 284-285; Kohler, Billari and Ortega 2006: 64-65). Young adults are also exposed longer to the social norms and values of their kinship group (Livi-Bacci 2001: 145-152, Billari 2008: 10), and the social norms that influence people's fertility behaviour are more likely to be shared within society and more easily enforced by children's parents (Granovetter 2005: 34). Consequently, children's choices on fertility behaviour are more constrained in strong family regions than in weak family regions and are less related to socialization and genetic influences (Udry 1996: 335; Kohler, Rodgers and Christensen 1999: 268; Van Bavel and Kok 2009: 357). *Hence, the correlation between parent's and children's completed family size is expected to be weaker in strong family regions than in weak family regions* **(H1)**.

Apart from the differences between family systems, previous research also suggests that the degree of intergenerational transmission significantly differs between men and women (Reher, Ortega and Sanz-Gimeno 2008: 25-26; Dahlberg 2013; Murphy 1999; Kolk 2013: 4). Gender differences have been attributed to several factors, including closer ties between daughters and their mothers (Kolk 2013: 4; Barber 2000), more influential parental authority over daughters' fertility behaviour (Dahlberg 2013: 241), and stronger genetic heritability effects for females (Kohler, Rodgers and Christensen 1999: 268; Bras, Van Bavel and Mandemakers 2013: 127-128). Based on these insights, we expect that strong family environments leave women less space to freely choose their fertility behaviour compared to men. In weak family regions, the stronger genetic heritability effects for females may lead to stronger correlations between parental and daughter's family size than between parental and son's family size. Therefore, we expect that the regional family system is specifically important to determine the family size of daughters (Kolk 2013: 4), while we expect little or no interaction effects for sons. *Therefore, we expect that the correlation between parent's (parents') and children's completed family size differs between regional family systems only for female children* **(H2)**.

5.3 Data, measures and methods

5.3.1 Data

This study uses the first, second and fourth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) (Börsch-Supan et al. 2013). The survey is well suited for our analysis because it includes information on several European regions that have been identified with the European Nomenclature of Units for Territorial Statistics (NUTS). The NUTS nomenclature is a hierarchical system that divides the European Union into areas of comparable population size and is based on the administrative division laid down by the EU member states[67]. In this chapter region or regions refer to the NUTS regions.

[67] Source: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction; http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/local_administrative_units; (14.11.14)

In addition, the SHARE survey provides us with information on the family structure and fertility of respondents (G1), and the completed fertility of their children (G2). Although the fertility of children (G2) was reported by the respondents (G1), the SHARE survey provides us with sufficient information on the completed fertility of multiple generations.

The first wave of SHARE was conducted in 2004/2005 in 11 European countries and Israel. The second (2006/2007) and the fourth wave (2010/2012) added more countries to the survey[68]. The survey's target population was males and females older than 50 years and their spouses, who were interviewed separately (Börsch-Supan et al. 2013: 993). Together, all three waves contain 57,242 respondents (G1), excluding spouses. Since the set of included countries varied between waves, the possibility of studying continuities in childbearing over birth cohorts is limited. From all respondents (G1), 19,907 individuals belong to the panel segment, meaning that these respondents have been interviewed in at least two of the included waves. For these respondents we included the last observation of their children (G2), since this increases the chance that their offspring (G2) had also completed their fertility career.

We restricted the sample to European respondents (G1) who were born between 1925 and 1961, who were between 40 and 80 years old, and who had information on their fertility careers[69]. We excluded Ireland and Estonia because the SHARE survey does not provide statistical weights for Ireland and provides information only on the country level for Estonia. We derived the cohort-average family size (based on birth cohorts) for each region based on all remaining respondents (N= 41,428) (G1). In a second step, childless respondents with missing information on NUTS region were excluded from the sample. In total, we were able to calculate the cohort-relative family size for 35,706 parents (G1).

To make reliable statements about the magnitude of the transmission process, information is required about the completed fertility of the children's

[68] First wave: Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden, and Switzerland; second wave: Ireland, Poland, and the Czech Republic; fourth wave Hungary, Portugal, Slovenia and Estonia. Because the structure of the third wave differs from that of the other waves, the third wave is excluded from this analysis.

[69] The lower bound of 40 years old was selected to increase the number of cases. Fecundity of both men and women strongly decreases after the age of 40 (ESHRE 2005; Kidd, Eskenazi and Wyrobek 2001). In our data set, only 3.57% of the 83,858 children were born after their parent was 40 years old.

generation (G2). Both parent's and children's fertility were reported during the parental interview; asking respondents about their number of children that are still alive, and about the number of grandchildren of each specific child. However, not all children had finished their reproductive careers at that time. To approximate children's cohort-relative family size, we constrained the analysis to children who were forty years old and older because they were likely to have completed their fertility career (32,799 children in G2). We selected only children (G2) born after 1950, due to relative low case numbers in the earlier birth cohorts, and excluded children with missing information. Due to variable non-response, our final sample for analysis contained 28,560 children[70] (G2) (14,300 males and 14,260 females).

5.3.2 Measures

Dependent variable

In this chapter we examine the regional variation in childbearing continuities between respondents (G1) and their children (G2). To control for demographic developments over time, we examine the fertility of parents and their children relative to their birth cohorts. This cohort-relative family size allows for a good identification of high and low fertility performers and to control for European-wide changes in completed fertility over time (Anderton et al. 1987: 469). The dependent variable, the cohort-relative family size of the children's generation (G2), was generated by dividing each child's family size by the mean family size of their birth cohort (Table 5.1). The cohort-relative parental fertility (G1) was similarly calculated. As Table 5.1 shows, the mean family size for the children's generation declined over time in all European countries.

[70] An overview on the number of cases per NUTS region and the correspondence between European regions, NUTS codes and countries is given in the supplement Table A5.1 (Appendix 5.1).

Table 5.1: Average fertility per country and birth cohort for the parental and the children's generation (based on individual data)

Parental Fertility (parent's generation, G1)*							
Country	**Mean Fertility (children per parent)**	**1925-29**	**1930-34**	**1935-39**	**1940-44**	**1945-49**	**1950-61**
Austria (AT)	1.967	1.891	2.185	2.262	2.031	1.889	1.853
Germany (DE)	1.930	1.944	2.386	2.139	1.827	1.822	1.838
Sweden (SE)	2.332	1.924	2.183	2.298	2.272	2.303	2.412
Netherlands (NL)	2.169	2.435	2.649	2.403	2.270	2.133	2.023
Spain (ES)	2.094	2.283	2.351	2.393	2.169	2.184	1.884
Italy (IT)	1.728	2.121	1.904	1.914	1.657	1.793	1.607
France (FR)	2.235	2.230	2.137	2.352	2.281	2.189	2.230
Denmark (DK)	2.221	2.107	2.502	2.406	2.235	2.084	2.177
Greece (GE)	1.849	2.035	2.023	1.884	1.659	1.808	1.823
Switzerland (CH)	1.931	1.997	2.264	2.043	1.959	1.841	1.871
Belgium (BE)	2.022	2.440	2.408	2.193	2.074	1.886	1.933
Czech Republic (CZ)	2.027	1.896	1.889	2.079	1.992	2.085	2.025
Poland (PL)	2.452	2.744	2.993	2.718	2.459	2.564	2.302
Hungary (HU)	1.882	.	1.790	1.809	1.857	1.895	1.918
Portugal (PT)	2.113	.	2.438	2.428	1.971	2.158	2.012
Slovenia (SI)	1.853	.	1.962	1.879	1.965	1.838	1.801
Total	**2.045**	**2.108**	**2.256**	**2.216**	**2.011**	**2.041**	**1.965**
Children's Fertility (children's generation, G2)							
Country	**Mean Fertility (children per parent)**	**1950-56**	**1957-60**	**1961-64**	**1965-68**	**1969-72**	
Austria (AT)	1.484	1.673	1.610	1.572	1.398	1.337	
Germany (DE)	1.407	1.658	1.575	1.399	1.250	1.134	
Sweden (SE)	1.798	1.967	2.104	1.823	1.749	1.447	
Netherlands (NL)	1.637	1.988	1.874	1.647	1.569	1.397	
Spain (ES)	1.411	1.688	1.802	1.483	1.324	1.109	
Italy (IT)	1.369	1.690	1.612	1.383	1.288	1.165	
France (FR)	1.749	2.011	1.887	1.798	1.677	1.527	
Denmark (DK)	1.796	1.892	1.829	1.904	1.790	1.535	
Greece (GE)	1.682	1.969	1.769	1.589	1.436	.	
Switzerland (CH)	1.538	1.717	1.881	1.505	1.483	1.385	
Belgium (BE)	1.709	1.772	1.858	1.751	1.653	1.558	
Czech Republic (CZ)	1.865	1.918	2.042	1.923	1.848	1.648	
Poland (PL)	1.915	2.199	2.178	2.086	1.807	1.458	
Hungary (HU)	1.821	1.789	2.006	1.771	1.872	1.725	
Portugal (PT)	1.509	1.484	1.593	1.578	1.612	1.336	
Slovenia (SI)	1.737	1.589	1.968	1.779	1.693	1.679	
Total	**1.652**	**1.852**	**1.851**	**1.684**	**1.587**	**1.440**	
*** Includes childless respondents in the parental generation, weighted output**							

Explanatory variables

In our analysis we include two indicators that reflect regional family systems as main explanatory variables. These indicators use the available information in the SHARE survey on contact frequency and spatial proximity between respondents and their kin. Average contact frequency, adjusted for all relationships, and average spatial proximity to kin, adjusted for kin relationships, was derived for all respondents (for a detailed description see the Methodological Appendix M1). These indicators constitute the basic opportunity structure for intergenerational interaction, and their combination can be assumed to reflect obligations and emotional associations between kin (Hank 2007: 158; Viazzo 2010a: 282-283). By aggregating the individual scores to the NUTS 2 level, we can learn about the family system in which each respondent lives[71] (Mönkediek and Bras 2014). Strong family regions are, for example, identified by a higher than average score on contact or distance between kin. The values range from 1 ('no contact') to 8 ('frequent contact') for average frequency of contact to kin, and 1 ('very distant') to 9 (or 'very close proximity') for average spatial proximity between kin. The European average for frequency of contact is 6.551 (between 'several times a week' and 'daily' contact), and for spatial proximity the European average is 6.765 (between 'between 1 and 5 km' and 'less than 1 km away').

As Figure 5.1 (right-hand side) demonstrates, countries categorized by their family system indicators follow the observed distinction between weak and strong family systems in Europe (Reher 1998). As expected, the northern countries (Denmark, Sweden) score low on frequency of contact and spatial proximity between kin, while the Mediterranean countries score relatively high on these indicators. The scores of the Central European countries fall between those of the Northern and Mediterranean countries, and the scores of the Eastern European countries are more similar to the Mediterranean countries. In contrast, the family system indicators demonstrate large within-country variation (Figure 5.1, left-hand side). These regional disparities are especially large within the strong family Mediterranean countries and in some Central European countries

[71] For Germany, where the information was provided only on NUTS1 levels, we used the respective NUTS level. For Denmark, we combined the information on NUTS 3 regions into higher level clusters (East-, South- and North-West-Denmark) approximating the NUTS 2 partition.

(e.g., Germany).

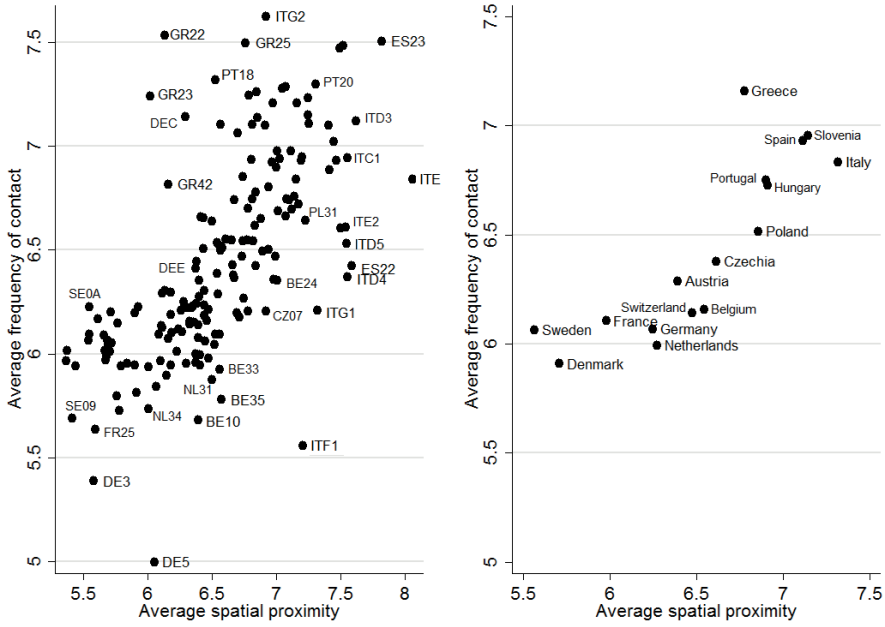

Figure 5.1: Regional and country averages of the family systems indicators (based on SHARE 2004-2012)

Control variables

The regression models include control variables for individual and regional level characteristics (Table 5.2).

Gender. Previous research suggests significant differences in the intergenerational transmission of fertility behaviour between men and women (Dahlberg 2013; Murphy 1999; Kolk 2013: 4). To examine these differences, we estimate separate models for each sex.

Education. Parental and children's education are included in the analysis as an approximate control for socio-economic similarities. The educational information in the SHARE survey is coded following the ISCED-97 classification[72]. The two categories "first" and "second stage tertiary" were pooled due to a low number of cases.

[72] For more information on ISCED-97, see http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm (access date: 17.07.13)

Birth cohort. We control for children's birth cohort to account for possible additional changes in the effects of the explanatory and the control variables over time.

Table 5.2: Descriptive statistics based on children's generation

Country (NUTS)	N	N Parents	Female children	Children's mean education (ISCED - 97)*	Parental mean education (ISCED - 97)*	Urban	GDP (in PPS)	Average frequency of contact*	Average spatial proximity*
Austria (AT)	3233	1637	66.9%	3.696 (0.024)	2.790 (0.028)	51.9%	25,100	6.288 (0.031)	6.391 (0.031)
Germany (DE)	1823	985	58.3%	3.727 (0.035)	3.227 (0.036)	65.3%	22,400	6.068 (0.038)	6.249 (0.038)
Sweden (SE)	1903	1008	61.1%	3.518 (0.034)	2.618 (0.045)	83.5%	24,300	6.063 (0.035)	5.565 (0.038)
Netherlands (NL)	1953	975	61.8%	3.442 (0.040)	2.568 (0.038)	81.3%	25,500	5.992 (0.078)	6.270 (0.088)
Spain (ES)	1894	920	67.2%	2.629 (0.051)	1.403 (0.029)	93.7%	18,500	6.930 (0.051)	7.115 (0.050)
Italy (IT)	2171	1165	64.5%	2.879 (0.044)	1.474 (0.031)	55.5%	22,300	6.833 (0.086)	7.318 (0.071)
France (FR)	3107	1542	62.2%	3.441 (0.047)	2.232 (0.040)	58.5%	21,900	6.104 (0.030)	5.977 (0.033)
Denmark (DK)	1448	735	61.3%	3.799 0.039)	3.205 (0.047)	80.4%	25,000	5.908 (0.038)	5.708 (0.034)
Greece (GE)	939	538	67.6%	3.055 (0.049)	1.376 (0.034)	79.1%	16,000	7.159 (0.029)	6.775 (0.041)
Switzerland (CH)	1703	844	56.8%	3.459 (0.025)	2.810 (0.029)	41.8%	28,100	6.143 (0.037)	6.475 (0.039)
Belgium (BE)	2833	1407	60.3%	3.743 (0.037)	2.664 (0.038)	74.1%	24,000	6.156 (0.047)	6.544 (0.045)
Czech Republic (CZ)	3395	1993	69.5%	3.031 (0.032)	2.440 (0.035)	69.5%	13,500	6.378 (0.037)	6.614 (0.037)
Poland (PL)	1455	717	69.1%	3.159 (0.033)	1.856 (0.041)	42.3%	9,200	6.516 (0.041)	6.856 (0.041)
Hungary (HU)	1256	772	70.7%	3.350 (0.045)	2.703 (0.052)	59.8%	10,300	6.725 (0.081)	6.908 (0.070)
Portugal (PT)	723	406	57.8%	2.939 (0.137)	2.052 (0.133)	70.5%	15,400	6.751 (0.100)	6.900 (0.117)
Slovenia (SI)	1272	758	63.8%	3.473 (0.032)	2.504 (0.034)	37.2%	15,200	6.956 (0.037)	7.144 (0.037)
Total N / %	**31,108**	**16,402**	**63.9%**	**30552**	**30476**	**65.1%**	**19,794**	**6.551 (0.026)**	**6.765 (0.024)**

Note: *weighted output with standard errors in brackets

Urbanization. Previous research has demonstrated substantive differences in family networks between urban and rural areas (Heady, Gruber and Ou 2010a; Buchowski 2010). In rural areas, family networks are more family centered (Höllinger and Haller 1990: 112, 119), and the shared-environment effects on people's fertility, such as socio-economic conditions and normative climates, seem stronger (Bras, Van Bavel and Mandemakers 2013: 118, 128). Unfortunately, we have no information on the place of residence of children (G2).

Since most children in the studied countries live within visiting distance of their parents, we approximated children's place of residence by using that of their parents (Hank 2007; Tomassini et al. 2004: 57; Santarelli and Cottone 2009: 12, 16).

Finally, average fertility levels of European regions may also depend on the socio-economic characteristics of these regions. To accurately assess the impact of regional family systems on intergenerational childbearing continuities, regional values (NUTS 2) of Gross Domestic Product (GDP) for the year 2000 were obtained from Eurostat[73]. Although GDP does not precisely measure regional socio-economic characteristics during the reproductive period of respondents, it is still a valuable approximation of often persistent socio-economic regional disparities. In the regression models we use the natural logarithm of GDP because this variable is unevenly distributed.

5.3.3 Methods

Since we start from a sample of the parental generation (G1) and include all children (G2) who fulfil our selection criteria, our study encompasses a prospective analysis (Song and Mare 2014). By doing so, we overcome two problems faced by retrospective studies, namely that the parents (G1) of the sampled children (G2) are not representative of the parental generation and that the parents with more children are overrepresented (Song and Mare 2014: 3).

We fit a multi-level mixed effects model to estimate variations in the effects parental family size (G1) on children's family size (G2) among NUTS regions by using individual level data. The model accounts for the hierarchical structure of the data: children are nested in families, nested in 170 European regions and nested in 15 countries. Since our study fulfils the limit on how many clusters are sufficient for consistent estimates in multi-level models (Stegmueller 2013: 758), the chance of an over-rejection of the null-hypothesis due to a small sample bias is reduced (Stegmueller 2013: 749, 758). Nonetheless, our models contain country-fixed effects and differentiate between three levels of analysis (child, family, NUTS regions) to account for unobserved heterogeneity at the

[73] GDP measured in Purchasing Power Standard (PPS), per capita. Source: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_r_e2gdp&lang=en (19.03.15)

country level. Additionally, we incorporate cluster robust estimators at the NUTS levels, where the largest variation in our independent variables is observed.

To estimate variations in the effects of parental completed fertility (G1) on children's family size (G2) among NUTS regions, our models include a random constant and a random slope. The coefficient of the random slope, measured in standard deviations, is reported under 'SD Parental Fertility'. Since our model differentiates between separate hierarchical levels of analysis, a random constant is provided for each level, namely 'SD (Region)' and 'SD (Family)'. These two random constant parameters control for unobserved effects at the specified levels. The correlation between the random intercept at the regional level, SD (Region), and the regional random slope for parental fertility, 'SD Parental Fertility', is reported under 'correlation' in the model's random part.

Due to non-response and different sampling methods in the target countries, our model results are weighted with the statistical weights provided by SHARE (Klevmarker, Swensson and Hesselius 2005: 32-33, 39-40). We rescaled the individual weights so that they reflect the conditional selection probabilities within the multi-level framework[74]. To examine regional variation in fertility transmission, a random intercept and slope for the effects of parental fertility are introduced at the regional level. These regional differences are later mapped by applying the empirical Bayes prediction (Rabe-Hesketh and Skrondal 2012: 201-203).

It is important to highlight that the relationships on which these indicators are based were measured after respondents (G1) had completed their reproductive careers. Additionally, the relationships between parents and children may be contingent on the number of children that parents have. Nevertheless, previous research has demonstrated significant differences in parent-child relationships between regional family systems using the same data (Hank 2007). Therefore, these relationships can be used to differentiate between strong and weak family system regions. Moreover, the two indicators were aggregated on the NUTS 2 level to reflect regional family systems instead of individual characteristics. This ensures that we avoid problems concerning endogeneity

[74] The results of the unweighted models can be found in supplement Table A5.2 in Appendix 5.1. This table also shows the model results when we use completed family size instead of the cohort relative measures to estimate the effects of parental fertility (G1) on offspring's family size (G2). The results stay the same.

since regional family systems are no longer directly related to respondent's (G1) fertility. Furthermore, these regional characteristics are used to explain the fertility behaviour in the children's generation (G2) and not the completed family size of the respondents (G1). The regional family system indicators have been mean-centered to reduce multicollinearity.

5.4 Results

Table 5.3 provides the results of the different multi-level random coefficient models. These models describe the general influence of parental fertility (G1) and regional family systems on children's cohort relative family size (G2). Due to size constraints, country-specific fixed effects are not reported in the table[75].

Model 3.1 and 3.2 include only the explanatory variable 'parental fertility' (G1) and control variables. The results demonstrate a small but significant transmission effect: children's family sizes are larger when their parents had larger families as well. When parents had one child more than the average number of children in their birth cohort, their son's cohort-relative family size would be around 7 percent larger, on average. This effect, controlled for parent's education, offspring's education, and parent's current place of residence, is significant for male and female offspring. Although the effect of parental family size seems small, it is stronger than the effect of children's education level. Children's education level influences family size positively for male but negatively for female offspring. With rising educational levels, son's fertility is increased, but daughter's fertility (G2) is lowered. For 'urbanity' we find a consistently negative effect for both sexes. Living in an urban area or in a region with a higher GDP is associated with a smaller family size for children (G2).

[75] The full table is provided as supplement Table A5.3 in Appendix 5.1. The table demonstrates country-specific effects on children's fertility. Compared to Austria (reference category), we find cohort-relative fertility to be higher in the Netherlands, France and in the traditional weak family countries (Sweden and Denmark). Moreover, in Eastern European countries, as well as in Belgium and Portugal, relatively higher fertility levels can be observed.

Table 5.3: Results of the multi-level regression analysis explaining offspring's cohort relative fertility – all children, weighted output

	Base Model Males (3.1)	Full Model Males (3.2)	Base Model Females (3.3)	Full Model Females (3.4)	Combined Model (3.5)
Fixed Part					
Individual Variables					
Parental Fertility	0.070 ***	0.079 ***	0.062 ***	0.058 ***	0.075 ***
Parental Fertility (G1) * Male (G2)					-0.019
Male (G2)					0.013
Education					
Parental Gen. (G1)	-0.007	-0.007	-0.012 ^	-0.012 ^	-0.010 ^
Children Gen. (G2)	0.033 ***	0.032 ***	-0.031 ***	-0.031 ***	-0.001
Urban (0 – 1)	-0.050 *	-0.051 *	-0.057 **	-0.056 **	-0.053 ***
Children's Cohort (G2) (Reference: 1950-56)					
1957-60	-0.023	-0.023	-0.003	-0.002	-0.011
1961-64	-0.006	-0.006	0.007	0.007	0.003
1965-68	-0.024	-0.025	0.023	0.024	0.003
1969-72	-0.030	-0.029	0.046	0.047	0.011
Regional Variables (NUTS 2) and Interaction Terms					
Log(GGP)	-0.135 *	-0.143 **	-0.083 *	-0.063	-0.101 **
Family System					
Average Contact		-0.023		0.055	0.018
Average Proximity		-0.047		-0.066	-0.073
Family Sys. * Parental Fertility (G1)					
Av. Contact		-0.114 *		-0.002	0.028
Av. Proximity		0.107 **		-0.012	-0.014
Fam. Sys. * Male (G2)					
Av. Contact					-0.001
Av. Proximity					0.034
Fam. Sys. * Parental Fertility (G1)* Male (G2)					
Av. Contact					-0.183 **
Av. Proximity					0.110 *
Constant term	1.142 *	1.203 *	0.865 *	0.655 ^	0.912 **
Random Part					
Parental Fertility					
SD Parental	0.137	0.131	0.062	0.063	0.081
Correlation	-0.491	-0.538	-0.643	-0.599	-0.284
SD (Regions)	0.067 (0.018)	0.068 (0.019)	0.060 (0.011)	0.056 (0.012)	0.053 (0.013)
SD (Family)	0.265 (0.030)	0.264 (0.030)	0.289 (0.035)	0.289 (0.034)	0.267 (0.027)
SD (Residual)	0.716 (0.018)	0.716 (0.019)	0.600 (0.017)	0.600 (0.017)	0.668 (0.011)
Wald Chi² (df)	382.75 (24)	422.27 (28)	358.62 (24)	403.62 (28)	574.49 (34)
BIC	30001.59 (30)	30031.21 (34)	26190.23 (30)	26223.81 (34)	56311.95 (40)
N Regions	170	170	170	170	170
N Children (G2)	14300	14300	14260	14260	28560

^p < 0.10, *p < 0.05, **p < 0.01, ***p< 0.001, Standard errors in bracket.

Models 3.1 and 3.3 are used to estimate and to visualize regional variations in the effects of intergenerational childbearing continuities (Figure 5.2 and 5.3). The interpretation of the model's random part is complex (Rabe-Hesketh and Skrondal 2012: 188-194). To simplify this interpretation, the strength of the association between parental and children's fertility is predicted and mapped by employing an empirical Bayes prediction for each NUTS 2 region for sons and daughters separately (Figure 5.2 and 5.3). These separate figures give us a clear overview of the regional differences in childbearing continuities.

When we examine the regional variation in the effects of parental family size on children's family size, no pattern emerges that follows any cultural divide between strong and weak family regions (compare Reher 1998; Mönkediek and Bras 2014). Instead, in nearly all countries, significant within-country variations can be observed in transmission strength. Interestingly, Figures 5.2 and 5.3 also display disparities in intergenerational transmission of fertility between male and female children. Their strength varies between regions, and in some regions, such as the Austrian region of Vienna (males: -0.030, females: 0.108), the Swedish regions of Sydsverige (males: -0.083, females: 0.047) and Norra Mellansverige (males: -0.081, females: 0.081), and in eastern Switzerland (males: -0.019, females: 0.101), negative transmission effects for males and positive transmission effects for females can be observed. A comparison of two nested models (not reported) verifies that the differences between men and women are indeed significant.

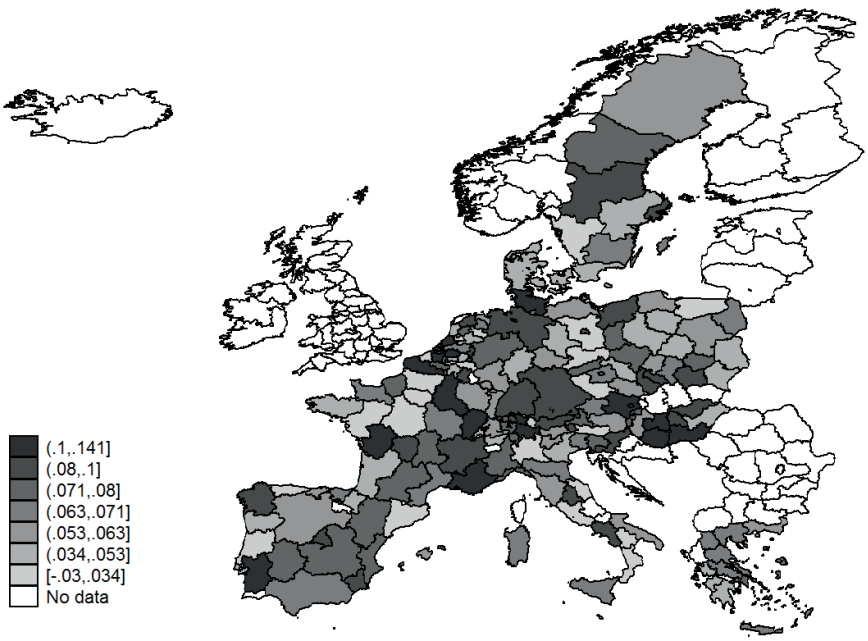

Figure 5.2: Regional variation of the intergenerational transmission effect, per NUTS region (for females, based on SHARE 2004-2012)

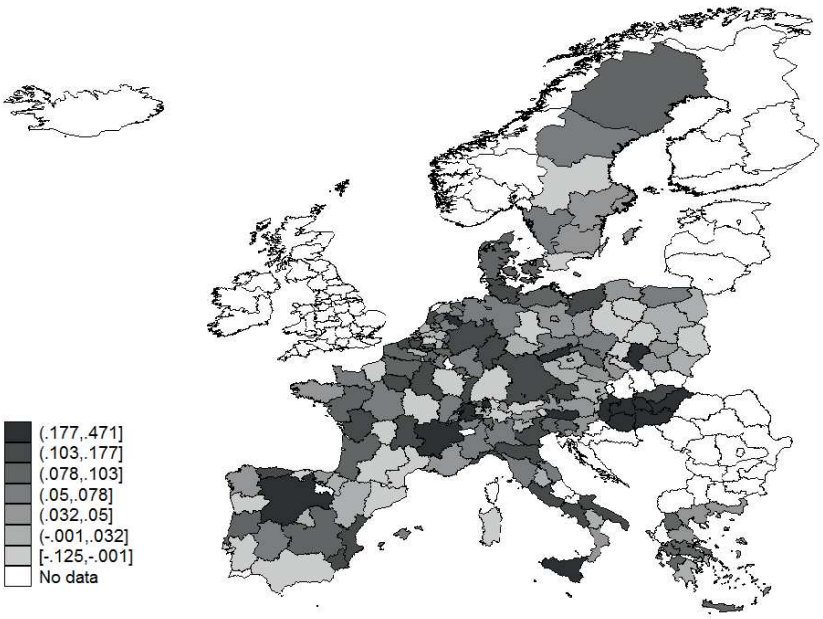

Figure 5.3: Regional variation of the intergenerational transmission effect, per NUTS region (for males, based on SHARE 2004-2012)

However, to what extent are the observed spatial variations in the effect of parental fertility on children's fertility related to regional family systems? To explain these differences, we include in our models two interaction terms combining regional family systems with parental fertility (Table 5.3, models 3.2 and 3.4). With the introduction of these interaction terms, the effects of the control variables stay nearly the same, although GDP is no longer significant for women. Our empirical analysis only partially supports our first hypothesis, concerning the strength of the transmission between weak and strong family regions. We do not observe a clear difference in the effects of weak and strong family regions on transmission effects. Instead, our results indicate a more complex pattern in which the dimensions constituting family systems exert varying effects on continuities in childbearing. The interaction terms in model 3.2 indicate a remarkable difference between sons and daughters in the effects of parental family size (G1) on their children's family size (G2) between regions characterized by different family systems. In contrast to our second hypothesis, frequency of social contact and spatial proximity between kin on fertility are significant for men but not for women. These results are confirmed in a combined model where we test whether the differences between male and female offspring are significant using third-level interaction effects (Table 5.3, model 3.5). While previous research suggested stronger transmission effects for females than for males (Murphy 1999; Kolk 2013: 4; Dahlberg 2013: 239, 241), our results indicate that gender differences are contingent on the family context. Given our results, stronger transmission effects for men compared to women occur in regions where the frequency of kin contact is below or the spatial proximity is above the European average.

5.5 Discussion and conclusion

In our study we investigated the spatial variation in the intergenerational transmission of fertility between European regions using the large-scale SHARE survey. In addition, we examined to what extent regional family systems explain differences in intergenerational childbearing continuities. These issues are highly relevant because the influence of family systems on the transmission of fertility in Europe is not well understood, even though family systems frame the context in which decisions on childbearing are made (Skinner 1997).

By extending the geographical scope of previous studies and bringing the analysis to a lower regional level, this chapter contributes important insights by showing to what extent the weak associations between parental and children's fertility -- which are often observed at the country level -- can be explained by regional effects. First, regional variations in the intergenerational transmission process were observed, which expand Murphy's (2013) earlier research, and show important within-country differences. Second, we investigated these variations separately for male and female children. Our analysis demonstrates that the often generalized weak association between the family sizes of successive generations is partly explained by differences in the transmission effects between men and women. Taking France as an example, the overall influence of parents on their children's family size appears to be minimal (as observed by Murphy 2013). Yet, childbearing continuities differ markedly between French regions, especially once we consider gender differences (Figures 5.2 and 5.3). In addition we find that the intergenerational associations in family size are not always positive, and for some regions, they are even negative (compare Murphy 2013).

Given the variation in intergenerational childbearing continuities that we observe between European regions, our results suggest that socialization and the social context continue to play an important role in shaping fertility. The significant negative association between the average frequency of contact between kin and male children's fertility supports this view. Furthermore, the significant influence of family systems on intergenerational childbearing continuities for sons supports the idea that genetic effects are mediated by the social environment (Kohler, Rodgers and Christensen 1999: 268, 275-276; Kohler et al. 2005; Udry 1996: 329-330, 335). In regions with, on average, higher contact frequency between kin, offspring's fertility is likely to be more controlled through social interactions, thereby leaving sons less space to determine their fertility behaviour. Apart from that, resource competition and overcrowding in strong family systems may convey negative family experiences, which could explain the adverse effect of frequency of contact between kin on the fertility of sons (compare Wellman and Wortley 1989: 300; Evans et al. 1998; Voorpostel and Van der Lippe 2007: 1279-1282).

In our study we do not observe in general stronger transmission effects for women than for men. In fact, our results even suggest a stronger effect of

parental fertility on the family size of sons in regions with family systems that are characterised by, on average, lower frequency of contact and higher spatial proximity between kin, such as the Italian region of Abruzzo (ITF1) (Figure 5.1). This result is surprising because earlier research has demonstrated stronger effects of family-of-origin characteristics on female fertility (Murphy 1999; Kolk 2013: 4). This effect was attributed to the role of women as kin-keepers as well as to a higher susceptibility to parental influence during their reproductive career (Dahlberg 2013: 241; Barber 2000; Gerstel and Gallagher 1994). On the other hand, recent research on the effects of social control on the transition to early parenthood shows that men are more affected than women by social control (Hofferth and Goldscheider 2010: 418). Surprisingly, less social control often resulted in a later entry into parenthood for men. In contrast, women were more influenced through social learning, suggesting differences in the underlying transmission process (Hofferth and Goldscheider 2010: 434).

Future research is needed to address the findings in this chapter in more detail, for example, by differentiating between regional gender systems as previous research suggested a non-linear relationship between the orientation towards certain gender roles and fertility (Oppenheim Mason 2001: 161; Miller Torr and Short 2004: 123; Puur et al. 2008: 1887). In addition, the role of parents-in-law deserves further attention. Future analysis may also consider possible differences in transmission effects between urban and rural locations over time and even the organization of welfare.

Appendix 5.1: Extra tables

Table A5.1: Cases per NUTS 2 region (offspring generation)

Code	Name	N	Code	Name	N	Code	Name	N	Code	Name	N	Code	Name	N
AT11	Burgenland	160	CZ06	Southeast	574	FR61	Aquitaine	200	ITF4	Puglia	176	SE04	Sydsverige	232
AT12	Niederoesterreich	641	CZ07	Stredni	475	FR62	Midi-Pyrénées	148	ITF5	Basilicata	83	SE06	Norra Mellansv.	240
AT13	Wien	544	CZ08	Moravskoslezsko	479	FR63	Limousin	75	ITF6	Calabria	127	SE07	Mellersta Norrland	96
AT21	Kaernten	219	ES11	Galicia	73	FR71	Rhône-Alpes	284	ITG1	Sicilia	238	SE08	Oevre Norrland	92
AT22	Steiermark	609	ES12	Princip. de Asturias	53	FR72	Auvergne	73	ITG2	Sardegna	78	SE09	Smaland med oear.	228
AT31	Oberoesterreich	530	ES13	Cantabria	37	FR81	Languedoc-Roussil.	166	NL11	Groningen	66	SE0A	Vaestsverige	345
AT32	Salzburg	196	ES21	País Vasco	67	FR82	Provence-Alpes-C.	185	NL12	Friesland	143	DE1	Baden-Wuert.	180
AT33	Tirol	166	ES22	Navarra	41	FR83	Corse	.	NL13	Drenthe	63	DE2	Bayern	232
AT34	Vorarlberg	168	ES23	La Rioja	.	GR11	Anatoliki Maked..	48	NL21	Overijssel	231	DE3	Berlin	50
BE10	Brussels	149	ES24	Aragón	62	GR12	Kentriki Makedonia	115	NL22	Gelderland	107	DE4	Brandenburg	64
BE21	Antwerpen	511	ES30	Com. de Madrid	150	GR13	Dytiki Makedonia	11	NL23	Flevoland	33	DE5	Bremen	.
BE22	Limburg	193	ES41	Castilla y León	125	GR14	Thessalia	101	NL31	Utrecht	196	DE6	Hamburg	28
BE23	Oost-Vlaanderen	192	ES42	Castilla-La Mancha	137	GR21	Ipeiros	.	NL32	Noord-Holland	232	DE7	Hessen	164
BE24	Vlaams-Brabant	227	ES43	Extremadura	43	GR22	Ionia Nisia	31	NL33	Zuid-Holland	400	DE8	Mecklenburg-Vorp.	43
BE25	West-Vlaanderen	356	ES51	Cataluna	233	GR23	Dytiki Ellada	47	NL34	Zeeland	57	DE9	Niedersachsen	194
BE31	Brabant-Wallon	112	ES52	Com. Valenciana	175	GR24	Sterea Ellada	65	NL41	Noord-Brabant	267	DEA	Nordrhein-Westf.	346
BE32	Hainaut	426	ES53	Illes Balears	14	GR25	Peloponnisos	42	NL42	Limburg(NL)	158	DEB	Rheinland-Pfalz	81
BE33	Liège	400	ES61	Andalucía	500	GR30	Attiki	384	PL11	Lodzkie	128	DEC	Saarland	15
BE34	Luxembourg (b)	84	ES62	Regíon de Murcia	65	GR41	Voreio Aigaio	21	PL12	Mazowieckie	189	DED	Sachsen	160
BE35	Namur	183	ES63	Ciudad Autón. de C.	.	GR42	Notio Aigaio	15	PL21	Malopolskie	42	DEE	Sachsen-Anhalt	72
CH01	lemanique	302	ES70	Canarias	110	GR43	Kriti	45	PL22	Slaskie	154	DEF	Schleswig-Hollst.	104
CH02	Espace Mittelland	424	FR10	île de France	351	ITC1	Piemonte	132	PL31	Lubelskie	35	DEG	Thueringen	85
CH03	Nordwestschweiz	194	FR21	Champagne-Ardene	79	ITC3	Liguria	38	PL32	Podkarpackie	97	HU10	Kozep-Magyarorsz.	267
CH04	Zurich	284	FR22	Picardie	84	ITC4	Lombardia	235	PL33	Swietokrzyskie	93	HU21	Kozep-Dunantul	141
CH05	Ostschweiz	324	FR23	Haute-Normandie	68	ITD1	Provincia	13	PL34	Podlaskie	85	HU22	Nyugat-Dunantul	133
CH06	Zentralschweiz	119	FR24	Centre	125	ITD2	Trentino-Alto Adige	29	PL41	Wielkopolskie	123	HU23	Del-Dunantul	150
CH07	Ticino	56	FR25	Basse Normandie	109	ITD3	Veneto	182	PL42	Zachodniopomorsk.	112	HU31	Eszak-Magyarorsz.	179
DK	East	535	FR26	Bourgogne	82	ITD4	Friuli-Venezia-Giul.	66	PL43	Lubuskie	33	HU32	Eszak-Alfold	201
DK	South	422	FR30	Nord-Pas-de-Calais	261	ITD5	Emilia - Romagna	115	PL51	Dolnoslaskie	80	HU33	Del-Alfold	185
DK	North-West	491	FR41	Lorraine	124	ITE1	Toscana	114	PL52	Opolskie	54	PT11	Norte	223
CZ01	Praha/Prague	317	FR42	Alsace	80	ITE2	Umbria	83	PL61	Kujawsko-Pomorsk.	98	PT16	Centro	150
CZ02	Stredni	287	FR43	Franche-Comte	70	ITE3	Marche	90	PL62	Warminsko-Mazur.	97	PT17	Lisboa	291
CZ03	Southwest	360	FR51	Pays de la Loire	228	ITE4	Lazio	158	PL63	Pomorskie	35	PT18	Alentejo	59
CZ04	Nothwest	348	FR52	Bretagne	183	ITF1	Abruzzo	.	SE01	Stockholm	319	SI01	Vzhodna Slovenija	761
CZ05	Northeast	555	FR53	Poitou-Charentes	132	ITF3	Campania	208	SE02	Oestra Mellansv.	351	SI02	Zahodna Slovenija	511
Total		**11084**	**Total**		**5389**	**Total**		**3519**	**Total**		**4780**	**Total**		**6302**

AT - Austria, BE - Belgium, CH - Switzerl., DK - Denmark, CZ - Czech Republic, ES - Spain, FR - France, GR - Greece, IT - Italy, NL - Netherlands, PL - Poland, SE - Sweden, DE - Germany, HU - Hungary, PT - Portugal, SI - Slovenia

Table A5.2: Results of the multi-level regression analysis – all children

	Cohort –relative Fertility		Completed fertility	
	unweighted Model Males (S1.1)	unweighted Model Females (S1.2)	Model Males (S1.3)	Model Females (S1.4)
Fixed Part				
Individual Variables				
Parental Fertility (G1)	0.081 ***	0.055 ***	0.049 ***	0.051 ***
Education				
Parental Gen. (G1)	-0.004	-0.010 ^	-0.011	-0.020 ^
Children Gen. (G2)	0.025 ***	-0.028 ***	0.049 ***	-0.055 ***
Urban (0 – 1) (G1)	-0.030 ^	-0.052 ***	-0.072 *	-0.096 **
Children's Cohort (G2)				
1950-56	Ref.	Ref.	Ref.	Ref.
1957-60	-0.011	0.011	-0.048	-0.004
1961-64	0.002	0.021	-0.209 ***	-0.123 **
1965-68	0.003	0.031	-0.369 ***	-0.142 ***
1969-72	-0.020	0.027	-0.526 ***	-0.245 ***
Regional Variables (NUTS 2) and Interaction Terms				
Log(GGP)	-0.169 ***	-0.114 ***	-0.222 **	-0.100
Family System				
Average Contact	-0.007	-0.005	-0.029	0.095
Average Proximity	-0.032	-0.020	-0.073	-0.120
Fam. System* Parental Fertility (G1)				
Av. Contact * Parental Fertility	-0.128 *	-0.019	-0.169 *	-0.003
Av. Prox. * Parental Fert.	0.129 **	-0.009	0.146 *	-0.016
Constant term	1.478 ***	1.200 ***	3.588 ***	2.813 ***
Random Part				
Parental Fertility (G1)				
SD Parental Fertility	0.114	0.064	0.199	0.110
Correlation (Par.Fert.*Cons)	-0.559	-0.951	-0.544	-0.556
SD (Regions)	0.053 (0.013)	0.034 (0.014)	0.110 (0.030)	0.095 (0.021)
SD (Family)	0.241 (0.039)	0.290 (0.028)	0.415 (0.045)	0.496 (0.064)
SD (Residual)	0.734 (0.025)	0.610 (0.017)	1.115 (0.027)	1.040 (0.028)
Wald Chi² (df)	532.96 (28)	546.76 (28)	573.48 (28)	528.61 (28)
N Regions	170	170	170	170
N Children (G2)	14300	14260	14300	14260

Note: ^p < 0.10, *p < 0.05, **p < 0.01, ***p< 0.001, standard errors in brackets

Table A5.3: Results of the multi-level regression analysis explaining offspring's cohort relative fertility – all children, weighted output

	Base Model Males (4.1)	Full Model Males (4.2)	Base Model Females (4.3)	Full Model Females (4.4)	Combined Model (4.5)
Fixed Part					
Individual Variables					
Parental Fertility	0.070 ***	0.079 ***	0.062 ***	0.058 ***	0.075 ***
Parental Fertility (G1) *Male (G2)					-0.019
Male (G2)					0.013
Education					
Parental Gen. (G1)	-0.007	-0.007	-0.012 ^	-0.012 ^	-0.010 ^
Children Gen. (G2)	0.033 ***	0.032 ***	-0.031 ***	-0.031 ***	-0.001
Urban (0 – 1)	-0.050 *	-0.051 *	-0.057 **	-0.056 **	-0.053 ***
Children's Cohort					
1950-56	Ref.	Ref.	Ref.	Ref.	Ref.
1957-60	-0.023	-0.023	-0.003	-0.002	-0.011
1961-64	-0.006	-0.006	0.007	0.007	0.003
1965-68	-0.024	-0.025	0.023	0.024	0.003
1969-72	-0.030	-0.029	0.046	0.047	0.011
Regional Variables (NUTS 2) & Interaction Terms					
Log(GGP)	-0.135 *	-0.143 **	-0.083 *	-0.063	-0.101 **
Family System					
Average Contact		-0.023		0.055	0.018
Average Proximity		-0.047		-0.066	-0.073
Fam. System* Parental Fertility (G1)					
Av. Contact		-0.114 *		-0.002	0.028
Av. Proximity		0.107 **		-0.012	-0.014
Fam. System * Male (G2)					
Av. Contact					-0.001
Av. Proximity					0.034
Fam. System* Parental Fertility (G1) * Male (G2)					
Av. Contact					-0.183 **
Av. Proximity					0.110 *
Constant term	1.142 *	1.203 *	0.865 *	0.655 ^	0.912 **
Country Dummies					
Germany	-0.101 **	-0.117 **	-0.042	-0.036	-0.073 *
Sweden	0.179 ***	0.152 **	0.239 ***	0.197 ***	0.172 ***
Netherlands	0.120 **	0.102 *	0.100 *	0.109 *	0.110 **
Spain	0.012	0.054	-0.083	-0.058	-0.007
Italy	-0.049	-0.002	-0.105 *	-0.065	-0.033
France	0.166 ***	0.149 ***	0.120 **	0.106 *	0.123 ***

Denmark	0.221	***	0.190	**	0.206	***	0.181	***	0.182	**
Greece	0.057		0.098	^	0.042		0.029		0.067	
Switzerland	0.072		0.068		0.052		0.065		0.061	
Belgium	0.226	***	0.217	***	0.143	**	0.164	**	0.194	***
Czechia	0.261	***	0.266	***	0.130	*	0.156	**	0.211	***
Poland	0.090		0.097		0.171	**	0.212	**	0.156	**
Hungary	0.190	*	0.214	**	0.095		0.126	^	0.153	**
Portugal	0.128	**	0.145	***	-0.063		-0.041		0.056	
Slovenia	0.201	**	0.245	**	0.118	**	0.145	**	0.192	***
Random Part										
Parental Fertility										
SD Parental	0.137		0.131		0.062		0.063		0.081	
Correlation	-0.491		-0.538		-0.643		-0.599		-0.284	
SD (Regions)	0.067	(0.018)	0.068	(0.019)	0.060	(0.011)	0.056	(0.012)	0.053	(0.013)
SD (Family)	0.265	(0.030)	0.264	(0.030)	0.289	(0.035)	0.289	(0.034)	0.267	
SD (Residual)	0.716	(0.018)	0.716	(0.019)	0.600	(0.017)	0.600	(0.017)	0.668	(0.011)
Wald Chi² (df)	382.75	(24)	422.27	(28)	358.62	(24)	403.62	(28)	574.49	(34)
N Regions	170		170		170		170		170	
N Children (G2)	14300		14300		14260		14260		28560	

^p < 0.10. *p < 0.05. **p < 0.01 ***p< 0.001, standard errors in brackets

Chapter 6: Family systems and the timing and spacing of bearing children

Abstract: Research has addressed the effects of family organization principles, so called family systems, on demographic outcomes. However, very little is known about the effects of family systems on the timing and spacing of bearing children. Family systems frame people's ideas about the preconditions to start a family. Moreover, there are systematic variations in kin importance at different points in people's lives which suggest that we should study the effects of family systems on people's fertility within a dynamic framework. Analysing the effects of regional family systems on the timing and spacing of children from a life course perspective would improve our understanding of the occurrence and persistence of lowest-low fertility in different parts of Europe. Beyond that, it helps us to understand why in some European regions fertility levels are recovering. Addressing this research gap, this chapter studies the effects of two regional family system indicators on people's timing of first birth, and transitions to the second and third child. The two family system indicators are derived from two waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) and identify regional family systems based on people's average frequency of contact and average spatial proximity between kin. I use a piecewise constant event history model to test and account for variations in the effects of family system variables over the life course. The results demonstrate that the family system indicators impact on the timing of first birth and the transitions to the second and third child. Moreover, these effects vary over people's life course, suggesting a more complex pattern of the effects of family systems on fertility.

6.1 Introduction

Researchers have found mixed empirical evidence about the effects of kin on fertility (for a systematic overview see Sear and Coall 2011: 94-101 or Mathews and Sear 2013a: 1). In some cases, kin supported people's fertility (Mathews and Sear 2013b), while in other cases the effects of kin were limited (Hank and Kreyenfeld 2003: 591; Fiori, Graham and Feng 2014: 163). Addressing this issue in a recent paper, Mathews and Sear (2013b: 316-317) argue that kin only encourages fertility when the context is right. In other contexts, such as strong resource competition, kin would discourage fertility and reduce reproductive success, to pool resources and invest in a smaller number of children (Becker and Lewis 1974; Turke 1989). By evaluating the context of fertility, kinship groups aim to improve the quantity/quality balance of their children, which raises children's chances for better socio-economic placement (Becker and Lewis 1974; Becker and Barro 1988) and their future chances to reproduce (Turke 1989; Voland 1998). Accordingly, the mixed empirical evidence of kin effects on fertility seem to be related to the socio-economic context of families, which can be regarded as 'good' or 'bad' by kin members. Which preconditions to start a family need to be fulfilled and 'when' a context is right to have a child, links to norms and ideals about the family and the timing of fertility. These norms and ideals are embedded in family systems, and provide certain life course stages with a meaning (Hagestad 1986; Plath 2009). Accordingly, regional family systems frame individuals' life courses and seem to explain local and regional differences in fertility and fertility postponement (Arpino and Tavares 2013; Billari and Kohler 2004: 166-169; McDonald 2006: 498-500; Suzuki 2003; Reher 1998: 205). They, for example, govern the availability of kin by providing norms and framing people's ideas about social obligations between kin. Thereby, family systems are associated with certain family types, such as nuclear or extended families (De Vos and Palloni 1989: 177; Rossi and Rossi 1990: 156).

While the effects of family systems often have been discussed as either supporting or hampering fertility (Burch and Gendell 1970; Scanzoni and Busch 1974; Dalla-Zuanna and Micheli 2005; Aassve, Meroni and Pronzato 2012: 512), little is known about variations in the effects of family systems over the reproductive life course. However, research describing variations in kin relationships over the life course, hint for such differences in the effects of family

systems on fertility at different stages in people's lives (Rossi and Rossi 1990: 186-187, 220 ff.; Madhavan, Adams and Simon 2003: 64; Segalen et al. 2010: 178–179, 195–197, 202; Bucx, Wel and Knijn 2012; Lois and Becker 2014: 126, 129-130). For example Bucx (2009: 173-175) observes variations in the relationships and the degree of resource exchange between Dutch parents and their children across their life course. He concludes that "parent-child relations are flexible enough to adjust to changes in life situation and in the respective needs of both parents and children" (p. 175). These changes, for example in the case of a childbirth leading to more intergenerational contact and support (Bucx 2009: 174), seem to relate to norms and values concerning the family and fertility. With these norms and values being embedded in regional family systems, this justifies studying the effects of family systems on people's demographic behaviour from a life course perspective. Moreover, analysing whether family systems support fertility only at certain ages or up to a certain parity, or whether they limit fertility in general, would improve our understanding of the occurrence of lowest-low fertility or the recent rise in fertility in different parts of Europe (Lesthaeghe 2010: 232-234; Bongaarts and Sobotka 2012). Identifying whether family systems lead to fertility postponement or fertility limitation would enable us to add to the debate in how far lowest-low fertility (defined as a total fertility level at or below 1.3; Billari and Kohler 2004: 161) is likely to persist (see Goldstein, Sobotka and Jasilionienne 2009).

The current chapter aims to analyse how the events of first, second and third birth are timed in regions with different family systems. In this context, the chapter addresses the questions: 1) in how far the event of starting a family varies among regional family systems, and 2) in how far the transition to the second and 3) the transition to the third child differ between regional family systems. To answer these research questions, I use the first two waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) and derive indicators of regional family systems based on people's social relationships. The effects of family systems on the different events of birth are tested using event history analysis which accounts for variations in the effects of family systems on fertility over people's life course. The outline of the chapter is as follows. In the next paragraph I describe the theoretical background for studying the influence of regional family systems on fertility using a life course approach. In this context, I first describe the link between fertility decline and fertility

postponement. Afterwards, I discuss possible variations in the effects of family systems on people's reproductive life courses and derive the main hypothesis. In the second part of the chapter, I describe the data, measures and methods. Next, the research results are presented. I finish the chapter with a conclusion and discuss the effects of family systems on fertility and its variations according to parity at different points in people's life course.

6.2 Theoretical background

6.2.1 Fertility decline: Tempo and quantum effects

Most demographers agree that historical changes in the timing of childbearing are the major reason behind periods of below replacement and lowest-low fertility in several European countries in the 20th century[76] (Goldstein, Sobotka and Jasilionienne 2009; Bongaarts and Sobotka 2012). They tested in how far the observed fertility decline was due to fertility postponement, so called 'tempo' effects, and fertility limitation, so called 'quantum' effects, by linking the occurrence of lowest-low fertility and total fertility rates (TFR) in different European countries (for an overview see Goldstein, Sobotka and Jasilionienne 2009; Billari 2008). These researchers thus studied the extent of fertility postponement and fertility limitation at a macro level (Sobotka 2004a; Bongaarts and Sobotka 2012; Goldstein, Sobotka and Jasilionienne 2009; Billari 2008). Sobotka (2004a), for example, studied the effect of changes in the overall timing of childbearing on the TFR of different European countries. He compared the TFR with an adjusted one (based on the Bongaarts-Feeney adjustment), which provided an estimate of how fertility levels would have looked like if there were no changes in the timing of childbearing (Sobotka 2004a: 198). He finds strong 'tempo effects' in southern European and several central (called 'western') and eastern (called 'central') European countries, but not in Scandinavian Europe (p. 202). Suzuki (2003) drew upon 'strong' and 'weak' family systems as an explanation for why some countries prevented fertility declining towards lowest-low fertility, despite rising female labour force participation. He finds higher fertility levels in weak family countries and explains this by these countries'

[76] See Billari, Liefbroer and Philipov (2007) or Sobotka (2004b) for a more detailed overview on the causes of fertility postponement.

welfare regimes promoting non-family care giver activities. However, he did not test his ideas empirically (p. 12).

Recently, a slight increase in the TFR in many European countries has been observed. Bongaarts and Sobotka (2012) use a tempo- and parity-adjusted total fertility rate to study the impact of fertility postponement and fertility limitation on the TFR. They find strong evidence that the recent increase in TFR in many European countries is actually due to the end of fertility postponement; and not due to an increase in the quantum of fertility (p. 112). Also Frejka and Sobotka (2008: 39) observe that declines in TFRs were mainly due to fertility postponement, while in many countries delayed births have been recuperated at higher ages. Interestingly, the recuperation rate is higher in the Nordic and many Western European countries, and lower in the Central (German speaking) and the Southern European countries. Accordingly, the patterns that Frejka and Sobotka (2008) observed suggest higher fertility limitation in the strong family Mediterranean or the German speaking countries. Finally, to overcome the limitations of tempo adjusted fertility rates estimating fertility levels for artificial cohorts, Myrskylä, Goldstein and Cheng (2013: 37, 48) use a new method to estimate the cohort fertility for cohorts born between 1950 and 1979. Based upon a 5-year extrapolation method they perform a short term forecasts for the cohorts who have not yet finished their reproductive careers. They find a flattening trend (Italy and Greece) and even a reversing trend in cohort fertility decline for several developed countries, including Sweden, France, the Netherlands, Belgium, Lithuania (Myrskylä, Goldstein and Cheng 2013: 38, 40-41, 48).

6.2.2 Family systems: varying effects over the life course?

The above described macro studies hint at differences in the extent of fertility postponement, fertility limitation and fertility recovery between strong and weak family systems. These regional patterns, as well as the fact that fertility recuperation in Europe is higher in regions with a greater extent of extra-marital fertility (Klüsener, Perelli-Harris and Sánchez Gassen 2013: 141, 149-153; Billari and Kohler 2004: 168-169), suggest a linkage between family systems and fertility quantum and tempo effects in European regions. Accordingly, it is relevant to study the effects of family systems within a life course approach and focus on the reproductive timing of individuals. In a recent article Huinink and

Kohli (2014) also argue that a life course approach is needed to study people's demographic behaviour. According to them, "[f]ertility behavior is […] embedded in a changing multi-level pattern of cultural, socio-structural, and institutional conditions of the life course (external conditions), and influenced by personal and physiological factors (internal conditions)" (p. 1296). Accordingly, to understand why fertility might have shifted to later stages in the life course, it is necessary to study fertility postponement from a life course perspective. In this regard, families play again an important role. Kin can provide life scripts, i.e. ideas and norms about the timing of certain life course events (Liefbroer and Billari 2009; Barber 2000: 321/322; Bernardi, Keim and von der Lippe 2006: 359). These norms may be enforced through social pressure or result out of how people experienced their family lives (Hilevych and Rotering 2013: 224-227; Hilevych 2015a: 20-23).

Accordingly, kin relationships can influence the tempo and the quantum of fertility because people's behaviours may represent shared norms within societies that are part of family systems[77]. One example of such a shared norm is that fertility is postponed until after having finished one's educational career (Blossfeld and Huinink 1991; Kohler, Billari and Ortega 2002; Jackson and Berkowitz 2005: 57-59, 75). While these norms concern the 'start' of the reproductive career, previous research also validates the existence of societal norms concerning the timing of fertility[78] (Neugarten, Moore and Lowe 1965; Billari et al. 2011). For example Mills et al. (2011) demonstrated significant country differences concerning people's opinions on ages at which women are considered too old to have more children. In Austria, France, Great Britain, Spain, Finland and Sweden the reported ages when women were considered too old to have any more children were highest (p. 849-850). There are more examples of research that underpin the existence of age norms limiting people's reproductive careers (Settersten and Hägestad 1996; Mynarska 2010; Liefbroer,

[77] Different studies already observed age-discrimination regarding behaviors, such as marriage and fertility, based on shared norms and values (Neugarten, Moore and Lowe 1965; Hagestad 1986). Neugarten and Datan (1996: 104-105) refer to this as the 'social time clock', which is part of the social and cultural context in which the life course evolves.

[78] Similar norms exist for people's ages of leaving the parental home (Aassve, Arpino and Billari 2013).

Merz and Testa 2015a). Again, these age norms can be regarded as part of family systems.

The effect of kin relationships on fertility might differ across the life course. Research on Mali demonstrated for example that the presence of certain kin had a significant effect on women's fertility only after a certain age (Madhavan, Adams and Simon 2003: 64). Accordingly, family systems link individuals' demographic behaviors to certain life course stages through processes of social learning or social control. Regional family systems structure kin co-residence and the types of families of individuals, which function as an important part of the frame in which the life course evolves (for a discussion see Mayer 2004: 166). Having this in mind, it comes as a surprise that the question in how far the effect of family systems on individuals' fertility behavior varies over the reproductive life course has with few exceptions been ignored (e.g. Neven 2002). Researchers who studied the effects of family structures on age at first birth over the life course, mainly distinguished between intact and non-intact, instable or disrupted families, but did not take differences in the extent of kinship networks (as measures of family systems) into account (Wu and Martinson 1993; Miller, Benson and Galbraith 2001; Hofferth and Goldscheider 2010). On the other hand, the work of ethnographers already demonstrated that there are variations in the effects of relatives, and thus possibly family systems, over the life course. Segalen et al. (2010), for example, described differences in the organization of help relationships in kinship networks between central, eastern and southern France. In all three places (in Nanterre, a suburb located west of Paris, in Dole, a medium-sized town in eastern France, and in Monhiolas and Atignac, two small villages in the Pyrenean) they observe relatively large kinship networks with an important share of social relationships to kin being 'inactive' (Segalen et al. 2010: 178/179, 195-197, 202). While social relationships to parents are in most cases binding, relationships to other kin gain importance only at certain stages or life events, for example when children are born or during family gatherings (see also Bucx, Wel and Knijn 2012: 109). In all three places, relationships to kin easily vanish once the ancestral generation died out (Segalen et al. 2010: 178/179, 181, 183, 190).

The changing importance of kin over the life course might partly be explained by varying kin obligations, which in- or decrease at certain stages or with certain life course events (Rossi and Rossi 1990: 186-187, 220 ff.). It

seems intuitive that, for example, with increasing age the chance of becoming parent, aunt or uncle, and thus also family responsibilities, increase. As such, one's own social position within a family (framing rights and duties) can be assumed to vary over the life course (Hill and Hansen 1960: 302-303, 308); while family systems can be regarded as boundaries framing 1) the presence and responsibility of kin, and 2) the transition between life course stages and therefore between social roles (Hill 1986: 20-21; Neven 2002; Mayer 2004: 170-172).

Thus, rethinking the idea that the influence of kin on each other's fertility depends on the local and regional environmental context and that kin would encourage fertility once the context is right, we need to account for variations in the effects of kin on fertility across the reproductive life course (Mathews and Sear 2013b: 316-317). These variations in kin effects most likely link to differences and changes in environmental contexts. Doing so, we might wonder about the criteria which have to be fulfilled to enter parenthood, because these might in fact vary between different family systems. In strong family countries, such as Italy, Spain or Poland (Synak 1990), where "the family group has had priority over the individual" (Reher 1998: 203), these seem to be broader and more difficult to fulfill (Newson 2009: 470). Young people feel more obliged to first marry, establish a household of their own and live in financial security before having children, while extra-marital births are less accepted[79] (Livi-Bacci 2001; Sobotka, Zeman and Kantorová 2003: 266; Možný and Katrňák 2005: 235-236). In the weak family Scandinavian countries, couples often start cohabiting while being engaged. Engagements are often separated from fertility and extra-marital fertility is more accepted (Trost and Levin 2005: 348-349, 353-354). These differences between strong and weak family countries are underlined by the results of the Word Value Survey, which demonstrate that extra-marital births are a minority phenomenon in strong family countries such

[79] As demonstrated by Heuveline and Timberlake (2004), the percentage of children of the early 1990s birth cohorts born to cohabiting parents *(p. 1224, Figure 2 at birth)* is lower in strong family countries, such as Poland, Italy and Spain, than in the weak family countries, such as Sweden and Finnland. However, percentages are also low in Belgium and Switzerland, and comparatively higher in Austria, Germany, and Slovania. Interestingly, Belgium is also characterized by comparatively close kin relationships – compared to its neighbouring countries (Dumon 2005: 227-228: Mönkediek and Bras 2014).

as Italy and Spain (Guerrero and Naldini 1996: 51-53). Similar results are found for several Eastern European countries, such as the Czech Republic, Hungary or Poland. In these countries degrees of birth outside marriage were comparatively low till the 1990s - and only strongly increased afterwards (Kotowska 2004: 114-115). Accordingly, in strong family countries childbirth is much more related to marriage than in other European countries. At the same time, fertility is more often postponed because of uncertain economic prospects (Guerrero and Naldini 1996: 51-53). Due to these economic insecurities children in contemporary Italy and Spain are more often and much longer dependent on familial support and tend to stay in their parents' households (Guerrero and Naldini 1996: 48-50; Livi-Bacci 2001: 145-152; Aassve, Mazzuco and Mencarini 2005: 284-285; Kohler, Billari and Ortega 2006: 64-65). This is supported by the welfare system which favors transfers to the aged and to the family, while young people and couples with children are less supported. Facilitating the strong family ties, this leads to later marriages and fertility postponement (Livi-Bacci 2001: 145-152; Newson 2009: 470; Dalla-Zuanna 2005: 111). Accordingly, past and current economic uncertainties, due to economic crisis, made it difficult to start a family in especially the strong family countries, such as Italy, Spain or Poland[80] (Synak 1990; Billari et al. 2002: 18-19; Goldstein et al. 2013). Accordingly, I would expect that these so called 'strong' family systems of Southern and Eastern Europe (Reher 1998: 203) tend to promote the postponement of fertility to higher ages.

In contrast, in contemporary Scandinavian Europe, the social constraints to start a family seem much less pronounced and allow for higher extra-marital fertility[81]. Taking Sweden as an example, Suzuki (2003) explains the lower social

[80] This was partly different in other Eastern European countries, such as Czechoslovakia, before 1990. For example, in Czechoslovakia pro-natalist policies, including financial and non-monetary incentives, such as getting a flat, regulations for parental leave and childcare facilities, lowered the requirements for starting a family. Together with a high labour force participation of women, this led to comparatively early childbearing (Kolorosová 1995: 105-109, 113-114; Sobotka, Zeman and Kantorová 2003: 258-259; Sobotka 2004b: 207-210; Možný and Katrňák 2005: 237).

[81] Traditionally, in Sweden marriage was highly institutionalized. Before and during industrialization, strong norms regarding family formation and the pre-conditions for marriage, such as setting up an own household, lead to comparatively high ages at marriage (Dribe and Lundh 2014). These norms regulated, for example, the partner selection, which was often based on economic rationalities and orientated towards keeping the families social status (Dribe and Lundh 2014: 224-228).

constraints and the higher levels of fertility with the welfare regime promoting non-family care giver activities; while he does not test his assumptions empirically (p. 12-13). The Swedish welfare system, for example, provides flexible opportunities for young couples and especially mothers to combine parenthood with labour force participation (Hoem 2005). Accordingly, it can be assumed that fertility nowadays not only happens earlier in people's life courses, but is also much earlier recuperated in case of having been postponed (Frejka and Sobotka 2008; Lesthaeghe 2010: 232-234). I can test this assumption via studying the occurrence of the event of first birth (see H1) and the transitions to a second and third child (see H2) in a comparative perspective.

> **(H1)**: *In strong family regions the event of first birth occurs later in the life course than in weak family regions.*
> **(H2):** *Compared to strong family regions, the transitions to the second and third birth are faster in weak family areas.*

6.2.3 Family systems and the 'Lower Fertility Trap Hypothesis'

Many researchers argue that families started to support fertility limitation once the costs of children had become high and families' chances for upward social mobility or keeping the achieved social status depended on the number of children (Billari 2008: 5; Billari and Kohler 2004; Dalla-Zuanna 2007: 457; Dalla-Zuanna 1995 cited in Micheli 2000: 16). However, fertility limitation in one generation might lead to a specific long-term problem in the succeeding generations. This problem is described by the 'Lower Fertility Trap Hypothesis' (LFTH). Developed by Lutz and Skribekk (2005) the LFTH assumes three different mechanisms which work in the same direction and reinforce each other, leading towards continuing fertility decline once low fertility occurs (Lutz, Skribekk and Testa 2006). These three mechanisms comprise a demographic, an economic, and a sociological one.

The demographic mechanism describes a shrinking population which modifies the age structure of this population and leads, in the long run, towards fewer women who are able to reproduce (Lutz, Skribekk and Testa 2006: 174).

The economic mechanism is based on Easterlin's relative income hypothesis. It is based on the idea that people's fertility is influenced by the ratio of their expected (what they expect to earn) and aspired income (what they

would like to earn), the so-called relative income. In this regard, the aspired income is formed by people's experiences when they grow up in their family of origin, and the expected income is the income of the current generation. In cases in which the ratio decreases, representing a lower actual income than aspired, fertility is expected to decline (Lutz, Skribekk and Testa 2006: 182). The economic mechanism assumes that fertility decline in one generation will lead to a higher standard of living which raises the aspired income in the offspring generation. At the same time, fertility decline likely leads to population aging, which puts pressure on the welfare state, increasing its costs for the younger generations. The rising standard of living and the rising costs of the welfare state both influence the relative income ratio and in the end further enforce fertility postponement and limitation to a certain minimum (p. 185).

Finally, the sociological mechanism assumes that lower fertility in one generation, leads to lower fertility aspirations through a feedback mechanism working through social learning and social contagion in the subsequent generations (Lutz, Skribekk and Testa 2006). The experience of growing up in smaller families leads an offspring generation to reduce their number of desired children. While a parental generation might have produced fewer children, because of economic constraints, the offspring generation might end up with even lower completed fertility, since they adapted to the behavior of the older generation as being the norm. Recent research seems to support this argument, observing declining ideals about expected family size (Goldstein, Lutz and Testa 2004: 484-486).

Cultural norms and values regarding fertility are reproduced within families (Bernardi 2003; Keim, Klärner and Bernardi 2009: 896-897; Montgomery and Casterline 1996; Lesthaeghe and Willems 1999). The degree to which this happens is framed by people's social relationships. Accordingly, different regional family systems provide different potentials to get caught in the 'low fertility trap'. In strong family regions kin relationships are closer than in weak family areas (Reher 1998), and the transmission of social norms and values in families seems stronger (Bott 1971: 205-207, 212; Lorimer 1954: 247). Respectively, children in strong family areas are thought to adapt less to lower family size ideals due to their socialization in larger kinships groups. Recent research supports these assumptions. The decline in ideals about family size is more pronounced in the German speaking than in Mediterranean countries. Though, it is least present in

weak family countries, such as Denmark and Sweden (Goldstein, Lutz and Testa 2004: 484-486). Nevertheless, in all countries family size ideals are often not realized. As demonstrated by Goldstein, Lutz and Testa (2004: 487) the difference between ideal and realized family size is greatest in Italy, while ideals about family size and people's expected family size score highest in the North-western European countries.

The larger difference between ideal and realized family size in especially the strong family countries seems to be explained by the fact that the closer kin relationships in strong family countries result in an environment in which the behavior of children is more effectively controlled (Granovetter 2005: 34, 39-40; Dalla-Zuanna 2004; Romero and Ruiz 2007; Lorimer 1954: 247). Given the organization of the welfare state, in which families often function as providers of welfare and social support (Hilgeman and Butts 2009: 107), in strong family countries, high fertility impacts people's standard of living stronger and is less influenced by the welfare state than in democratic welfare state regimes (Esping-Andersen 1999). Accordingly, the organization of the welfare state can be assumed to increase the feedback loop of fertility limitation working through the above described economic mechanism. This leads to a stronger rationale to limit fertility in stronger than in weaker family regions (Lorimer 1954: 200-203). To a lesser extent this will likely also be the case in Germany, where the welfare regime favors the traditional (male-breadwinner) family model (Esping-Andersen 1999; Hoem 2005).

Assuming that the economic mechanisms of the 'Lower Fertility Trap Hypothesis' (LFTH) works more efficiently in strong family regions, where fertility limitation is also more effectively controlled, strong family regions seem to face greater risks to get caught in the lower fertility trap than weak family areas -- despite still larger family size ideals. If this assumption holds, I would expect a decreasing amount of transitions to second and third births in the younger birth cohorts in especially strong family regions; while this is less the case in weak family areas.

> **(H3)**: *For the younger birth cohorts (1941-1960) there are fewer transitions to second and third children in strong family regions than in weak family regions.*

6.3 Data, Measures and Method

6.3.1 Data

To answer my research question and the earlier derived hypothesis I use the first two waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) (Börsch-Supan et al. 2013). The first and second wave of SHARE were conducted in 2004/05 and 2006/07 in different European countries and Israel. While the first wave included Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden, and Switzerland, the second wave was extended to the Czech Republic, Ireland, Poland and contained a panel and a replication-part. Together, both waves contain 31,186 respondents that can be identified as anchor persons (ego's); 13,678 respondents belong to the panel part. The target population of the survey was 50 years and older. Yet, to some extent also people younger than 50 years old were interviewed (Mönkediek and Bras, 2014).

In the following analysis only respondents from European countries aged 40 till 80 years old were included (omitting 5,666 cases)[82]. Respondents with missing information on their fertility or their geographical belonging were dropped from the analysis (1,431 cases). The same accounts for cases where no weights were provided (127 cases). Furthermore, European regions which contained less than 10 observations were excluded (three regions with in total 16 cases). This reduces the number of cases in the current data-set to a maximum of 23,928 cases. Due to variable non-response, the N in the different regression models is even lower (14,550 cases).

6.3.2 Measures

Dependent variable

In the current analysis I focus on the occurrence of the events of first, second and third birth. While the timing of the event of first birth tells us something about the postponement of fertility to later stages in the life course, the transitions to second and third births are studied to identify fertility limitation. In this context, I assume that in case of fertility recuperation, after having fertility postponed, this is represented by a higher and faster transition rate from first to second and to third birth. The dependent variables in the current analysis are

[82] Ireland got excluded as there are no weights for Ireland in the data-set (844 cases).

hence 1) the event of first birth, and 2) the transition from first to second and to third birth.

Table 6.1: European average cohort fertility and mean ages at first, second and third birth

Cohort (N cases)	Mean Cohort Fertility* (SD)	Mean Age at First Birth*	Mean Age at Second Birth*	Mean Age at Third birth*
Total				
1951-60 (5,301)	1.911 (0.031)	26.4	29.4	32.3
1941-50 (8,954)	2.001 (0.022)	26.0	29.0	31.5
1931-40 (6,989)	2.172 (0.027)	26.4	29.3	31.6
1920-30 (2,666)	2.231 (0.050)	26.9	30.0	32.3
For men				
1951-60 (2,496)	1.879 (0.049)	28.0	30.9	33.7
1941-50 (4,293)	1.936 (0.035)	27.7	30.6	33.5
1931-40 (3,351)	2.113 (0.038)	28.3	31.1	33.6
1920-30 (1,152)	2.312 (0.069)	28.5	31.9	34.4
For women				
1951-60 (2,805)	1.946 (0.036)	24.6	27.9	30.9
1941-50 (4,661)	2.066 (0.028)	24.5	27.5	29.8
1931-40 (3,638)	2.221 (0.037)	24.9	27.8	30.1
1920-30 (1,514)	2.180 (0.069)	25.8	28.6	30.8
23,910	2.059 (0.015)	26.3	29.3	31.8

Note: weighted output

Table 6.1 gives an overview of the cohort fertility in the data-set and the mean ages at first, second and third birth, as well as the average fertility and the ages at birth per included country. Due to the fact that the respondents in the survey are 50 years and older, these figures represent the completed cohort fertility of the respondents. The figures in Table 6.1 reflect a European wide fertility decline over birth cohorts. This decline can be observed for both men and women. Concerning the ages at first, second and third birth there is little change, apart from for the oldest birth cohort group. However, these values average out important regional differences. Looking more closely at variations between countries and over cohorts reveals a much more diverse picture (compare Table A6.1, Appendix 6.1). This diversity becomes even more evident at the regional level. For example, the regional variations in the mean ages at first birth, for respondents born between 1931 and 1950 (Figures 6.1 and 6.2), demonstrate there are differences in the direction of the described developments. While in some regions the mean age increased over cohorts (for example in Piedmont (Italy), Småland and the islands (Sweden), or in Pomeranian (Poland)), in other

regions it decreased (for example in Basilicata (Italy), Castile and León (Spain), Middle Norrland (Sweden) or Bavaria (Germany)).

These regional differences continue to exist when we look at, for example, the mean age at second birth (cohorts 1941 to 1950). In regions in which the events of first birth happened later, also the events of second birth occurred later in life (Figure 6.3). However, if we look more closely at the average spacing of children by subtracting the values presented in Figure 6.3 and Figure 6.2, the different regional demographic strategies become even more visible. In some regions in which the event of first birth is postponed, such as the Spanish regions of Aragon and Andalusia, different patterns of spacing children occur. While in Andalusia the event of second birth happened comparatively early after the first child was born, this event is postponed to higher ages in the region of Aragon (Figure 6.4).

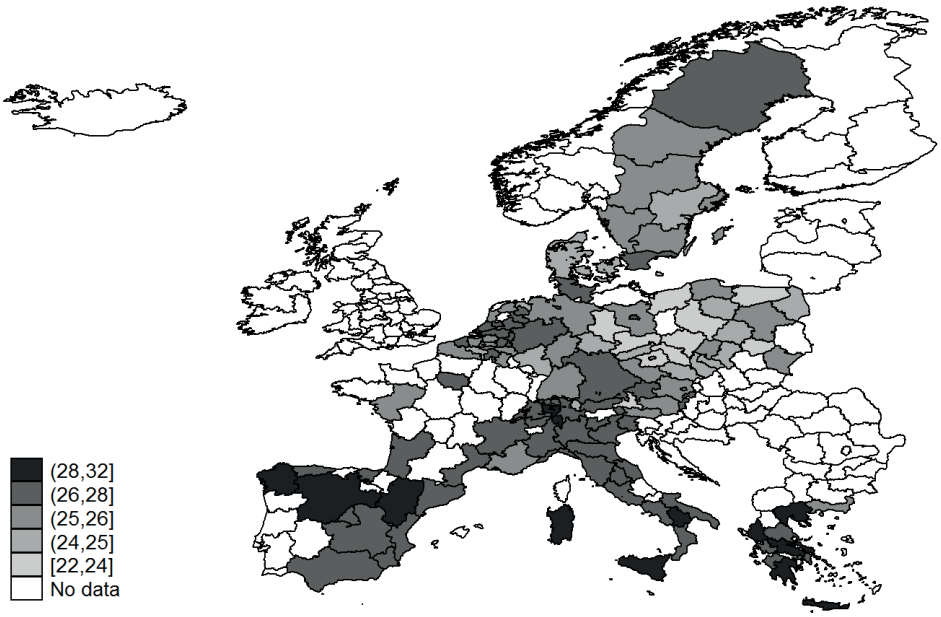

Figure 6.1: Mean age at first birth per NUTS 2 region, cohorts 1931-40

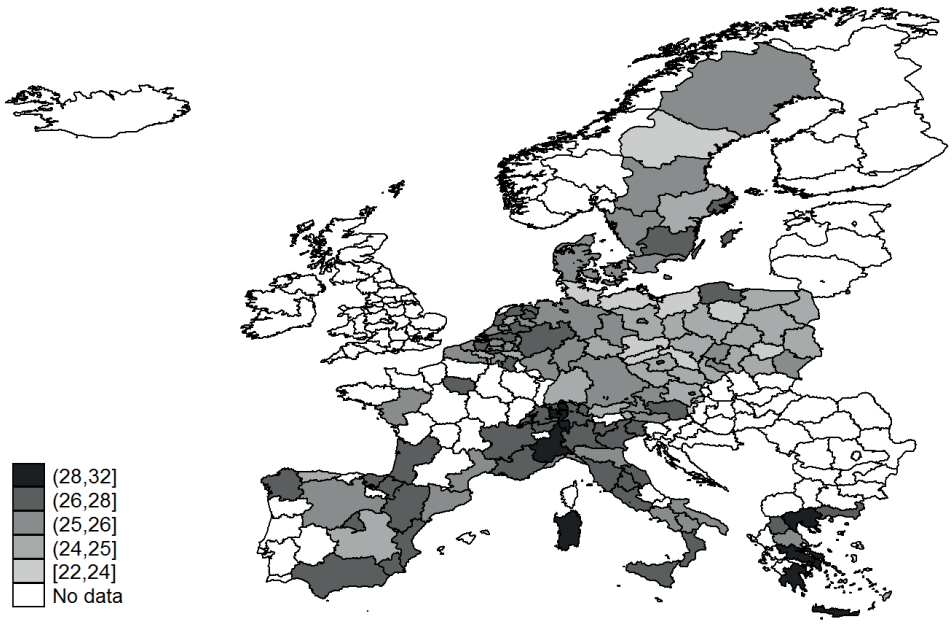

Figure 6.2: Mean age at first birth per NUTS 2 region, cohorts 1941-50

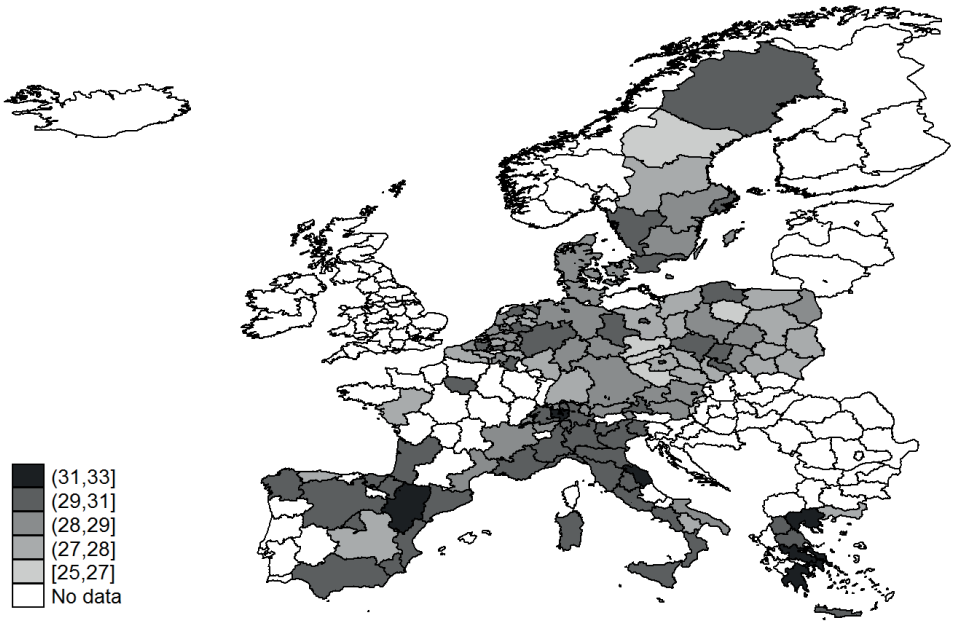

Figure 6.3: Mean age at second birth per NUTS 2 region, cohorts 1941-50

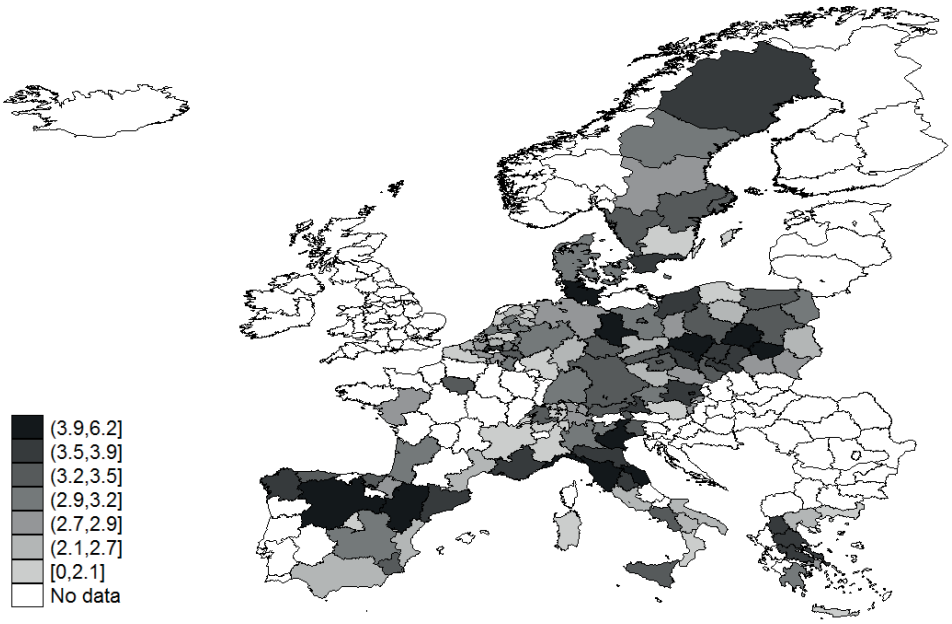

Figure 6.4: Average length of the birth interval between the first and the second child per NUTS 2 region, cohorts 1941-50

Explanatory variables

The observed regional differences in the age at first birth, as well as the transitions to second and third birth shall be explained by differences in regional family systems. As suggested by earlier research, regional family systems are multi-dimensional (Mönkediek and Bras 2014: 252). To acknowledge this multi-dimensionality, I derive regional family systems from 'contact frequency' and 'spatial proximity' between kin using the information on structures of people's social networks in the first two waves of the SHARE data-set. These two network indicators providing me with a two dimensional framework. While the first dimension, frequency of contact between kin, reflects real family life, the second dimension, spatial proximity between kin, tells us something about dormant kin relationships as well (and thus about possible kin obligations; Mönkediek and Bras 2014: 249). In a first stage, the two scores were derived for each individual based on the observed ego-networks, reflecting the average kinship networks' density. After that in a second stage these individual indicators were aggregated to regional means, indicating the regional family systems. The resulting aggregate scores between one ('no contact') and eight ('frequent contact') for the average frequency of contact to kin, and one ('very distant') to nine (or 'very

close proximity') for the average spatial proximity between kin (for a more detailed description see the Methodological Appendix M1). The resulting scores seem to trace differences in regional family systems very well. The scores strongly correlate with other regional scores measuring family systems, such as attitudes towards individualism, divorce and marriage, as well as household size (see the Methodological Appendix M2).

To simplify the interpretation and to reduce multicollinearity both scores were centered on their mean so that they reflect regional family systems as compared to the European average. Thus, the presented regression coefficients reflect the changes in people's timing of the event of birth (first, second or third birth) in relation to deviations from the European average spatial proximity (between one and five km; mean value: 6.535) and the average frequency of social contact with family and kin-members (several times a week; mean value: 6.441). Country averages of these variables are presented in Table 6.2.

To better visualize the effects of family systems on the studied birth events, I clustered the regional family systems into four groups. These groups describe whether European regions lie above or below the European averages of the two family system indicators. Accordingly, the four distinct groups reflect regions characterized by 1) on average sparse contact and distant proximity (N = 12,646; 52.9%), 2) on average sparse contact and close proximity (N = 2,654; 11.1%), 3) on average frequent contact and distant proximity (N = 1033; 4.32%) and 4) on average more frequent contact and closer proximity between kin (N = 7,594; 31.7%). Moreover, the graphs show the trend of the hazard rates separately for the included cohort groups, to describe changes in these trends over time.

Control variables

Different control variables were included into the analysis. Table 6.2 provides a descriptive overview of these variables presented on country level.

Gender. To control for possible gender differences, the regression models control for respondents being male or female.

Education. To test in how far the timing of fertility depends on people's socio-economic position, I included educational level, as this indicator is highly correlated with a person's social-economic status. In the data-set educational

degrees are classified on the basis of the ISCED-97 classification[83]. As the number of cases with tertiary education ("first" and "second stage tertiary") is rather low, these categories have hence been pooled.

Birth cohort. To account for changes in people's demographic behavior over cohorts (e.g. changes in fertility postponement), respondents' birth cohort were included in the form of cohort groups. The distribution of the respondents' birth cohort groups is as follows: 1920-30: 11.14%, 1931-40: 29.21%, 1941-50: 37.42% and 1951-60: 22.15%.

Age at marriage. For most of the regarded cohorts, nuptiality played an important role in shaping their fertility behaviour. In many cases marriage was a normative precondition to start a family, while it has to be admitted that pregnancies often triggered marriages as well (Skinner 1997: 63-64; Dribe and Lundh 2014: 229-232). Accordingly, people's timing of the event of first birth often related closely to their age at marriage. In this context, younger ages at marriage, for example, lead women to longer reproductive phase (Van Bavel and Reher 2013: 271-276). Changes in the age at marriage altered this phase, in many cases shortening it. To control for the changes in the age of marriage explaining fertility behaviour, age at marriage is included into the analysis.

[83] For more information see: http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm (access date: 07.05.14).

Table 6.2: Descriptive statistics

Country	N	Female resp.	Respondents education (ISCED - 97)*	Mean age at marriage*	Average contact frequency*	Average spatial distance*
Austria	1250	53.0%	3.029 (0.039)	27.2	6.347 (0.045)	6.410 (0.047)
Germany	2307	52.6%	3.364 (0.025)	28.1	6.074 (0.040)	6.307 (0.040)
Sweden	2155	54.2%	2.788 (0.033)	32.6	6.075 (0.037)	5.613 (0.042)
Netherlands	2183	52.4%	2.764 (0.032)	28.1	6.133 (0.039)	6.338 (0.037)
Spain	1713	57.3%	1.721 (0.043)	26.9	6.973 (0.042)	7.054 (0.048)
Italy	2163	55.0%	1.921 (0.031)	27.0	6.909 (0.042)	7.199 (0.041)
France	2202	47.4%	2.409 (0.043)	27.7	6.241 (0.041)	5.888 (0.046)
Denmark	1739	53.4%	3.328 (0.035)	29.8	5.942 (0.040)	5.800 (0.036)
Greece	1683	53.3%	2.125 (0.040)	27.6	7.178 (0.032)	6.863 (0.044)
Switzerland	1069	49.4%	2.848 (0.040)	29.3	6.106 (0.050)	6.295 (0.054)
Belgium	2290	45.1%	2.885 (0.036)	27.3	6.254 (0.037)	6.538 (0.034)
Czech Republic	1625	59.5%	2.759 (0.039)	26.2	6.331 (0.049)	6.523 (0.052)
Poland	1531	56.6%	2.345 (0.037)	25.0	6.519 (0.044)	6.880 (0.044)
Total N	**23910**	**23,910**	**23616**	**15896**	**23296**	**22519**

Note: *weighted output, standard errors in brackets

6.3.3 Method

To answer the research question and test the derived hypotheses the chapter uses event history analysis. The risk to experience an event of first birth or higher order birth at a given age is explained by the regional family system and the described control variables using a parametric regression survival model with a log-logistic distribution of the hazard rate[84].

To study the effects of family systems on people's fertility only at different points in their lives, I split life courses into episodes and created dummy variables for the family system variables for each episode. I differentiated between the following episodes: 1) for the event of first birth, before and after

[84] I do not use a cox-regression model, since the proportional hazard assumption for most of the independent variables did not hold.

the age of 30, 2) for the transitions to second and third birth, before and after two years after the last event of birth. The time points for the episode splitting were based on the fact that fertility is often postponed until after education and the first job entrance (Jackson and Berkowitz 2005: 57-59, 75). Moreover, earlier research suggests that parents try to space their children fitting their household situation (Van Bavel 2004; Amialchuck and Dimitrova 2012). For this reason, I assumed that parents try to space their children not too close (< two years after the last child was born).

There might be unobserved factors shared between individuals at higher aggregate levels, which could explain similarities in the timing of births. To capture these unobserved factors which would bias the presented results, the derived models account for shared frailty between individuals of the same country. Frailty models can be distinguished into parametric and shared frailty survival models. The first type of models account for heterogeneity among individuals. The second type of frailty models are used to capture unobserved factors shared between individuals of a certain group. As described by Gutierrez (2002: 23), shared frailty models can be thought of as random effects models for survival data.

6.4 Results

6.4.1 Changing hazard rates and clusters of family system regions

To visualize the effects of my family systems indicators on the three different events of birth, Figures 6.5 to 6.7 present the smoothed hazard rates for the event of first birth and the transitions to the second and third child for different clusters of regions. Regions were clustered based on similar levels of frequency of contact and spatial proximity between kin. The time at risk starts from respondents' age 15.

First of all, comparing the smoothed hazard rates for the event of first birth in regions with different family systems (see Figure 6.5), confirms that the hazard rates are indeed time-varying. Additionally, the hazard rates differ between regional family systems. In the regions with on average sparse contact and closer proximity between kin, events of first birth occurred less, while in regions with on average more frequent contact and less proximity between kin such events occurred much faster and more often. Concerning the changes in the

hazard rates over cohorts, Figure 6.5 demonstrates that the hazard rates first decreased and became again more pronounced in the younger birth cohort group.

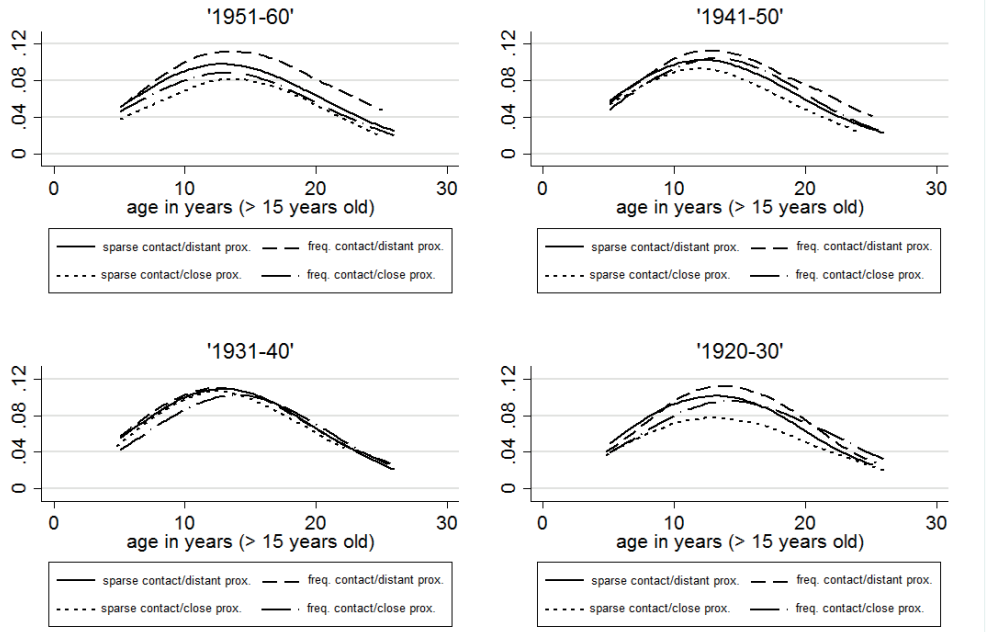

Figure 6.5: Smoothed hazard rates for the event of first birth in different family systems, for different birth cohort groups

Figure 6.6 presents the smoothed hazard rates for the transition from first to second birth in different family systems, for the different birth cohort groups. On first glance, there appears to be little difference between the hazard rates. Only in the youngest and oldest birth cohort group differences in the hazard rates between family systems become evident. For respondents born between 1951 and 1960, higher transition rates occur in regions with on average more distant proximity between kin. Interestingly, a reverse pattern can be observed for respondents born between 1920 and 1930. Higher transition rates in strong family regions. These developments seem to reflect the demographic changes in weak and strong family regions.

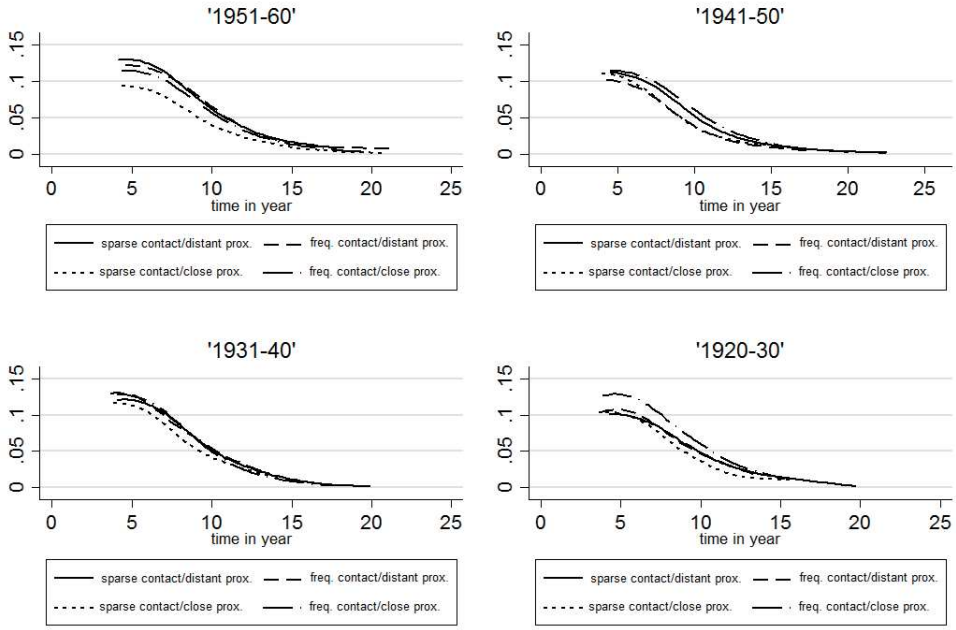

Figure 6.6: Smoothed hazard rates for the transition from first to second birth in different family systems, for different birth cohort groups

Taking a look at the transition from the second to the third child, we find decreasing transition rates in regions with frequent contact and close proximity decreased over cohorts (Figure 6.7). A similar pattern can be observed in regions characterized by on average less contact and more distant proximity between kin; although transition rates recovered in the youngest birth cohort group. The intermediate regions show a relatively stable pattern, with transitions peaking in regions characterized by on average more frequent contact and less proximity between kin for the cohorts born between 1931 and 1940.

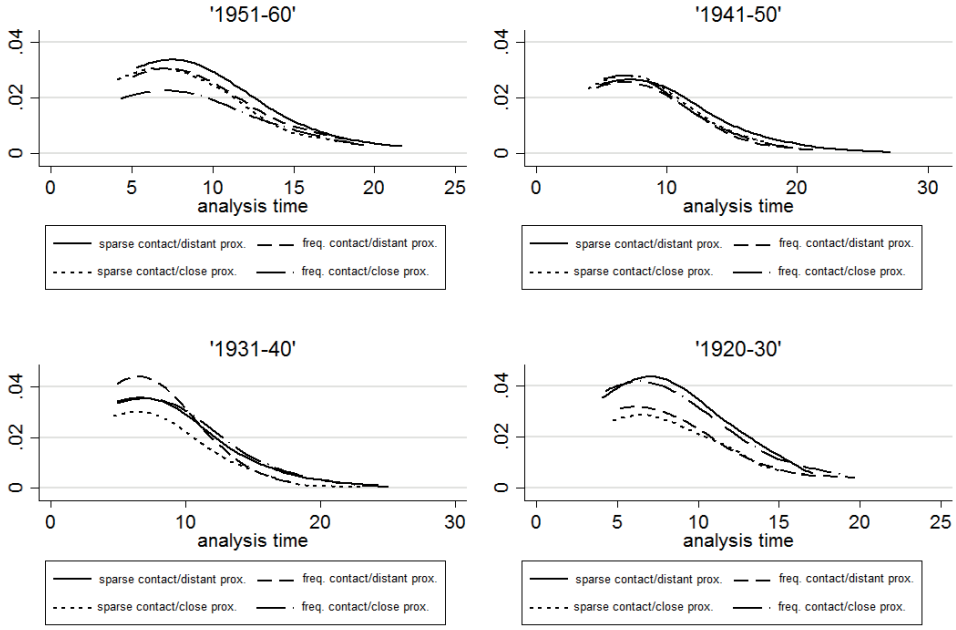

Figure 6.7: Smoothed hazard rates for the transition from second to third birth in different family systems, for different birth cohort groups

Reflecting the descriptive results, the occurrence of starting a family and the timing of higher order births seems to differ among regions with different family systems (Figure 6.5 and Figure 6.7). For the second child, the fertility behaviours seem rather similar in all areas -- possibly reflecting two child norms. However, the transition to a third child seems to be again framed by regional family systems. In this context, the descriptive results suggest that the transitions to the third child first changed over cohorts. They first reduced in both strong and weak family regions and later on increased in the intermediate family system regions, such as regions with on average sparse contact and close proximity between kin (Figure 6.7). For the older birth cohorts larger family size was the result of higher fertility over a longer age span in both strong and weak family regions. For the cohorts born between 1931 and 1941 this reproductive age span was much more condensed. Interestingly, for the youngest birth cohort group the transition rates recovered and reproductive ages expanded again in weak family regions (Figure 6.7).

6.4.2 Results of the event history analysis

Table 6.3 presents the effects of regional family systems on the timing and spacing of children. To capture unobserved factors shared between individuals living in the same country, which might influence the hazard rates and explain people's fertility behaviour, the models presented in Table 6.3 include a frailty term. As demonstrated by the frailty terms ('Theta') there are indeed unobserved factors, such as welfare policies, shared between individuals which commonly affect the occurrence of the birth events. These shared effects seem to be stronger for higher order births as indicated by the increasing value of 'Theta'.

Looking at first and second births, we find significant effects of education, age at marriage, gender, and birth cohort. These effects seem to change over people's life course. As demonstrated by Table 6.3 (and Table A6.4), higher education, a later age of marriage, or belonging to the older birth cohort groups, positively impact on the event of first birth for respondents aged below thirty. After the age of thirty, higher education decreases the chance for a first birth event. A similar effect is observed for the age of marriage in case of the transition to the second child: a higher age at marriage decreases the hazard rate, reducing and delaying the transitions within the first two years after the first child was born. Afterwards, the transition rates increase again significantly. Interestingly, during the second episode, higher educational degrees support the transition to a second child[85], which suggest larger spacing between children of parents with higher education. For the transition to the third child, the effects were not studied separately for the periods 'till two years after the last child was born' and 'afterwards', since the model did not converge. Still, the results suggest a delaying effect of a higher age at marriage, reducing the hazard rate.

[85] Kreyenfeld (2002) observes similar results for West Germany. However, for the West German case the positive effect of higher female education on the risk of a second birth results out of a model misspecification. In models which do not control for women's partners education, the coefficients are upwardly biased (p. 37-38). She links this result to the institutional context of Western Germany which favours the male-breadwinner model and male employment being crucial for having a larger family (p. 39).

Table 6.3: Results of the event history models (regression coefficients)

	Event of birth		
	Model 4.1 First birth	**Model 4.2 Second birth**	**Model 4.3 Third birth**
	Individual level		
Female	-0.199 ***	0.001	-0.009
Cohort			
1951-60	Ref.	Ref.	Ref.
1941-50	-0.008	-0.022	-0.014
1931-40	0.073 ***	-0.046 **	-0.029 **
1920-30	0.142 ***	-0.016	-0.030 ^
Variables (first episode)	**< age 30**	**0 - 2 years**	**0 - 2 years**
Education (ISCED-97)	0.047 ***	-0.004	0.016
Age at marriage	0.017 ***	-0.006 ***	-0.013 ***
Variables (second episode)	**< age 30**	**> 2 years**	**> 2 years**
Education (ISCED-97)	-0.056 ***	0.037 ***	0.003
Age at marriage	0.011 ***	0.019 ***	0.014 ***
	Regional level		
Family Culture (first episode)	**< age 30**	**0 - 2 years**	**0 - 2 years**
Average contact	0.136 ***	0.105 **	0.078 **
Average proximity	0.099 ***	-0.156 ***	-0.055 **
Family Culture (second episode)	**> age 30**	**> 2 years**	**> 2 years**
Average contact	-0.302 ***	-0.075	-0.038
Average proximity	0.108 *	0.257 ***	0.035
Constant term	1.831 ***	0.424 ***	1.006 ***
Ln_gamma	-1.376 ***	-1.686 ***	-3.347 ***
Ln_theta	-3.237 ***	0.704 *	1.744 ***
Gamma	0.253	0.185	0.035
Theta	0.039 ***	2.021 ***	5.719 ***
LR Chi² (df)	3157.77 (12) ***	715.07 (12) ***	636.58 (12) ***
Clusters	**13**	**13**	**13**
N	**15644**	**14550**	**14656**

Note: ^p < 0.10. *p < 0.05. **p < 0.01 ***p< 0.001

Regarding the effects of the family system indicators on the timing and spacing of children, the results demonstrate significant effects of the regional average frequency of contact and proximity between kin on the event of the first birth and the traditions to the second and third child (Table 6.3). As expected, these effects differ between the studied episodes. While in regions with frequent contact between kin fertility is higher for respondents before they turn thirty, increased contact between kin reduces the hazard rate afterwards. For the transition to the second child we observe a reversed effect in regions with close spatial proximity between kin: delaying the transition to the second child during

the first two year after the last child was born and supporting the transition afterwards. Concerning the transition to the third child, regional family systems only frame people's fertility during the first two years after the second child was born. While the hazard rate increases in regions with frequent contact between kin, individuals in regions with close spatial proximity between kin experience again a delaying effect.

I test whether the effects of the family system indicators changed over the studied birth cohorts, via including cohort-family system interaction terms into my models. As demonstrated by the results (Table 6.4), the effects of the family system indicators indeed varied over the studied cohorts. In regions with on average more social contact between kin, the event of first birth occurred faster for respondents aged below thirty who were born after 1931. This effect changed after respondents turned thirty. During the second episode, there is a significant and over cohorts increasing effect for respondents in regions where kin lives spatially close on their timing of the first birth. While in regions with on average close spatial proximity fertility was lower in the older cohorts, in the youngest birth cohort group, this effect turns positive increasing the hazard rate. Moreover, the average frequency of contact between kin only plays a role for the youngest cohort group (1951-60). As suggested by the significant direct effect, on average frequent contact between kin in a region reduces the occurrence of first birth events.

For the transition to the second child, the results demonstrate a negative (delaying) effect in regions with close spatial proximity, and a positive (accelerating) effect in regions with frequent contact between kin, for the two oldest birth cohort groups and during the first two years after the last child were born. Afterwards, these effects disappear and in regions with close spatial proximity between kin transitions to the second child occur faster for the younger birth cohorts.

Concerning the transition to the third child, I observe significant effects of the family system indicators two years after the last childbirth. Yet, these effects seem spurious and are limited only to certain birth cohort groups. The transitions to the third child, after two years since the last childbirth had passed, is lower for respondents born between 1941 and 1950 in regions with on average frequent contact between kin reduced. For spatial proximity such a negative effect can be identified only for respondents born between 1920 and 1930.

Table 6.4: Results of the event history models with interaction terms (regression coefficients)

	Event of birth		
	Model 5.1 First birth	**Model 5.2 Second birth**	**Model 5.3 Third birth**
	Individual level		
Female	-0.197 ***	-0.000	-0.046 *
Cohort			
1951-60	Ref.	Ref.	Ref.
1941-50	-0.009 ^	-0.020	-0.204 ***
1931-40	0.072 ***	-0.046 **	-0.268 ***
1920-30	0.144 ***	-0.015	-0.272 ***
Variables (first episode)	**< age 30**	**0 - 2 years**	
Education (ISCED-97)	0.048 ***	-0.003	0.016
Age at marriage	0.017 ***	-0.006 ***	-0.005 ***
Variables (second episode)	**< age 30**	**> 2 years**	
Education (ISCED-97)	-0.057 ***	0.037 ***	
Age at marriage	0.011 ***	0.019 ***	
	Regional level		
Family Culture (first episode)	**< age 30**	**0 - 2 years**	**0 - 2 years**
Average contact	0.028	0.036	0.201
Average spatial proximity	0.122 ***	-0.091 ^	-0.257 ^
Cohort* Network (first episode)	**< age 30**	**0- 2 years**	**0- 2 years**
41-50 * contact	0.127 **	-0.044	-0.116
31-40 * contact	0.168 ***	0.176 *	-0.029
20-30 * contact	0.070	0.357 **	-0.017
41-50 * proximity	-0.016	-0.014	0.187
31-40 * proximity	-0.040	-0.131 *	0.110
20-30 * proximity	0.009	-0.203 *	0.164
Family Culture (second episode)	**> age 30**	**> 2 years**	**> 2 years**
Average contact	-0.337 *	0.019	-0.030
Average spatial proximity	0.413 ***	0.202 *	0.175
Cohort* Network (sec. episode)	**> age 30**	**> 2 years**	**> 2 years**
41-50 * contact	-0.199	-0.037	-0.663 *
31-40 * contact	0.058	-0.186	-0.569 ^
20-30 * contact	0.359 ^	-0.210	0.423
41-50 * proximity	-0.225	0.043	-0.350 ^
31-40 * proximity	-0.375 **	0.108	-0.331
20-30 * proximity	-0.587 ***	-0.065	-0.729 **
Constant term	1.833 ***	0.423 ***	1.109 ***
Ln_gamma	-1.376 ***	-1.690 ***	-2.165 ***
Ln_theta	-3.241 ***	0.706 *	1.476 ***
Gamma	0.253	0.184	0.115
Theta	0.039 ***	2.026 ***	4.374 ***
LR Chi² (df)	3216.17 (24) ***	743.53 (24) ***	84.77 (22) ***
Clusters	**13**	**13**	**13**
N	**15644**	**14550**	**14656**

^p < 0.10. *p < 0.05. **p < 0.01 ***p< 0.001

6.5 Discussion and conclusion

This chapter raised the questions 1) to what extent regional family systems influence the timing and spacing of children and 2) whether this effect varies over people's reproductive life course. Answering these questions is important to understand the occurrence and persistence of lowest-low fertility and the recent rise in fertility in different parts of Europe. I tried to answer these questions by studying the effects of two family system indicators at different points in people's lives. I compared the effects of average special proximity and average frequency of contact between kin in a region on people's events of first birth before and after respondents turned 30, and on the transitions to the second and third child before and after two years after the last child was born, using event history models. Based on earlier research I assumed that the event of first birth occurs later in strong family regions than in weak family regions **(H1)**, resulting in fertility being postponed. Moreover, I expected to find the transitions to the second and third child occurring faster in weak family areas **(H2)**. Finally, I suspected that in the younger birth cohorts fewer transitions to higher parity occurred in strong family regions than in weak family regions, reflecting an increase in fertility limitation **(H3)**. As demonstrated by Table 6.3 and Table 6.4, the results of the different event history models turned out more complex than earlier assumed.

Concerning my first hypothesis, the results indicate that for the studied birth cohorts events of first birth occurred earlier in regions with on average closer kin relationships when respondents were below thirty years old. For respondents aged 30 and older, living in a region with on average frequent contact between kin decreased the chance for a first birth event. Interestingly, in regions with on average close proximity between kin I observe the opposite effect; possibly related to increased chances for kin support (Table 6.3).

Accordingly, the overall results suggest that in regions with strong links to kin early fertility is supported for the studied birth cohorts, rejecting the first hypothesis **(H1)**. This result is in line with previous research describing that for the time period 1975 till 1989 - when parts of the studied cohorts reproduced – events of first birth occurred comparatively early in strong family countries, such as Italy, Spain, Czechoslovakia and Poland. During this period the events of first birth occurred slightly later in countries where kin relationships are weaker, such

as the Netherlands (Billari and Kohler 2004: 167-169; Sobotka 2004b: 54-56). Interestingly, the Netherlands additionally show substantial delays in childbearing without marked declines, whereas in Italy lowest-low fertility seems to result from Italian cohorts falling behind in fertility later in life (Billari and Kohler 2004: 167, 169). Billari and Kohler (2004: 169) argue that "[t]his falling behind at higher ages is absent in countries that have more successfully accommodated late childbearing" (Billari and Kohler 2004: 169; compare Sobotka 2004b: 68-69). However, during later periods especially the strong family countries, such as the Czech Republic or Spain, experienced a rapid increase in fertility postponement, leading to especially Southern European country taking the lead in fertility postponement (Sobotka 2004b: 54-56, 60-62, 161, 180).

Furthermore, the changes in the effects propose that in regions with on average frequent contact between kin these relationships may have indirectly led to stronger fertility control when women's work became imperative. This seems to have been the case in many Eastern European countries before the 1990s. For example in Czechoslovakia childbearing took place in a very narrow age span and early in the life course. As described by Sobotka (2004b: 208), "four out of five Czech women [born in 1957] gave birth to their first child by age 25 and 90% by age 29". Next to the high (and supported) labour force participation of women and the pro-natalist policies by the state (Sobotka 2004b: 207-210), this can be explained by the high values assigned to children and family life (Kolorosová 1995: 105-109, 113-114; Sobotka, Zeman and Kantorová 2003: 258-259; Sobotka 2004b: 207-212). Together, these factors favoured early fertility and an early stopping behaviour.

With respect to the second hypothesis **(H2)** the results revealed that family systems had varying effects on the transition to the second and third child. Depending on the family system indicator, couples in regions with on average frequent contact between kin had an earlier transition to higher parity at younger ages (< 30), while couples in regions with on average close proximity between kin displayed a delaying effect. For respondents above age 30 the effect of contact between kin disappeared and the effect of proximity between kin turned around. Accordingly, regional family systems supporting close kin relationships based on spatial proximity facilitated a faster transition to the second child after respondents turned thirty.

As all these results indicate, regional family systems are made up of different dimensions which exert varying effects under different conditions. The original first two hypotheses were too simplistic to catch the more complex effects of my family system indicators on fertility. The effects of regional family systems on fertility vary – as expected – over people's life courses, which suggest that regional family system norms support fertility only at certain ages. Although these variations might result in similar overall outcomes, such as lowest-low fertility, it seems important to decompose these effects over cohorts. If in one regional family system, for example, early fertility is favoured and supported, any developments leading to shifts in fertility to higher ages could raise discrepancies between family ideals and realities lowering fertility in an offspring cohort. Solving these discrepancies, could - in the long run - raise fertility levels.

To study and assess changes in the influence of the regional family systems over cohorts, I included cohort-interaction terms into the event history models. As assumed in the third hypothesis **(H3)** I expected to find fewer transitions to higher parity in weak family than in strong family regions in the younger birth cohorts. These fewer transitions reflect increasing fertility limitation in strong family areas for the more recent birth cohorts. As it turned out, some family system effects were of importance indeed only for the younger birth cohorts, while other effects seem to have changed or vanished over time. However, most of these effects relate to the event of first birth. While, for example, older birth cohorts in regions with on average close spatial proximity postponed the event of first birth at latter ages, the younger birth cohorts of these regions realized transitions to first birth faster. The result for the younger birth cohorts might be explained by better opportunities for social support, such as caretaking of children, provided by kin in proximity. Interestingly, I observe the opposite effect for respondents out of younger birth cohorts and aged 30 and older in regions with on average frequent contact between kin. For these respondents, the effect of on average frequent contact between kin leading to fertility postponement might relate to changes in children's socialization. These might increasingly follow the rational to limit fertility to raise children's opportunities for social mobility (Billari 2008: 5; Billari and Kohler 2004; Dalla-Zuanna 2007: 457). This effect, observed by other researchers as well (Livi-Bacci 2001: 145-152; Aassve, Mazzuco and Mencarini 2005: 284-285), seems to be a

problem especially for the younger birth cohorts. Taking both results together, for regional spatial proximity and contact frequency between kin, there seems to be a trade-off between too close and too distant kin relationships. These might either increase the economic burden of a family or relax problems of combining work and family (Schaffnit and Sear 2014: 5; Grundy and Henretta 2006: 708-710).

Finally, regarding transitions to higher parity, there are few significant effects concerning the transition to the second child, mainly during the first two years after the first child was born. In this context, the positive effect of living in a region with on average frequent contact between kin, raising fertility, disappeared over cohorts. At the same time, also the negative effect of on average close spatial distance between kin, lowering fertility, weakened and turned insignificant. This result is surprising, because I expected to find effects of regional family systems especially for the transitions to higher parities. While one explanation might be that family systems norm only become important at even higher parities – which I did not regard due to data limitation - , another explanation could be that my original assumptions were misleading. As, for example, discussed by Lorimer (1954), strong family regions do not necessarily promote fertility. Depending on the context, such as degree of competition for resources, there might be no motivation for kin to support fertility (p. 247). It could be more efficient for them to control fertility and invest more resources in fewer children to improve their reproductive success (Turke 1989; Voland 1998). Since my data does not allow testing for these differences in reproductive strategies, this will be the work of future research.

Finally, taking the different results together, the question is whether certain regions with specific family systems face greater risks of getting caught in the 'low-fertility trap'? The answer to this question is again more complex than earlier assumed. While regions with family systems ranging in between those with 'strong' and 'weak' kin ties may be more balanced with respect to kin support and economic burdens about caring for kin, it seems that especially these regions are most vulnerable to persistent low fertility. This risk is especially high in regional family systems characterized by less frequent contact and close spatial proximity between kin. In these intermediate family systems, fertility decline in one generation, due to economic rationales to limit fertility (Becker and Lewis 1974) seems to translate more easily into lower fertility ideals since kin

relationships are loose. In strong family regions, close kin ties and processes of socialization may still support larger family size ideals – although these are not fulfilled. The observation that the decline in family size ideals is more pronounced in the German speaking countries, while the difference between ideal and realized family size is greatest in countries such as Italy, underpins my argument (Goldstein, Lutz and Testa 2004: 484-486). Finally, in weak family regions the often more generous and more flexible welfare arrangements stabilize family size ideals and levels of fertility. These provide better conditions for individuals to combine work with having children (Hoem 2005; Ichino and De Galdeano 2005), and reduce the need to limit fertility to increase children's chances for upward social mobility.

Appendix 6.1: Extra tables

Table A6.1: Number of cases, mean fertility and mean ages at birth per country and cohort

Country	Cohort	N	Mean Age at First Birth	Mean Age at Second Birth	Mean Age at Third Birth
Austria	1951-1960	147	25.4	28.3	32.5
	1941-1950	464	25.3	28.4	29.0
	1931-1940	450	25.7	28.3	30.4
	1920-1930	189	26.5	29.6	33.2
Germany	1951-1960	473	26.5	29.5	32.6
	1941-1950	829	25.4	28.5	30.9
	1931-1940	747	25.7	28.7	30.9
	1920-1930	258	26.3	29.3	31.7
Sweden	1951-1960	376	26.6	29.8	33.0
	1941-1950	878	25.8	29.0	31.9
	1931-1940	653	25.7	29.0	31.9
	1920-1930	248	26.3	30.0	32.7
Netherlands	1951-1960	543	27.6	30.4	33.6
	1941-1950	896	26.1	28.6	30.9
	1931-1940	530	26.5	29.1	31.0
	1920-1930	214	27.6	30.1	32.1
Spain	1951-1960	378	26.7	29.6	31.2
	1941-1950	538	26.5	29.5	32.1
	1931-1940	542	27.5	30.7	33.4
	1920-1930	255	28.0	31.4	34.1
Italy	1951-1960	361	27.1	30.1	32.4
	1941-1950	806	26.9	29.9	31.8
	1931-1940	777	27.3	30.2	32.7
	1920-1930	219	27.6	30.6	32.8
France	1951-1960	508	26.0	29.5	32.9
	1941-1950	800	26.2	28.9	31.6
	1931-1940	605	26.5	29.2	31.0
	1920-1930	289	25.9	29.5	32.0
Denmark	1951-1960	461	26.1	29.8	33.1
	1941-1950	677	25.0	28.0	31.7
	1931-1940	407	24.8	28.0	30.0
	1920-1930	194	25.3	28.3	31.2
Greece	1951-1960	365	26.4	29.1	31.3
	1941-1950	605	28.2	31.1	34.2
	1931-1940	520	28.0	31.0	33.4
	1920-1930	193	28.4	30.7	31.4
Switzerland	1951-1960	291	27.6	30.1	32.4
	1941-1950	374	27.6	29.8	31.6
	1931-1940	284	27.3	29.8	31.6
	1920-1930	120	28.7	31.3	33.3
Belgium	1951-1960	516	26.1	28.9	31.9
	1941-1950	860	25.4	28.5	31.5
	1931-1940	646	26.0	28.5	30.6
	1920-1930	268	26.5	29.5	31.9
Czech Republic	1951-1960	404	25.9	27.9	31.4
	1941-1950	680	25.0	28.0	31.8
	1931-1940	437	24.4	27.7	31.0
	1920-1930	104	24.4	27.6	29.0
Poland	1951-1960	478	24.5	27.9	31.3
	1941-1950	547	24.5	28.0	30.9
	1931-1940	391	24.4	27.0	29.7
	1920-1930	115	25.5	28.3	30.7

Chapter 7: Regional family systems and fertility: Main findings and conclusion

Abstract: This chapter provides an overview of the main results of this thesis. It combines the results of the different chapters of this thesis in an overall discussion and conclusion of the importance of regional family systems for explaining people's fertility. As discussed in this chapter, family systems influence fertility intentions, intergenerational childbearing continuities and levels of fertility in different ways. However, the effects of family systems on fertility have to be contextualized and interpreted given regional socio-economic conditions and existing welfare regimes. Together, the interplay of family systems and these contexts seem to explain regional differences in levels of fertility across European regions. I close this chapter with an outlook on the implications of my research results for future research and a discussion of its societal relevance.

7.1 Main findings

> "*Regardless of their historical origins, attitudes toward the family and the individual make up the cultural tapestry of societies, and thus they are models that are learned at very young ages and that societies — individuals, families, institutions — help perpetuate. Learning these behavior patterns is the cornerstone of the socialization of children. They are attitudes shared by the society as a whole*."
>
> (Reher 1998: 215)

In this thesis I studied the importance of regional family systems for explaining fertility behaviours in different parts of Europe. While historians, historical demographers and anthropologists have studied the effects of family systems on demographic outcomes (see Das Gupta 1997; Skinner 1997; Viazzo 2010a, 2010b), they often did not test for the hypothesized effects using statistical models (exceptions are Kok 2009, Rotering and Bras 2015). In addition, sociological studies based on qualitative or quantitative approaches mainly focussed on the effects of certain kin relationships on fertility, without taking the underlying regional pattern of family organisation into account (for an overview see Bernardi and Klärner 2014). Accordingly, there was little empirical evidence charting the effects of family systems on fertility. In this chapter, I review the results of the different chapters presented in this thesis and discuss their implications for my two main research aims, namely to study **(1)** *how patterns of European family organization principles (family systems) can be described, when we use regional measures of social relatedness and geographical proximity that reach beyond the household*, and to **(2)** *explain differences in fertility behaviours and levels of fertility among European regions by differences in family systems*. In addition, I discuss the limitations of my research and its implications for future studies. Finally, I describe the societal relevance of my results.

7.1.1 Overview of the research results

Chapter 2

In chapter 2, I describe regional family systems on a regional level and thereby expand earlier research, such as the work of Reher (1998), describing European family systems. Therefore, I took direct measures of the structures of people's broader social networks (ego-networks) into consideration. Aggregating these

measures to regional levels (NUTS 2) provided me with indicators reflecting regional family systems. The results of my analysis demonstrate that earlier classifications of a strong family-centered South and a weaker family-centered North are supported (Laslett 1983; Reher 1998; Hank 2007). However, substantive regional differences in and between European countries are also evident. These differences suggest that pre-defined European macro-regions (north/west, central, east and south) are too crude to catch the variety of existing family organization principles in different parts of Europe. Using, for example, average frequency of social contact between kin as a criterion, cohesive family bonds are observed even in the Northern European regions. Accordingly, my results support the idea that regional family systems are made up of multiple dimensions (Viazzo 2010a p: 282/283; Viazzo 2010b: 148; Mönkediek and Bras 2014).

Chapter 3

In chapter 3, I study the effects of the regional family system on people's fertility intentions using the SHARE and the Gender and Generations Survey (GGS). I link my analysis to the Theory of Planned behaviour (TPB) to conceptualize the pathways through which my family system indicators influence people's ideas about when to start a family or when to have another child. In this context, I assume that regional family systems frame people's perceptions about requirements that need to be fulfilled before having a(nother) child, such as their financial or housing situation. In addition, I expect that regional family systems influence the complexity of families of respondents, which frame the socio-environmental context in which our fertility behaviour takes place. Next to direct effects of the family systems indicators, these two factors – requirements and household size - are meant to explain people's attitudes towards children, their subjective norms and their perceived behavioural control. As demonstrated by the results, regional family systems indeed frame the contexts in which individual's fertility intentions are developed. Living in strong family regions characterized by high frequency of contact between kin, influences people's attitudes towards children and the expected reaction in their social networks in case of childbirth positively. Average spatial proximity between kin is found to influence people's attitudes towards children by framing household sizes and

people's ideas about requirements for having children. In this context, in regions with close spatial proximity between kin perceived requirements are greater and household size is larger, increasing the perceived costs of having children and relating to more negative expected reactions in their social networks regarding their fertility. While these effects are only by trend significant ($p < 0.010$), I observe a direct negative effect of regional spatial proximity between kin on attitudes towards children that could relate to increased conflicts between kin.

Although the pathways through which my family system indicators influence people's fertility intentions turn out partly different from what I did expect, the results underline the importance of family systems for people's fertility intentions. Moreover, the results give us a better clue about the pathways and mechanisms through which family systems shape individuals fertility, which have often been theorized but not often tested empirically.

Chapter 4

The central question of chapter 4 is to what extent the interplay of regional family systems and social networks shaped the fertility behaviour of individuals born between 1920 and 1960. In this context, I first study the degree to which networks deviated from regional family system norms, by comparing social networks with the derived regional indicators. Surprisingly, the coherence in social networks turns out to be comparatively strong in the weak family ties Northern European regions. The stronger emphasis of individualism together with the more generous welfare state of the Scandinavian countries (Reher 1998; Albertini and Kohli 2013) may in fact have reduced the possible range of family configurations of the studied cohorts. Instead, it facilitated networks where kin tend to live outside the household in proximity (as demonstrated, for example, by Albertini and Kohli 2013). At the same time, the steady nuclearization of for instance Italian families (Viazzo 2010b: 146), seems to result in less coherence in social networks, instead.

In a second step, I test how deviations from regional family system norms in terms of social network composition influenced people's completed fertility. To test these effects I use the Lewbel approach (LA) (Lewbel 2012; for a detailed description see Appendix 4.2). This approach is new to demographic studies and tackles several problems occurring in the presence of endogeneity (Rigobon

2003: 77; Rigobon and Rodrik 2005: 536). The results of my analysis suggest that deviations from family system norms in terms of social network compositions influence people's fertility significantly. Different from my expectations, closer ties to kin led to lower fertility in all family system regions. While it is puzzling that this effect is the same in weak and strong family regions, this result confirms the negative effect of closer family bonds on fertility observed by previous research (Livi-Bacci 2001). Nevertheless, the lower fertility in the strong family regions and the greater variety in social networks can be linked again to the welfare state. Especially in the strong family Mediterranean countries, the welfare state increases the disparities among regional family ideals and families' actual styles of living, leading to fertility postponement (Livi-Bacci 2001: 146-148; Vignoli, Rinesi and Mussino 2013). At the same time, the better fit of family system norms and families' lifestyles in the weak family Nordic countries might explain why we observe a negative effect of stronger family ties on fertility. The better fit allows for higher fertility in the Nordic countries, while the misfit in the strong family Mediterranean countries reduced fertility. From this point of view, there seems to be no added value of living in close-knit family networks in weak family regions on fertility, as long as family in proximity or the welfare state provides practical and emotional support. Yet, this seems to be different in regions where family system norms allow for a greater variety in social networks, such as the central European ones. In these parts of Europe, the difference between regional family system norms and the actual pattern of family organization seems to be less strong than in the Mediterranean countries. In these regions, familial support does not necessarily stop at the household border but involves larger kinship networks, such as is the case in many Mediterranean countries (Albertini and Kohli 2013: 836). Given the traditional welfare state, there is thus still the added value of living in close-knit family networks in these parts of Europe, which could support higher fertility.

Chapter 5

In chapter 5, I investigate the spatial variation in the intergenerational transmission of fertility among European regions. Moreover, I examine to what extent regional family systems can explain these differences in childbearing continuities for male and female children. My research extends the geographic

scope of previous studies and brings the analysis to a lower (regional) level. Based on multilevel random coefficient models, my results demonstrate important regional variations in the intergenerational transmission process, which expand the work of Murphy (2013). In this context, the often generalized weak association between the family sizes of successive generations is partly explained by differences in the transmission effects for men and women. Interestingly, my results hint for stronger effects of parental fertility on the family size of sons leading to higher fertility, in family systems that are characterized by low frequency of contact and high spatial proximity between kin. This is surprising since earlier research demonstrated stronger effects of family of origin characteristics on female fertility (Murphy 1999; Kolk 2013: 4). However, recent research on the effects of social control on the transition to early parenthood shows that men are more influenced than women by parental social control (Hofferth and Goldscheider 2010: 418). Given the variation in childbearing continuities observed between European regions, my results suggest that the social context and children's socialization shape their fertility. Especially the significant negative association between the average frequency of contact between kin in a region and male children's fertility supports this view. In this context, the significant influence of family systems on intergenerational childbearing continuities for sons support the idea that genetic effects are mediated by the social environment (Kohler, Rodgers and Christensen 1999: 268, 275-276; Kohler et al. 2005; Udry 1996: 329-330, 335).

Chapter 6

In chapter 6, I raise the question to what extent regional family systems influence the timing and spacing of children and whether this effect varies over people's reproductive life course. To answer these questions I study the effects of the family system indicators on the timing and spacing of children at different points in people's lives. In this context, I focus on the occurrence of the event of first birth before and after respondents turned 30, and the transitions to the second and third child before and after two years after the last child was born. Based on several event history models, my results show that the effects of regional family systems on fertility vary over people's life courses and that regional family systems support fertility at certain ages. In this context, regions

with strong links to kin facilitate early fertility. However, changes in the effects suggest that strong links to kin could lead to stronger fertility control at ages when women's work becomes imperative. Proximity between kin, possibly rising kin support, mediates this effect. In addition, my results suggest that family system indicators have varying effects on the transitions to the second and third child. Close kin relationships based on spatial proximity between kin facilitate a faster transition to the second birth after respondents turned thirty. These results again indicate that regional family systems contain different dimensions which exert varying effects under different conditions.

Although these variations might result in similar overall outcomes, such as lowest-low fertility, it is important to further decompose these effects over cohorts. Therefore, I include cohort-interaction terms into the event history models. My results indicate changes in the effects of regional family systems, with some effects having been of importance only for the younger birth cohorts, while other effects seem to have vanished over time. In this context, the earlier observed negative effect of too close kin ties on fertility seems to be a problem especially for the younger birth cohorts (Livi-Bacci 2001: 145-152; Aassve, Mazzuco and Mencarini 2005: 284-285). For the younger birth cohorts, fewer transitions to higher parity occur in strong family than in weak family regions. These fewer transitions seem to reflect increasing fertility limitation in strong family areas for the more recent birth cohorts (1951-1960). However, the younger cohorts are additionally positively affected by the average proximity to kin in a region which raises fertility. This might be explained by better opportunities for social support, such as caretaking of children, provided by kin in proximity. Accordingly, there is a trade-off between on average too close and too distant kin relationships, which either increase the economic burden of a family or relax problems of combining work and a family (Schaffnit and Sear 2014: 5).

7.1.2 Discussion and Conclusion: What have we learned?

> *"To claim that behavior is "cultural" is to make the slightly more specific claim that surrounding or preceding individuals constitute an environmental factor that has influenced the behavior under discussion in some way."*
>
> (Tooby and Cosmides 1989: 46)

This thesis demonstrates that there are shared attitudes by societies that frame people's fertility intentions and fertility behaviours in certain ways. The regional indicators that I created to chart differences in patterns of family organization are far from perfect. However, with respect to my first research aim to describe **(1)** *how patterns of European family organization principles (family systems) look like, when we use regional measures of social relatedness and geographical proximity that go beyond households*, they allowed me to describe regional differences between family systems on a more detailed level. Moreover, they closely relate to several other indicators researchers use as indicators for family systems (see the Methodological Appendix of this thesis M2). Accordingly, the first contribution of this thesis is that it expands the work of Reher (1998) who described in bold strokes strong and weak family ties regions in Europe. Reher's (1998) picture of family systems in Europe became more divers and more colourful. The ways how families are organized turned out to be complex (see Chapter 2), while the results suggest to use different indicators and to include relationships in- and outside the household to describe patterns of family organization.

This complexity and colourfulness of regional family systems was needed to **(2)** *explain differences in fertility behaviours among European regions by differences in family systems* – which was the second aim of my Thesis. My research demonstrates (Chapters 3 to 6) that regional family systems are an integral part of the environments in which fertility behaviour takes place. In this context, the ways in which family systems relate to our demographic behaviours are manifold.

First of all, family systems structure the organization of individuals in social groups of kin and non-kin, with non-kin sometimes taking in positions as 'voluntary kin' (Murdock 1949: 91-101; Braithwaite et al. 2010: 390). Thereby, family systems relate to different degrees of kin interaction and kin support (Skinner 1997; Reher 1998), and open up possibilities for kin and non-kin

influencing each other's fertility behaviours, allowing for social influence (Tooby and Cosmides 1989: 46). Accordingly, family systems regulate the degree to which the fertility behaviour of specific kin, such as mothers or grandparents, may be correlated with an individual's fertility. As a consequence, family systems differ in the degree to which son's fertility reflect that of their parents (Chapter 5). In this context, I observe stronger effects of higher parental fertility on the family size of sons in regions that are characterized by comparatively lower frequency of contact and/or close spatial proximity between kin, such as the Italian region of Abruzzo (ITF1). Especially in regions with on average closer proximity between kin, sons' fertility might be more a result of the improved parental control over sons' fertility behaviour (Lorimer 1954: 247), as well as greater provided social support (Höllinger and Haller 1990: 116-118), instead of transmitted family ideals[86].

Secondly, regional family systems function as guidelines, as ideal types of how families should be organized (Chapters 2 and 4), while these ideals influence people's attitudes towards children and their opinions about expected and accepted demographic behaviours (Chapter 3). However, when we look at individuals' families, families often do not adhere to these ideals, while deviations mostly occur within a certain range (Chapter 4). The fact that deviations from family system norms are not random phenomena probably relates to family systems not only influencing our ideas about patterns of family organization. By framing the family as a work-group (Laslett 1983; Lesthaeghe and Wilson 1986), these systems historically influenced the development of the welfare state (Naldini 2003; Galasso and Profeta 2015) and also relate to the regional socio-economic development (Duranton, Rodriguez-Pose and Sandall 2009: 37; Alesina and Giuliano 2010). These patterns reinforce the organization of families and lead to a certain path-dependency in its developments (Reher 1998: 221).

Does this mean that regional differences in family systems are persistent (Reher 1998, Kalmijn and Saraceno 2008)? As discussed by Viazzo (2010b: 149ff.), this question is open for debate. Differences in family systems relate to the organization of the family as a working/economic unit that provides the

[86] Previous research suggests that men are more affected by means of social control, while women's transitions to parenthood are more affected through processes of social learning (Hofferth and Goldscheider 2010: 418, 434).

economic grounds for the family group to survive and reproduce (Medick 1976: 301-306; Laslett 1983; Kochanowicz 1983: 161-166). The organization of family as a working unit has changed in the past[87] and these patterns are still changing (Adams 1968; Hareven 1991: 111-115; Reher 1998: 215). To give an example, with industrialization occurring in the eastern regions of the Netherlands at the end of the 19th century, peasant families more and more entered the factories, while often still cultivating small pieces of land (Hendrickx 2003). The opportunities to work outside the agricultural sector supported earlier marriages and patterns of leaving home of farmer's children in the Netherlands (Klep 2011: 23-24; Bras, Liefbroer and Elzinga 2010: 1026). This probably weakened family bonds to a certain extent, because children became economically more independent and probably could afford to live in proximity to their parents instead of co-residing. Moreover, the increase in wage-earnings during industrialization supported a male-breadwinner model (Levine 1985: 178-179), which probably reduced people's economic dependence on kin outside the nuclear family unit (Greenfield 1961: 321-322). An example of this 'weakening' can be found in Italy, where the share of 'complex' families halved from 1951 (22.4%) to 1980 (11.3%) (Viazzo 2010b: 146). In Italy, despite strong family ideals, industrialization and urbanization led to family structures where children previously living in co-residence was increasingly replaced by children living in close proximity (Viazzo 2010b: 146).

Accordingly, historical processes of modernization, such as industrialization and urbanization, influenced the family as a working unit (Greenfield 1961: 314-316; Adams 1968; Van de Kaa 2001: 301-302). These processes did not always result in a loosening of kin relationships (for an overview see Hareven 1991: 111-115), and kin relationships remained strong for example in Italy (Castiglioni and Dalla-Zuanna 2014; Höllinger and Haller 1990). Still, these processes impacted on the social control within families (Lesthaeghe 1980: 535-539; Waite 2000: 463), led to changes in pattern of kin co-residence (Reher 1998: 220; Bras, Liefbroer and Elzinga 2010: 1016), changes in value orientations (Inglehart 1997: 30-33, 2008) and resulted in demographic alterations, such as changes in family formation or infant mortality (Chesnais 1992: 78-79, Van de Kaa 2001). The onset of these demographic changes varied between and within European

[87] For an example on the evolution of English families see Stone (1977: 4-9).

countries. Fertility changes occurred earlier in France and the weak family countries of Northern Europe, and later in the strong family Mediterranean countries (Lesthaeghe 2010: 222-223). Similar patterns can also be observed in Eastern European countries. Within the Ukraine, fertility declined earlier and faster in the eastern region of Kharkiv, where industrialization took place earlier, than in the western region of Lviv (Hilevych 2015b: 91-93). Taking this into account may indicate that current differences in family systems are not only a result of a path dependent developments, but also a result of differences in the speed and the strategies of families to adapt to processes of modernization (Hareven 1991: 117).

Also in contemporary societies we find processes of modernization that affect ways of kin interaction and welfare production. These processes often relate to technological advancements, such as more effective contraceptives, improved communication technologies and faster ways of traveling greater distances (Litwak 1960: 386; Van de Kaa 2001: 301; Geurts et al. 2015: 1322). These technological advancements allow for kin to better keep in touch regardless of spatial distances and reconfigured the association between support and geographical proximity[88] (Litwak and Kulis 1987: 653-657; Viazzo 2010b). Besides technological advancements, many contemporary welfare states increase again the reliance of families as providers of welfare to cut welfare expenses (see the first KASS volume, Grandits 2010; Viazzo 2010b: 149-150). Thereby, many countries facilitate again the relationships between close kin. Together, these different developments will once more reshuffle the relationships between kin, as well as the role of the family as a 'working group'. Nevertheless, these changes as well depend on the tracks laid down by earlier historical developments (Reher 1998: 219-220). Patterns of welfare organization continue to support weak kin ties in Sweden and higher fertility, due to better childcare services that support grandparents role as flexible child-care providers (Weelock and Jones 2002: 458-461; Hoem 2005; Herlofson and Hagestad 2012: 41). At the same time, the economic circumstances and the limited availability of independent living space on the housing market, continue to support strong kin ties in Italy and relate to

[88] Although certain services, such as personal care, still require close spatial distance between kin, many other forms of help, such as emotional support, only require communication technologies and can be performed from distance (Litwak and Kulis 1987: 650).

late fertility, due to children co-residing much longer with their parents (Livi-Bacci 2001: 146–8; Dalla-Zuanna 2004: 111–15; Vignoli, Rinesi and Mussino 2013). And it seems difficult to leave these pathways, because possibilities to reactivate kin relationships seem limited, due to, for example, fertility decline the extent of relatives (siblings, cousins, etc.) that could provide support has declined (Viazzo 2010b: 149).

Nevertheless, does this mean that drastic shifts in regional family systems over a short period of time are impossible? Looking at the historical developments of family systems in Eastern European countries suggests that comparatively rapid shifts did occur in the past in times of political disturbances and economic crisis. Concerning for example the areas later becoming Poland and Czechoslovakia, around 1900 these countries were characterized by comparatively late marriage and economically separated nuclear families (Sklar 1974: 234-236; Možný and Katrňák 2005: 235-236). However, in Poland, the position of the family was strengthened during the time periods in which Poland did not exist as a nation and the family provided the only sphere of identification. In addition, economic crisis and political disturbances during the 21st century strengthened the kinship ties in Poland (Synak 1990: 334-335). Nowadays, multigenerational (extended) households are more common in Bulgaria and Poland (Iacovou and Skew 2011: 471). Similar developments can be observed in the areas that became Czechoslovakia after annexation by the Soviet Union. Economic crisis and Soviet policies that affected the structure of ownerships brought the family closer together (Možný and Katrňák 2005: 236-238). As described by Možný and Katrňák (2005: 23) "[i]n times of trouble, the family proved to be the best survival kit". Facing these troubles, the soviet state altered parts of its policies that originally tried to weaken the 'family' as an organizational unit by taking over family's responsibilities (such as care). Instead, during the 1970s and 1980s the state started to support families and familistic attitudes, because these included values that emphasized the private sphere instead of the political space[89] (Možný and Katrňák 2005: 237).

[89] Using data for drawn from the World Value Survey, Alesina and Giuliano (2011) demonstrate that individuals with strong family ties do engage much less in political activity and are often much less interested in politics.

Regardless of the question of how the future family may look like, until today regional differences in family systems continue to exist (Chapter 2; Reher 1998: 220-221). Often and probably even more in the near future they express themselves in form of differences in emotional closeness to kin living in proximity, as well as social relatedness, communication and openness to non-kin (Bengtson 2001; Segalen 2010: 268; Viazzo and Zanotelli 2010: 73–75; Viazzo 2010b: 149-150). Nevertheless, the shifts and developments in family organizational patterns that occurred had and still have implications for people's fertility. These implications develop out of the fact that actual patterns of family organization seem to change faster and easier than values regarding family organization (Inglehart 2000, 2008); an aspect which can be described as 'Cultural lag' (Ogburn 1922: 200ff.; Woodard 1934). Cultural lags resulting in 'maladjustments'[90] have been described to explain developments in marriage rates, based on changes in views on gender roles (Yoshida 2010), or developments in fertility, based on developments in gender-equity (McDonald 2000: 4-5, 12-13). The existence of cultural lags is also reflected in value changes in various European countries, from materialism to postmaterialism, and its effects on ideal and realized family size. While cohorts classified as postmaterialist gave birth to fewer children than those as classified as materialists, these value changes did not immediately translate into ideals about lower family size[91] (Van de Kaa 2001: 319-321). Still, the resulting discrepancies between family systems and family realities seem to explain why in many European countries people's actual fertility lies below the intended number of children (compare Goldstein, Lutz and Testa 2004; Liefbroer 2009; Régnier-Loilier and Vignoli 2011; Spéder and Kapitány 2015). People's fertility intentions, such as the timing of children, are framed by regional family systems that influenced people's attitudes and subjective norms regarding children and fertility (Chapter 3). These intentions often relate to ideals about the timing and sequence of specific life course events (such as marriage occurring before starting a family; Livi-Bacci 2001). However, intervening factors, such as a missing partner, bad socio-economic conditions, or simply time spent in

[90] See Ogburn 1922: 200
[91] In his paper, Van de Kaa (2001: 310-311) based his classification of materialists and postmaterialists on respondents orientations towards religion and respect for authority.

education, result in family ideals differing from real life and lead to intentions not being realized and fertility being postponed (Billari, Liefbroer and Philipov 2007: 3-7)[92]. Such adaptations regarding fertility are reflected in the difference between ideal and realized family size in Italy. In Italy, differences between ideal and realized family size are not only greatest, but also norms and values regarding the family as having priority over the individual are still among the strongest (Goldstein, Lutz and Testa 2004: 487). However, even within Italy there are important regional differences in family systems (Chapter 2) which link to variations in fertility (Chapter 4). In this context, my results (Chapter 4) support the idea that the more people's family networks differ from regional family systems, the more likely people postpone or lower their fertility[93] (Régnier-Loilier and Vignoli 2011). Fertility is higher in countries and regions where the fit between family ideals and realities is better, such as Sweden (Chapter 4).

Interestingly, the Swedish society adapted very well to late childbearing (Billari and Kohler 2004: 169). This is different in many strong family countries, which face greater difficulties in adapting to fertility postponement[94]. In the strong family countries, partly loosening kinship networks, indicated by changes in patterns of co-residence (for example in Italy; Viazzo and Zanotelli 2010: 73-75), might have supported the fertility decline (Newson and Richerson 2009: 35). A loosening of kin ties can be expected to reduce the social support provided by close kin, while the modern welfare state is often a less perfect substitute for the personal services, such as caring and teaching infants and toddlers (Turke 1989: 68; Herlofson and Hagestad 2012: 37, 40-41). These developments can increase the opportunity costs of children and probably facilitated the

[92] An example of these differences between family ideals and realities can be found in Italy, where traditional criteria for starting a family, such as setting up one's own household and getting married are more and more difficult to fulfil due to, for example, economic developments, leading to fertility postponement (Guerrero and Naldini 1996: 51-53; Livi-Bacci 2001: 149; Newson 2009: 470).

[93] Interestingly, closer ties to kin led to lower fertility in all family system regions and not only in strong family systems as expected. This might be again explained by the fact that strong families not necessarily promote fertility in cases in which conditions not motivate high fertility (see Lorimer 1954: 201-202 for a discussion). Moreover, extended families in weak family regions might represent families in precarious situations that are forced to co-reside.

[94] Regarding fertility, already Lorimer (1954: 249) argued that "Societies with traditional cultures may or may not develop the necessary adaptability to meet changed conditions without disruptive disorganization."

discrepancies between ideal and realized family size (Turke 1989). Growing discrepancies most likely support fertility limitation based on parents aim to optimize the quantity/quality balance of their children (Turke 1989: 64-66; Voland 1998). This could be the case in Italy, where lowest-low fertility is partly a result of Italian cohorts falling behind in fertility later in life (Billari and Kohler 2004: 167, 169).

However, support relationships remained strong in most strong family countries, such as Italy (Höllinger and Haller 1990). In addition, in case of loosening or widening kinship networks non-kin might take in positions as care givers (Gondal 2012: 747-748) and thereby lower the opportunity costs of having children. Accordingly, the above described arguments are insufficient to explain the problem of strong family countries in adapting to later life fertility. Another reason seems more convincing: as described earlier in this thesis, in many countries grandparents are the favoured source of childcare support (Weelock and Jones 2002: 458-461; Baker and Silverstein 2012: 54-55; Geurts et al. 2015: 1321). While in most weak family countries this support is regarded as complementary to public services and occurs less frequent, in the strong family Mediterranean countries childcare is provided on a much more regular and frequent basis (Geurts et al. 2015: 1320; Hank and Buber 2009: 62-63). Accordingly, in these countries childcare support provided by grandparents can be regarded as more intensive. With the occurrence of fertility postponement, grandparents are on average older when they act as childcare providers. Based on declining health conditions with age, this is not without problems. Grandparenting not only often imposes time and financial constraints on the caregivers. It frequently demands adaptations in the lives of the grandparents (for an overview see Grinstead et al. 2003). Although the outcomes are debated (see for example Hughes et al. 2007), with fertility being postponed the chances seem to reduce that grandparents are able to provide support, without influencing their physical and mental health negatively (Grinstead et al. 2003). Consequently, the risk of grandparents falling out as a major (and culturally favoured) pillar of kin support, increases the more fertility is postponed to later ages. This most likely increases again the demand for institutionalized childcare support. However, with the welfare states being a less perfect substitute for the personal services, such as caring and teaching infants and toddlers, in especially the strong family countries (Herlofson and Hagestad 2012: 37, 40-41), this

might explain why these countries had difficulties in adapting to models of late childbearing.

All in all, my results support the notion that "It is not structure or culture but rather structure and culture that affect our [demographic] outcomes" (Bachrach 2014: 4). Related to this, my results suggest that there is no 'good' or 'bad' family system per se. Respectively, extended families in strong family regions do not necessarily promote fertility – especially if there is no motivation to increase fertility, such as competitive relations or normative values (Lorimer 1954: 247). The effects of family systems on fertility rather depend on the individual's and the regional socio-economic context, while family systems themselves probably change only slowly (Chapter 6). As described in Chapter 4, part of this context is welfare organization, which seems to affect to what extent living in close-knit-family networks is advantageous in different family systems. These seem to play no role in the Northern European weak family countries, probably due to the democratic welfare state providing support. In these countries, co-resident kin might more often relate to adjustments in living arrangements to precarious situations. In the central European countries, such as Germany, living in close-knit families may still increase fertility, given the traditional welfare state which is less generous (Esping-Andersen 1999; Hoem 2005), and mismatches between family system ideals and economic realities being less pronounced (Chapter 4). However, at the same time especially the German-speaking countries seem most vulnerable to persistent low fertility (Chapter 6). In these parts of Europe, the economic rationales to limit fertility may more easily translate into lower fertility ideals, because these weaker family relationships limit the extent to which positive attitudes towards the family and childbearing are formed (Chapter 3 and 6). Interestingly, the decline of family size ideals is in fact more pronounced in the German-speaking countries compared to other parts of Europe (Goldstein, Lutz and Testa 2004: 484-486). The strong family countries might be able to circumnavigate the risk of getting caught in a persistent lowest-low-fertility trap, due to comparatively high family size ideals (Goldstein, Lutz and Testa 2004: 487). However, this depends to what extent these regions are able to reduce existing hurdles for having larger families, such as the preconditions for starting a family (Chapter 3) (Newson 2009: 470), and are able to better adapt to models of late childbearing.

While my starting point was to explore the effects of family systems on fertility given certain individual and regional socio-economic contexts, my results suggest that future research should take a more integrated perspective. In addition, it seems worthwhile to continue and study the effects of family systems on fertility using a dynamic life-course perspective, because socio-economic contexts changed over cohorts and even varied across individual's life course. Concerning the included birth cohorts, the oldest birth cohorts got their children during the 'economic boom' occurring in several European countries. Increasing male wages and better employment conditions improved families' economic situations (Sprague 1988: 697). As a result, in many European countries the age at first marriage decreased and marriages became more universal. This supported higher fertility rates, because women were much longer and earlier exposed to a period of potential childbearing (Bean 1983: 360-361). The younger birth cohorts were faced with growing individualism, liberalization, and increasing women's labour force participation. Together with improving contraceptives, these developments facilitated fertility decline (Watkins 1987; Westhoff 1986: 156; Lesthaeghe and Surkyn 1988: 36-39).

Following this approach, my research provided new insights on variations in the effects of family systems on fertility over cohorts and across people's life course (Chapter 6). These support the idea that when studying the effects of the family and regional family systems on fertility, a life-course perspective is needed. Adding this perspective may further illuminate the reasons for variations in fertility levels and variations in intergenerational childbearing across European regions which are difficult to explain by social-economic and cultural factors alone (Lesthaeghe and Neels 2002; Billari and Kohler 2004; Dalla-Zuanna 2007). For this future research my thesis and its results provided important insights that may help to better contextualize these effects. Moreover, it demonstrated that part of the context which influences individual's fertility behaviour is the regional family system. These family contexts explain part of the differences in fertility intentions, childbearing continuities and levels of fertility across European regions.

7.2 Limitations and suggestions for future research

In this thesis I explained differences in individual's fertility by regional family systems. Regional family systems were derived based on information on contact frequency and spatial proximity between kin (for a detailed description see the Methodological Appendix M1). The indicators I derived have clear limitations and are far from perfect in capturing regional family systems. The data quality is not always the same in all regarded countries (M1). In addition, my indicators look at specific characteristics of family systems: family ties (1.3.1). These measures of social relatedness seem to be good indicators of regional differences in the customary, normative manner in which family processes unfold and family relations are structures (Skinner 1997: 54) (for an evaluation see the Methodological Appendix M2). However, concerning the explanation why contact frequency and spatial proximity between kin varies among different parts of Europe, there are alternative explanations. Contact frequency between kin, such as between parents and their children, varies for example with children's education (Hank 2007: 167). Moreover, kin contact decreases with age, attributable to a decreasing pool of available kin (Lee 1980: 930). Accordingly, regions that are characterized by specific population characteristics, such as higher levels of education, might be more easily classified as having a specific family system. Yet, it has been argued that family systems influence the socio-economic development of a region (1.4.2; Duranton, Rodriguez-Pose and Sandall 2009: 37; Alesina and Giuliano 2010). Accordingly, higher average regional levels of education might be a result of family systems themselves.

Testing to what extent also socio-economic differences explain regional differences in family systems would be the next step and should include regional and local characteristics (such as agricultural and economic systems, religious composition, the degree of urbanization; Lee 1999: 98-101), as well as structural factors (welfare regimes and macro-regional-cultures)[95] (Mönkediek and Bras 2014: 253). This is, nevertheless, not without problems, because the question 'what came first' needs to be solved theoretically and addressed empirically. In

[95] Previous research, for example, demonstrates that social norms about age-appropriate behaviour interact with country-level institutional factors, such as labour-market conditions and education levels, and regional-level cultural factors, such as urbanity (Aassve, Arpino and Billari 2013: 393-397)

order to at least control for regional socio-economic characteristics and calculate the net effect of family systems on fertility, my models include regional GDP (Chapters 3 and 5) and/or random effect terms (Chapters 5 and 6) that capture unobserved regional or country factors.

My results demonstrated that both regional family systems and deviations from them in terms of specific social networks play an important role in determining people's fertility intentions (Chapter 3) and their family size (Chapter 4). However, my findings also underpin that welfare states and their interactions with regional family systems need to be acknowledged in future models studying the effects of family systems on fertility (Chapter 4). As discussed before, this seems necessary, because my results hint at important differences in the effects of family systems on fertility across welfare regimes. Nevertheless, the historical link between welfare states and family systems[96] makes it difficult to differentiate between the effects of both. In addition, depending on how this link is theorized, it could mean that welfare regimes are part of the mechanism through which family systems influence fertility. More research in needed to clarify this association and its meaning for the presented results.

Additionally, future research should not only pay attention to the characteristics of single regions, but also include the contexts of neighbouring regions. These contexts have been described as influencing, for example, the diffusion of new fertility behaviours (Vitali and Billari 2015). Accordingly, not only the context of a region, but also the embeddedness of a region into wider geographical areas shape people's opportunities and demographic behaviours.

Apart from further contextualization of the effects of regional family systems on fertility, future research should also address possible variations in the effects of specific kin relationships on people's fertility across different family systems. So far, I did not study or compare the effects of specific categories of kin relationships, such as a grandmother or sibling, on fertility among various family systems. Again, this would have expanded the current research too much. However, inspired by Rotering and Bras (2015), it seems necessary to study the

[96] As demonstrated, for example, by Naldini (2003) or Galasso and Profeta (2015). For a conceptual framework how family systems affect family policies see Bahle (2008: 102-104).

effects of specific kin relationships on fertility given the presence of other kinship ties. The importance of, for example, a grandmother as a helper in people's social networks can be assumed to change if other kin that may provide help is present or absent (Borgatti and Halgin 2011: 1173; Bernardi and Oppo 2008: 200). Moreover, these effects can be assumed to change depending on family systems norms structuring the obligations between kin and providing kin presence or absence with specific meanings.

Future research may also extend the present study and analyze the effects of kin on fertility using a more integrated perspective; including the regional family systems (macro-level), the type and structure of individual's social networks (meso-level), and the presence of specific kin relationships (micro-level). Therefore, more detailed data on family networks would be needed that allow for a detailed analysis of the social relationships between the different family members; something which is extremely rare in most standard data-sets based on survey data.

When extending the present focus, also the role of non-kin, including the effects of different types of non-kin, such as neighbors, acquaintances or close friends, needs further attention. The role of non-kin for people's fertility behaviour has with few exceptions been ignored (see Potter and Kantner 1955; Balbo 2012; Keim, Klärner and Bernardi 2013). Instead, many studies looked at the effects of parenthood on network structures and on the number of non-kin in people's social networks (Belsky and Rovine 1984, Bost et al. 2002). In this context, it seems interesting to test the assumption that non-kin would not encourage each other's fertility behaviour (Newson et al. 2005: 370, Newson et al. 2007). This assumption is based on the postulation that non-kin more often provides ideas about different life concepts which could sometimes even lower fertility (Newson et al. 2005). However, research on homophily lets us believe that non-kin in many cases share norms and values, as we tend to form (and maintain) relationships to alter egos with whom we share characteristics (Cohen 1977; McPherson, Smith-Lovin and Cook 2001). In addition, previous research suggests that, similar to kin, also non-kin can provide salient behavioural examples, can function as providers of support[97] (Gondal 2012), and can

[97] In this context, non-kin might take in positions as 'voluntary kin' (Gondal 2012: 735, 747; Höllinger and Haller 1990: 118, 120; Braithwaite et al. 2010: 390/391).

influence each other's reproductive behaviours (for examples see Hilevych 2015b; Keim, Klärner and Bernardi 2013: 474-475; Balbo 2012). These relationships might be especially important in societies in which social relationships are more selective and more often based on emotional closeness (like Sweden, Germany or France; compare Segalen et al. 2010; Thelen and Baerwolf 2010).

As Moore (1990) summarizes, women's networks more often focus on family and kin relationships, while men's social networks are more often organized around non-kin[98] (Moore 1990; Dunbar and Spoors 1995). In addition, men and women tend to form support relationships to non-kin of their same sex (Dunbar and Spoors 1995: 285). However, the differences in the number of friends are more profound between men and women across rather than inside different societies; and that within gender variations in the number of friends are thus greater than between gender variations (Bruckner and Knaup 1993: 254). Family systems might explain the differences in men's and women's relationships to kin and non-kin, because they include norms structuring obligations between kin (Reher 1998: 207-211), and link to gender systems (Oppenheim Mason 2001). Earlier research already demonstrated that differences in social networks are often based on social constraints generated out of gender roles[99], employment and/or in many cases the organization of the family itself; providing and enhancing norms and values, and finally structuring peoples' opportunities for social relationships (Moore 1990: 726-727). So far, I only controlled for possible differences in the effects between both sexes to reduce the models' complexity, without regarding differences in the underlying mechanisms between men and women. Bernardi and Oppo (2008: 200) already demonstrated that the presence of maternal female kin alters women's fertility behaviour, by providing them with additional behavioral examples. Since regional family systems differ in their extent to which they regulate these kin relationships, they could explain the extent to which maternal female kin affect each other's fertility behaviors. In addition, my research results suggest stronger transmission effects of parental

[98] However, men and women have closer relationships to maternal kin, making women to the connecting links in kinship networks (Salmon 1999: 192; Rossi and Rossi 1990: 196-198, 490).

[99] One example here is the views on women's traditional role in societies; for example as "keeper of the extended family", as caregiver for the family and kin (Gerstel and Gallagher 1994).

fertility on the family size of sons in specific regional family systems (Chapter 5). This result is surprising since earlier research has demonstrated stronger effects of family-of-origin characteristics on female fertility (Murphy 1999; Kolk 2013: 4). However, recent research on the effects of social control on the transition to early parenthood shows that men are more affected than women by means of social control (Hofferth and Goldscheider 2010: 41). Future research needs to further address these findings by, for example, differentiating between regional gender systems that structure, for example, the relationships between spouses (for a discussion on the linkage between family systems and gender power relations see Bras and Schumacher 2015).

My research provided a more in-depth view on the 'bold strokes' of European family systems laid down by Reher (1998). Nevertheless, it has to be mentioned that most of my results concerning the effects of these regional family systems on people's fertility reflect European wide 'averaged' effects (European wide trends). It is very likely that there are deviations in these effects across European regions; similar to the observed variations in intergenerational childbearing continuities (Chapter 5). Previous studies already observed regional variations in the effects of factors explaining fertility, for example, for Italy (Vitali and Billari 2015). Recognizing regional variations in effect size and directions is another task for future research, which provides further insights into the explanations of regional differences in demographic developments across European regions.

Finally, apart from variations in effects of family systems on fertility across regions, future studies should also pay attention to variations in the effects across social status groups. Based on differences in their social networks, these status groups might be affected differently by regional family system norms. For example, individuals with higher education tend to report a larger number of friends in their social networks (Höllinger and Haller 1990: 115). Accordingly, their fertility behaviour might be less controlled by kin members.

7.3 Societal relevance and policy issues

> *"In fact, it will usually be inappropriate to attempt to evaluate the effect of particular individual policies because the effectiveness of any policy will depend upon the broader setting. The condition of ceteris paribus is unlikely to be fulfilled across time or across cultures."*
>
> (McDonald 2002: 442)

After having discussed the results, the limitations and the implications of this thesis for future research, it seems important to discuss on the societal relevance of the presented results. As discussed in the introduction of this thesis, the study of family systems and their effects on people's demographic behaviours is of societal relevance (Chapter 1.4.2). It is necessary to chart and understand the principles which frame our kin relationships, because many aspects of societal life are affected by it, such as the organization of welfare (Alesina and Giuliano 2014). One of these aspects is people's fertility. This thesis demonstrated that regional family systems make up part of the context in which people's fertility behaviour takes place. In this context, family systems interact with regional socio-economic conditions, and their combinations seem to explain regional differences in fertility behaviours (7.2; McDonald 2006: 498-500). Accordingly, regarding only individual or regional socio-economic or regional cultural conditions would ignore an important part of the setting in which fertility takes place. Combining all aspects seems to be a key issue for social policies directly or indirectly addressing people's fertility.

Since social policies cannot immediately change family systems -- while family systems can be assumed to adapt to changes in the reproductive strategies of human beings over the long run (compare Symons 1992) and during times of crisis (compare 7.1) -- it seems logical to advice policy makers to address the socio-economic conditions under which people's fertility behaviour take place[100]. The policies changing these conditions need to be informed by knowledge of regional family systems -- otherwise they might not necessarily lead to the expected results (compare 1.4.2). In fact, family systems norms have even been part of the problem why certain countries did not effectively

[100] The socio-economic conditions changed markedly in the different European countries, such as Italy, Spain (Billari et al. 2002; Kohler, Billari and Ortega 2006), Czechoslovakia (Možný and Katrňák 2005), and Poland (Synak 1990), during the 21st century.

implement social policies that seem to have been successful in promoting fertility in other parts of Europe (McDonald 2006: 498-499; Bahle 2008: 120). Especially the weak family countries, such as Sweden, seemingly adapted well to current challenges, such as economic uncertainties, by promoting non-family care giver activities (Suzuki 2003: 12; Billari and Kohler 2004: 169). Still, recent developments, for example in Germany or Spain, suggest a wider paradigmatic change in the welfare policies of different European countries that could raise fertility (compare Morel 2007: 634-635; Naldini and Jurado 2013). In this context, the main goal of many contemporary policies promoting fertility is tackling the problems of population aging and decline[101]. For quite a long time (partly till the 1990s) a majority of European countries had low interest to intervene in the demographic field, and their policies were often only reacting to demographic changes instead of being pro-active (Bonifazi and Kamarás 1998: 30-31). Today, population aging and decline have been identified as areas of major concern to many more developed countries; for example, in 2013 92% of the more developed countries perceived population aging as a major concern (United Nations 2013: 48-51).

While few policies aim to explicitly overcome the problems of population aging and decline, most policies address these issues implicitly (Kohler, Billari and Ortega 2006: 98; Bonifazi and Kamarás 1998: 9-14). To raise fertility, social policies often address the costs of children, via financial incentives and regulations regarding childcare[102]. In addition, policies try to optimize the balance of life domains, such as work and family, for example by improving work leave options and the flexibilization of work (Sleebos 2003: 34). The mix of these policies widely varies across European countries, which is, for example, reflected in the national differences in maternity and parenting benefits (Bahle 2008: 111-113). Concerning the later, especially the Scandinavian and Eastern European countries are most generous, while most Southern European countries, the Netherlands and Belgium provide no general paid parental leave (p. 112). Apart from the mix of policies, also their coverage differs strongly among European

[101] Recently, researchers started to challenge the idea that replacement fertility is actually desirable. They argue that migration as a tool to stabilize population size is not always recognized, and that also ecological effects need to be recognized when describing the effects of population decline (Striessnig and Lutz 2013: 410-412).
[102] McDonald (2002) provides a detailed overview on policies and broader societal changes that could raise fertility in low and lowest-low fertility.

countries. While child benefits are universal in weak family countries, such as Belgium, Denmark, Germany, France, The Netherlands, and Sweden, in the strong family Mediterranean countries (except Greece), child benefits are income-tested and partly only granted to low income families (Saraceno 2004: 77-78).

Although recently many contemporary policies in low and lowest-low fertility countries, such as Italy and Germany, seemingly follow the idea to increasingly promote people's 'free choice' in organizing their work and family lives, they often follow and facilitate the existing welfare models (Morel 2007; Graziano 2009). Germany is still characterized by strong reliance on the male-breadwinner model, supporting the traditional family (Morel 2007: 620; Esping-Andersen 2006: 168). Only lately Germany introduced policies that try to improve the family-work balance and more resemble a shift towards a principle of 'free choice' (Morel 2007: 630-632). However, similar to Italy, these reforms supported the creation of mainly low-income jobs and rather tried to modernize instead of flexibilize the economy and the welfare state (Morel 2007: 631-632; Graziano 2009: 605-607). According to Morel (2007: 621), family policies in several conservative welfare states "offer generous financial transfers to families to support them in their role of primary welfare providers but little in terms of substitutive social services. [...] The 'freedom of choice' rhetoric that later developed and which has guided care policy reforms fits well with this principle of subsidiarity".

Through keeping the reliance on families as producers of welfare, while partly facing economic uncertainties and crisis (Goldstein et al. 2013), as well as changes in value orientation (Inglehart 1997: 30-33, 2008; Lesthaeghe 2014), these countries do not solve existing discrepancies between family ideals and realities that seem to partly explain low and lowest-low fertility (7.1.2). To reduce the gap between ideals and realities, European countries would need to provide more economic security and actual 'free choice' regarding the organization of work and a family. In contrast, several low fertility countries, such as Italy, even reduced the coverage of the welfare state to contain its costs (Graziano 2009). Due to the financial and economic crisis that hit Europe in 2007 (Goldstein et al. 2013: 86), one can assume that in especially in countries that got more affected, such as the Southern European countries, welfare cuts will continue to occur in the near future (Naldini and Jurado 2013: 56). However,

policy responses to global economic crises vary across European countries (Starke, Kaasch, and Van Hooren 2014). Thus, it is not completely clear how the future pathways of the different European welfare state will look like.

Nevertheless, also in European countries that were less hit by the financial and economic crisis of 2007 and try to increase people's free choice, such as Germany, it will be difficult to raise fertility again, because especially the German speaking countries face a great decline in family size ideals (Goldstein, Lutz and Testa 2004: 484-486). Accordingly, the effect of raising fertility beyond a certain point through reducing the costs of children seems limited without implementing additional policies that raise the social acceptance of children in the different European countries (McDonald 2002).

Regarding the efficiency of many of policies that could raise fertility, it will be limited by the future declines in the number of women (and couples) in childbearing ages (Kohler, Billari and Ortega 2006: 101). Their shares already declined in several European countries so that a certain population decline seems inevitable (Kohler, Billari and Ortega 2006: 101-102; Lutz, O'Neill and Scherbov 2003). Based on the current age structure of the European population, ignoring migration for the moment, the negative momentum[103] of low and lowest-low fertility was in many European countries already reached in the year 2000 (Lutz, O'Neill and Scherbov 2003).

One solution to this problem could be immigration (Bonifazi and Kamarás 1998: 7). Stimulating the immigration of young individuals in childbearing ages could reduce the population decline to a certain extent (Kohler, Billari and Ortega 2006: 95-97). However, the effectiveness of immigration as a tool is debated. Large and continuing high numbers of immigrants would be needed to maintain the population size of many different European countries, such as Italy (McDonald 2002: 418-421) or Germany (Kohler, Billari and Ortega 2006: 97; United Nations 2000). Concerning for example the European Union, a UN projection calculated a net total of 100 million migrants required during the period 1995 till 2050 (1.8 million per year) to maintain the European population

[103] The population momentum describes the effect of the current age structure of a population on its future growth (Lutz, O'Neill and Scherbov 2003: 1991).

at its 1995 level[104] (United Nations 2000: 83-84). These large numbers of immigrants are difficult to achieve, and require an array of social policies to support not only social integration of immigrants into European societies. Since attitudes towards immigration vary markedly among European countries (Bonifazi and Kamarás 1998: 24-29), also social policies raising the acceptance of immigrants are needed, to avoid social conflicts in the different European countries.

Finally, an evaluation of different work-related or cash related policies suggests only a weak effect on fertility that – most important – will often manifest only in the long run (Sleebos 2003: 43-45; Kohler, Billari and Ortega 2006: 104-105; Gauthier 2007: 335-338). Accordingly, facing the demographic changes running out of time is one of the major problems of current European societies. Nevertheless, contemporary policies might still reduce the degree and effects of population aging and decline, by further addressing degrees of fertility postponement (Lutz, O'Neill and Scherbov 2003), by improving countries adaptations to late childbearing (Billari and Kohler 2004), and by stimulating immigration (Kohler, Billari and Ortega 2006). Policies addressing these topics need to be combined and implemented stepwise to reduce the discrepancy between family ideals and realities. In order to work efficiently, before implementing these policies the particular reasons for low fertility and lowest-low fertility need to be identified (McDonald 2002: 442). Regarding this identification, the presented results provided further insights.

[104] Facing populations aging and decline, the projected number of migrants needed to stabilize the support ratio at its 1995 values lies even higher; with about 25.2 million immigrants required very year for the period 1995-2050 (United Nations 2000: 84). However, this would lead to a serious increase in the European population by 2050.

Methodological Appendix

M1 Description of the family system indicators

To identify regional family systems based on people's social relatedness (Carsten 2000), I first needed to derive indicators of respondents' social relationships to their non-kin and kin. Therefore, I utilized the information in SHARE on different parts of respondents' social networks, including their household compositions, their relationships to their parents and children, and their relationships to non-kin and kin outside their households to whom they provided or from whom they received any kind of help during the last twelve months (help nodes), and looked at frequency of contact and spatial proximity between respondents and their alter-egos. Although the data on these different network parts was of different quality (see Figure M1.1), their combination allowed me to chart differences in regional family systems. Regions were identified based on NUTS codes that are provided in SHARE. In the following paragraph, I give a more detailed description of how I derived my indicators within three steps.

In a first step, I exploited the information on respondents' social ties to individuals who lived in respondents' current households. Although these individuals were not interviewed, the first, second and fourth wave of SHARE provided detailed information on respondent's household composition and complexity. Unfortunately, for co-residential relationships the frequency of contact between respondents and their alter-egos was often missing. In these cases 'very frequent contact' (daily contact) was assumed because it seemed likely that co-residing individuals meet frequently (compare Castiglioni and Dalla-Zuanna 2014: 426). Nevertheless, based on this assumption the frequency of contact between co-residing individuals will be slightly overestimated.

According to Wall (1983), households cannot be understood in isolation from the rest of the society surrounding it (Wall 1983: 7). Especially concerning people's social relatedness it is important to chart influential relationships that go beyond households (Widmer and Jallinoja 2008: 397; Bonvalet and Lelièvre 2008: 377-383). Accordingly, I derived the information on frequency of contact and spatial proximity between respondents and their parents (if alive), and between respondents and their children (if existent) that lived outside respondents' current households. These relationships were charted in SHARE using separate questions. While information on 'spatial proximity' was gathered

for all children, the information on 'frequency of social contact' was only collected for the first four children.

Finally, to chart respondents' relationships to non-kin and kin living in proximity, I exploited the information on respondents' relationships to individuals (help nodes) living outside respondents' household that received or provided respondents with help during the last twelve month. In this context, relationships to up to three persons were identified, while I ignored relationships to respondent's partners, children or parents since these were charted before. Unfortunately, for help relationships only frequency of contact (indicated by frequency of help) was provided. For relationships to neighbours close spatial proximity (between 1 and 5 km distance which was the closest category outside households) was assumed.

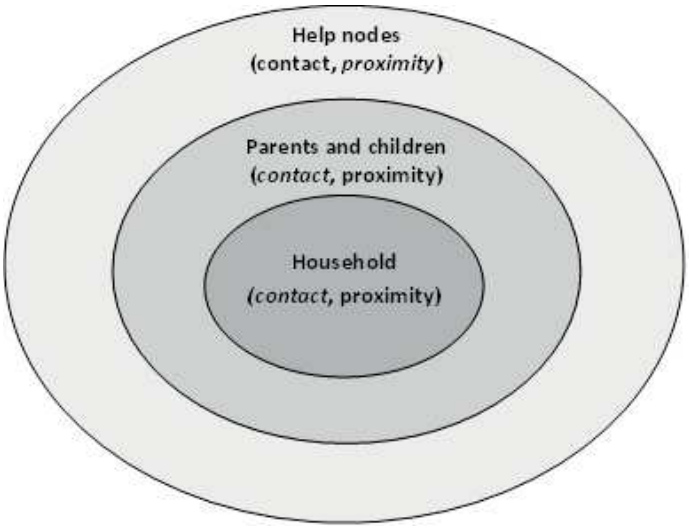

Figure M1.1: Conceptualization data ego-networks, data restrictions in italic

In a second step, I checked for duplicate cases in respondent's ego-networks based on indicators such as birth year, gender, type of relation, frequency of contact and spatial distance. While duplicate cases in case of respondent's partners, their parents, their parents-in-law, their children[105] and any co-residing individuals were easily identified, it was difficult to classify other kin and non-kin outside respondents' households as possible duplicate cases.

[105] In some cases, duplicates of children were kept since the data structure suggested that they were twins or triplets.

These relationships were identified based on respondents' help relationships (Figure M1.1), including those who received and provided respondents with help. Unfortunately, the survey questions did not allow describing in how far relationships were mutual[106]. Accordingly, it is not possible to be 100% sure that individuals, such as neighbours, named as providers and receivers of support were exactly the same persons (duplicates). Still, looking at the (up to three) persons respondents were able to name, the data suggests that there is some overlap. Regarding for example the first named individual that provided respondents with help with the first named individual that received support, the data of the first SHARE wave demonstrates that 13.2% of the named help nodes had the same relations to respondents. These cases are likely to include duplicates (Table M1.1).

Table M1.1: Overlap relationships to providers and receivers of support (potential duplicate cases of help nodes), based on SHARE wave 1

	Person 1	**Person 2**	**Person 3**
Provider	310 (13.2%)	49 (6%)	9 (3.1%)
N relationships	2,349	813	294
Receiver	310 (10.5%)	49 (4.9%)	9 (2.9%)
N relationships	2,944	991	312

Although this seems to be the case, it is difficult to solve this problem. One way would be to only include providers or receivers of support. However, an inspection of the data revealed that both sets of variables identifying receivers and providers of support contain a lot of unique relationships. In addition, it seems to be likely that there are systematic differences among these two types of social relationships. Previous research demonstrated important differences in, for example, the direction of resource flows or time transfers (indicating other types of support). Resources are often provided by older generations to the younger ones (Kohli 1999), while time transfers are directed upwards and

[106] Within the questionnaire, the following two questions were asked:
SP002: "Now please think of the last twelve months. Has any family member from outside the household, any friend or neighbor given you [or] [your] [husband/wife/partner] any kind of help listed on card 28?"
SP008: "Now I would like to ask you about the help you have given to others. In the last twelve months, have you personally given any kind of help listed on card 28 to a family member from outside the household, a friend or neighbor?"

downwards (Attias-Donfut, Ogg and Wolff 2005). Concerning both there are important country differences. Regarding social support, Albertini, Kohli and Vogel (2007: 235) demonstrate that "elderly persons are net receivers in France, Germany, Greece and Spain, whereas they are net givers in Demark and the Netherlands". In addition, there is variation in individuals' relationships to receivers and providers of support (Attias-Donfut, Ogg and Wolff 2005: 165). These differences suggest that distinctions between the two types of help relationships have to be made, because it is very likely that alter-egos that receive or provided respondents with help will differ. Accordingly, it made sense to include both type of relationships to describe regional family systems. The question remains to what extent my family system indicators are affected by possible duplicate cases in the data? To evaluate these effects I first need to finally create my regional family system indicators and compare them with other set-ups afterwards.

My family system indicators were created in a third and final step. For the first indicator, average contact, I added up the frequency of social contact for all kin relationships and divided it by the sum of all social ties in the network. In this way I created a personal mean value for each respondent, reflecting the density of the kinship network in relation to all social ties (Mönkediek and Bras 2014: 35). For the second indicator, average spatial proximity, I counted all family relationships, added up the spatial proximity scores, and divide their sum by the number of all family ties in the network. This resulted in a variable reflecting the spatial density of the kinship network (Mönkediek and Bras 2014: 35-36).

To evaluate in how far possible duplicate cases affect my results, I rerun the analysis presented in Chapter 4 (Table 4.4 Model 4.6). In this context, I compare the original model's results (M1) with revised model (M2) in which I excluded all help relationships which were likely to be duplicate cases (see Table M1.2). These were identified by looking at the respondent's relationships to the different providers and receivers of help and the position they were named (first, second or third person). As demonstrated by Table M1.2, the results between both models are indifferent, suggesting that the problem of duplicate cases in the data is negligible.

Table M1.2: Instrumental variables regression results, explaining completed fertility (based on Chapter 3)

	Model M1 LA+		Model M2 LA+	
Variables	***Coef.***	***P>***	***Coef.***	***P>***
Individual Factors				
Contact freq. (mean centered)	-0.484	*	-0.481	*
Spatial prox. (mean centered)	-0.304	^	-0.290	^
Regional Factors				
Regional variance contact freq.	-0.390	^	-0.381	^
Regional variance spatial pro.	-0.043		-0.047	
Interaction Terms				
Reg. variance contact freq. * Contact freq.	0.357	*	0.341	*
Reg. variance spatial prox. * Spatial prox.	0.082		0.071	
Hansen J	122		119	
jdf	109		109	
jp	0.194		0.240	
N	15,252		15186	
F Test (P > F)	17.60	***	19.50	***
Clusters	136		136	

Note: The effects of the control variables have been partialed out; weighted output; ^p < 0.10, *p < 0.05, **p < 0.01, ***p< 0.001

M2 Evaluation of the family system indicators

To evaluate my family system indicators, I compare them with regional differences in people's attitudes towards children's independency and traditional marriage values, and related them to people's household size, charted in the Gender and Generation Studies (GGS). In this context, I used the data prepared for Chapter 3 of this Thesis.

As argued by Reher (1998: 211-212), weak family systems promote individuality, while in strong family regions the family has priority over the individual. In the GGS, people's attitudes towards children's independency were charted by measuring their agreement to the statement (a1107_i) 'when children turn about 18 to 20 years old they should live independently'. Respondents could agree to this statement on a Likert-scale ranging from 1 (strongly agree) to 5 (strongly disagree). Rescaling the item so that high values indicate high agreement, respondents tend to more often agree that children should live independently when they turn 18-20 years old (mean: 3.272, std. error: 0.007) (Figure M2.1).

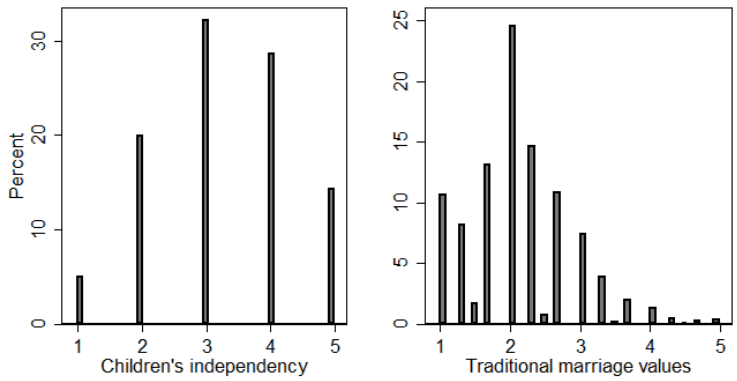

Figure M2.1: People's attitudes towards children's independency and traditional marriage values.

As demonstrated by Figure M2.1 (left hand side), this statement was mostly agreed by respondents in Germany, Estonia, Austria, France and Sweden, while respondents in Belgium and Italy tended to disagree. Interestingly, the Eastern European countries (Hungary, the Czech Republic and Poland), with exception of Estonia, range in between. Looking at the association between regional family systems and regional differences in people's orientation towards children's independency, reveals a significant negative correlation (on NUTS

levels for frequency of contact: Pearson = -0.624, p = 0.000; for spatial proximity: Pearson = -0.717, p = 0.000). In countries (left hand side) and regions (right hand side) characterized by frequent contact between kin (figures above) respondents agreed less with the statement about children's independence when aged 18 years and older. However, there are some outliers, such as the Belgian region of Brussel (BE1) or the Flemish region of Belgium (BE2). The association between regional family systems and regional averaged attitudes towards children's independence when children become adults, appears stronger when we look at average spatial proximity between kin in a region (or country). Figure M2.2 shows that the association between both seems much stronger, while it is again negative (figures below). In countries (left hand side) and regions (right hand side) with less spatial proximity between kin, people seem to more often agree that children should live independently when they turn about 18 to 20 years old.

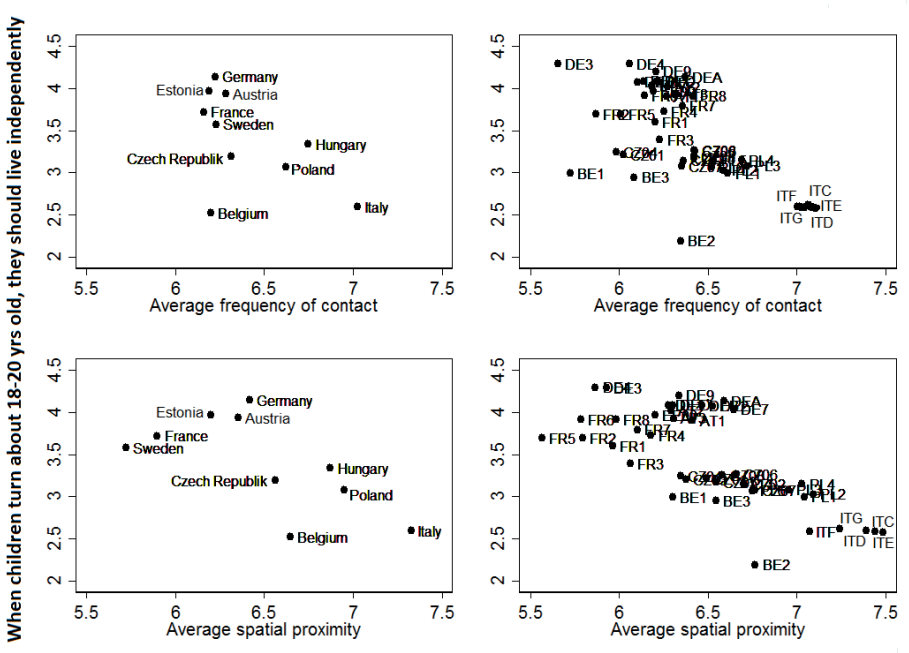

Figure M2.2: Family system indicators and attitudes towards children's independency

Beside orientations towards children's independency, regional family systems have been characterized by different marriage and household formation pattern (Hajnal 1982; Goody 1996). Historically, in the weak family countries of

Northern Europe, children left their parent's house early, often for working as servants (Reher 1998: 206-208). They married comparatively late, while couples tended to establish their own households at marriage. In strong family regions, such as Italy and Spain, marriage occurred comparatively early, and married couples often lived together with one of the couples parents (Goody 1996: 3; Reher 1998; Alvarez 2004: 436). However, children left their parent's house far later (Reher 1998: 206-208).

Nowadays, continuing regions disparities in marriage and household formation pattern among regions with different family systems have been described. In strong family countries, such as Italy and Spain, children still tend to stay much longer in their parents households (Livi-Bacci 2001: 145-152), while rates of cohabiting couples and birth out-side marriage are low. In contrast, in many weak family countries, such as Denmark, cohabitating couples form a large share of the population and the share of birth out-side wedlock is high (Reher 1998: 229; Billari and Kohler 2004: 164). Relating regional differences in marriage and household formation pattern to my two family system indicators, one could expect traditional marriage attitudes are more pronounced in strong family than in weak family regions.

To measure people's attitudes towards marriage values, I use three Items with valid information in all GGS countries[107]. Based on a Likert-scale ranging from 1 (strongly agree) to 5 (strongly disagree), these items measure respondents agreement to the statements (a1107_b) 'It is all right for an unmarried couple to live together', (a1107_d) 'It's all right for a couple to divorce even if they have children', and (a1107_h) 'Woman can have child as single parent even without stable relationship'. As demonstrated by Figure M2.3, most respondents tend to favour more liberal marriage values (mean: 2.126, std. error: 0.004). Given the number of items included in this scale, the reliability of the resulting variable 'marriage values' appears acceptable.

Comparing my family system indicators with shared regional attitudes toward traditional marriage values, Figure M2.3 demonstrates that in countries (left hand side) and regions (right hand side) with frequent contact or close spatial proximity between kin, attitudes towards marriage are more traditional.

[107] Unfortunately, the items that measured respondent's attitudes towards children and attitudes towards traditional marriage values differed per GGS country.

Especially in Italian and Polish regions respondents disagreed that a) 'Woman can have child as single parent even without stable relationship', that b) 'It is all right for an unmarried couple to live together' and that c) 'It's all right for a couple to divorce even if they have children'. On NUTS levels this correlation is again significant and comparatively strong (for frequency of contact: Pearson: 0.739, p = 0.000; for spatial proximity: Pearson = 0.756, p = 0.000).

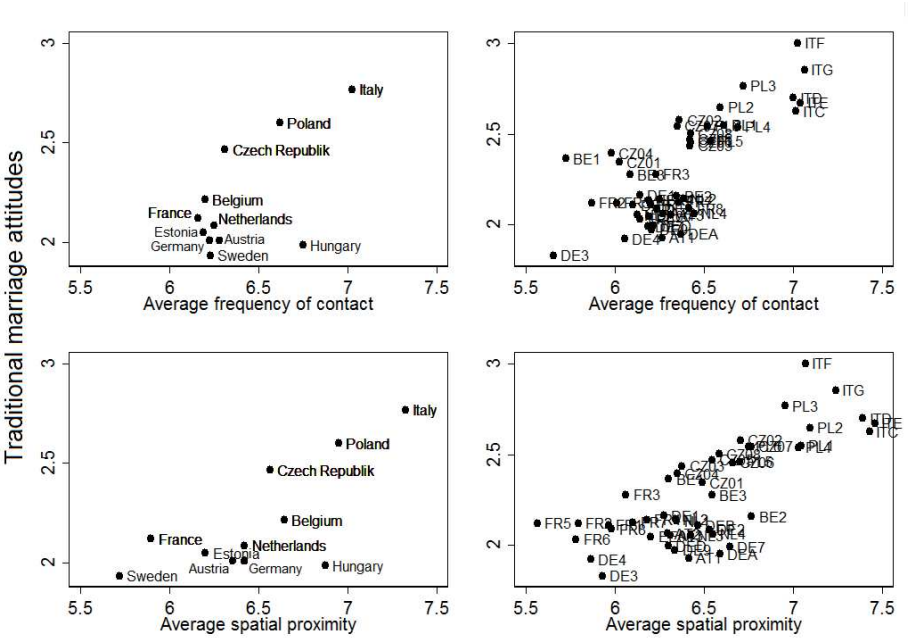

Figure M2.3: Family systems and attitudes towards marriage, divorce and cohabitation

Until now, my results suggest that the two family system indicators relate to regional differences in attitudes towards children's independency and traditional marriage values. However, the observed regional pattern might as well be explained by other regional factors, such as regional economic development. For example, in many Italian regions the economic circumstances and the limited possibilities for independent living space on the housing market force children to remain in their parent's households (Livi-Bacci 2001: 146-148; Dalla-Zuanna 2004: 111-115; Vignoli, Rinesi and Mussino 2013). Accordingly, people's opinions towards children should live independently when they turn 18-20 years old might be the result of regional differences in the socio-economic realities. However, also factors such as regional economic development are influenced by family systems (Alesina and Giuliano 2010). As demonstrated by

Duranton, Rodriguez-Pose and Sandall (2009: 37) family types, such as nuclear or stem families, overlap with current regional disparities in labour participation, wealth and economic development in Europe.

To finally evaluate my two family system indicators I compare their distributions with regional pattern of household size. Therefore, I calculate the average number of household members of GGS respondents per country and NUTS region. As demonstrated by Figure M2.4, there is again a positive association between the two family system indicators and the average household size of respondents in a region (for frequency of contact: Pearson: 0.676, p = 0.000; for spatial proximity: Pearson = 0.641, p = 0.000). In both cases, the average number of household members is larger in strong family regions and countries, such as Italy or Hungary, than in the weak family countries, such as France and Sweden. However, Austria does not seem to completely follow this picture and provides an important outlier. Nevertheless, the observed regional patterns of household size follow a north-south divide described by earlier research (Reher 1998; Hank 2007; Heady, Gruber and Ou 2010a: 42/43). Accordingly, taking all the results into account, my two indicators seem to be well suited to capture and describe regional family systems in Europe.

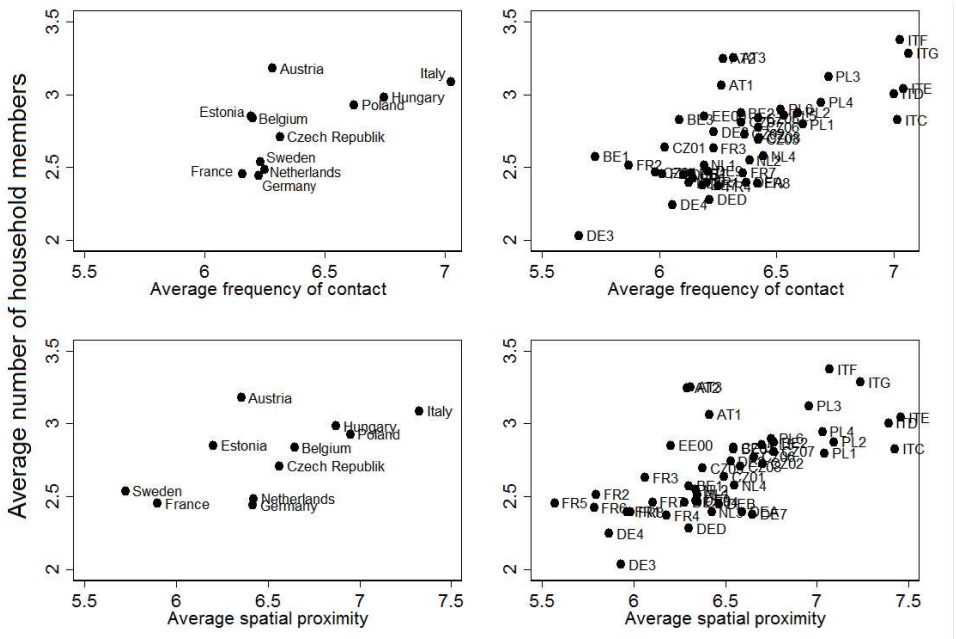

Figure M2.4: Family systems and average number of household members (per country and NUTS2 region)

M3 Place of birth, migration and regional family systems

My family system indicators are based on information concerning respondents' current places of residence, while I try to explain their fertility behaviour retrospectively. In this context, I assume that regional family system respondents are currently living in reflect the family system in which they grew up and where their reproductive behaviour took place. Obviously, there is a problem regarding this assumption: migration. For the studied respondents it is very likely that at the time point of the interview part of them no longer lived in their places of birth, or where they spend their reproductive careers. As a result such migrations into other regions, with possibly other family system, are likely to affect the link between regional family system and fertility. Although this problem cannot be ruled out completely using the current data, there are arguments which suggest that for the studied birth cohorts this effect would be limited.

Based on SHARELIFE (the third wave of SHARE) I am able to study the migration behaviour of a large share of my respondents. Comparing the changes in respondents' places of residence for respondents aged 45 till 80 years old, I am able to describe since when they lived in the NUTS regions without breaks in which the interview took place[108]. As demonstrated by Figure M3.1, the majority of respondents lived in the current region since birth (58.9%). About 10% of the respondents lived there since child- or young adulthood, and one third (31.1%) of respondents entered the region during their reproductive careers or afterwards. For the later respondents, the degree to which family systems link to fertility might be affected by respondent's migration experience. These respondents might have grown up in a different region whose family system might have framed their fertility behaviour. Nevertheless, a large share of respondents that migrated and entered the current region after the age of 20 (38.9% corresponding to 12.08% of all respondents), originated from the same NUTS region and only migrated temporarily. In addition, if we look at the partners of these respondents, 30.5% of respondent's partners (corresponding to 9.5% of all respondents) lived in the region of interview since birth or young

[108] For Austria, Czech Republic, Denmark, Greece, Italy, Poland, Spain, Sweden, and Switzerland regional information was available on NUTS2 levels. For Belgium, Germany, the Netherlands, and France, regions were identified based on NUTS1 levels.

adulthood. Accordingly, taking both results into account, it can be assumed that the measured family systems framed the reproductive behaviour of about 80% of the included respondents.

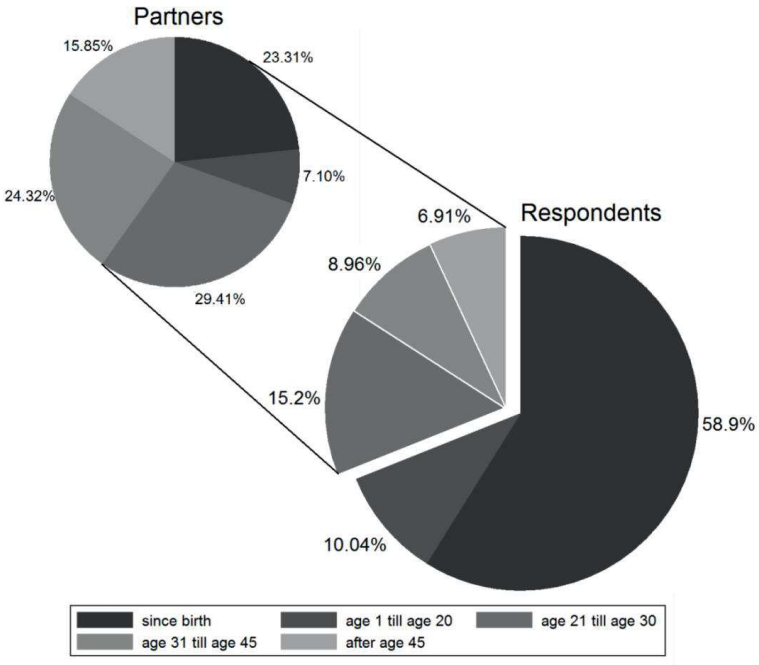

Figure M3.1: Age since when respondents and their partners live in the current NUTS regions (Source: SHARELIFE)

However, regarding the age since when respondents lived in the region of interview without breaks, there are important country differences. The share of respondents who lived in the current region since they were born varies strongly among European countries (Figure M3.2). It is especially high in Austria, Belgium, Italy, Greece, Spain, Poland and the Czech Republic and comparatively low in Sweden, Denmark, Switzerland and France. The Netherlands and Germany range in between. Nevertheless, the country variations partly support my argument that the effect of migration on my research results should be limited. The share of respondents who entered the current region somewhere later in life is higher in countries where regional differences between family systems are smaller, such as Sweden, Denmark, or Germany (Chapter 2). For these respondents it should matter much less from which region of the country they originated, because regional differences in family system appear to be less strong. However, this assumption does not completely hold for the Netherlands

and Switzerland, where migrations occur to be more frequent and regional variations in family systems appear to be greater (Chapter 2). In these countries the link between family systems and fertility might be more affected than in other European countries.

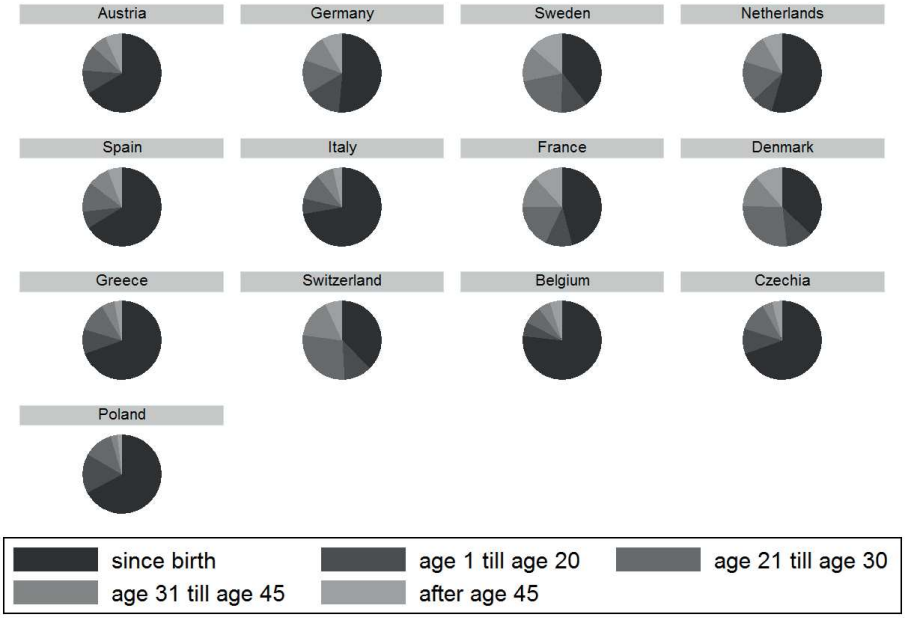

Figure M3.2: Age since when respondents live in the current NUTS region (Source: SHARELIFE)

To evaluate the extent to which migration experience of respondents influenced my research results, I run two simple multilevel regression model explaining respondent's fertility (number of children). The first model (M1) is based on all respondents with information on their age since when they lived in the current region. The second model (M2) includes only respondents who lived without breaks in the NUTS region where the interview took place since they were born. I use the data presented in Chapter 4 and control for the variables: 'country', 'birth cohort', 'education', 'urbanity' and regional GDP[109]. Table M3.1 provides an overview of the models' results. As demonstrated by Table M3.1,

[109] Regional values (NUTS 2) on GDP for the year 2000 were obtained from Eurostat. GDP was measured in Purchasing Power Standard, per capita. Source: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_r_e2gdp&lang=en (19.03.15)

there are minor differences between both models. These differences mainly refer to less significant effects of my family system indicator 'frequency of contact between kin' on respondent's fertility and the birth cohort effect for people born between 1931-= and 1940 turning insignificant. This result might be explained by the decreasing case numbers. Nevertheless, my main results stay the same, including the direction and the intensity of my coefficients. Accordingly, my results suggest that the effect of a possible 'migration bias' on my analysis should be limited.

Table M3.1: Instrumental variables regression results, explaining respondents number of children (data based on Chapter 3)

	Model M1		**Model M2**	
Variables	***Coef.***	***P>***	***Coef.***	***P>***
Individual Factors				
Birth Cohort				
1951-60	ref.		ref.	
1941-50	0.070	0.025	0.069	0.082
1931-40	0.222	0.000	0.214	0.000
1920-30	0.183	0.000	0.170	0.002
Education (ISCED-97)	-0.076	0.000	-0.081	0.000
Urban	-0.194	0.000	-0.220	0.000
Regional Factors				
GDP	-0.467	0.000	-0.577	0.000
Av. Spatial Proximity	-0.453	0.000	-0.430	0.002
Av. Frequency of Contact	0.395	0.006	0.386	0.011
Interaction terms				
Av. Prox. X 1941-50	0.221	0.010	0.244	0.022
Av. Prox. X 1931-40	0.421	0.000	0.379	0.001
Av. Prox. X 1920-30	0.542	0.000	0.546	0.000
Av Contact X 1941-50	-0.070	0.515	-0.143	0.242
Av Contact X 1931-40	-0.265	0.042	-0.238	0.093
Av Contact X 1920-30	-0.386	0.016	-0.360	0.031
Constant	7.014	0.000	8.183	0.000
Random Part				
SD (Regions)	0.167		0.187	
SD (Individual)	1.367		1.347	
N	15,885		10,874	
F Test (df)	374.03	(26)	343.74	(26)
Clusters	142		142	

Note: controlling for country using fixed effects (not presented); unweighted output

M4 Measuring fertility in the SHARE survey

In the SHARE survey respondent's fertility was measured by asking them about the number of children still alive. This question has the disadvantage that it does not include children who died. While this seems less problematic for younger respondents in contexts in many contemporary societies with of low infant mortality and higher life expectancy, it seems challenging for older respondents of birth cohorts where infant mortality was higher and life expectancy was lower. For these cohorts there is a certain risk of underestimating their fertility.

In most chapters of this thesis I included respondents aged 45 to 80 years old. In how far did I possibly underestimate the levels of fertility of these respondents? Taking the earliest birth cohort group included in this thesis (1920-1930), and assuming roughly 25 years of biological reproduction starting from about age 20, [110] the majority of these respondents probably got their first child between 1940 and 1965 (Figure M4.1), when infant mortality had already strongly decreased and was still decreasing (Chesnais 1992: 57-65, 70-73; Vallin 1991); between 1950 and 1955 the number of deaths under age 5 per 1,000 life birth for Europe was 94 (see United Nations 2015). At the same time life expectancy at birth[111] was fast growing. In 1950 life expectancy at birth ranged from 55.6 years in Poland to 70.6 years in the Netherlands for men, and from 64.2 years in Poland to 72.9 years in the Netherlands for women (Tomka 2013: 26-27). In 1960 it already rose to 64.8 years in Poland and 71.2 years in the Netherlands for men, and 70.5 years in Poland and 75.3 years in the Netherlands for women (Tomka 2013: 26-27). Taking into account that the SHARE country surveys were conducted between 2004 and 2011, and that living conditions improved for the European population, which is reflected in the increasing life expectancy rates (Tomka 2013: 26-27), it seems reasonable to assume that most children of respondents born between 1920 and 1930 were still alive when the country surveys were conducted.

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[110] As demonstrated by Eijkemans et al. (2014: 1304) fertility strongly decreases after the age of 45.

[111] Life expectancy at birth is defined as the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life (Source: http://data.worldbank.org/indicator/SP.DYN.LE00.IN , access date: 24.09.2015)

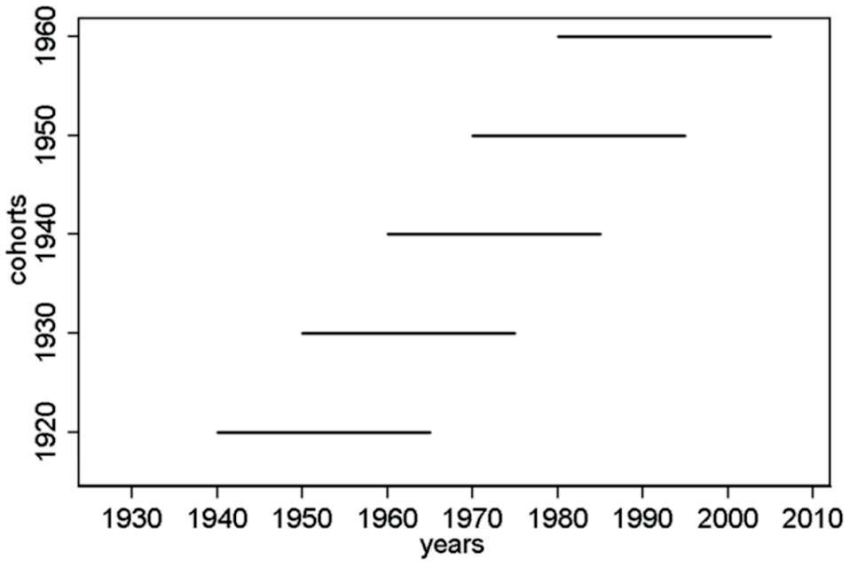

Figure M4.1: Birth cohorts and their reproduction years
(assuming 25 years of biological reproduction, starting with age 20)

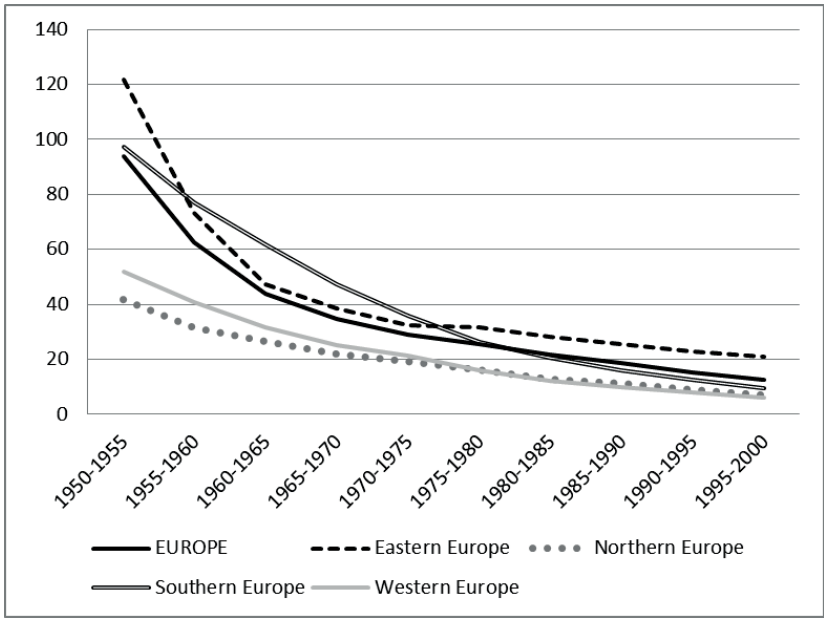

Figure M4.2: Under-five infant mortality for both sexes (deaths under age five per 1,000 live births) (Source: United Nations 2015)

Testing my assumption that respondent's fertility is not underestimated in SHARE is difficult without additional data. To get an idea in how far my assumption is likely to hold, I compare levels of cohort fertility in SHARE with levels of cohort fertility reported in GGS. In this context, I use the SHARE data from Chapter 5 and the GGS data from Chapter 3.

In GGS respondent's fertility was charted in several ways. One way was by charting the number of children living in- and outside respondent's households. This way is similar to SHARE since it only includes children that were alive. However, next to these questions, for some countries GGS also charted the number of all children (including deceased children) respondents ever had. Unfortunately, evaluations of the fertility data suggest that for Germany GGS underestimates the fertility of older birth cohorts and overestimates fertility levels of the younger birth cohorts (for a discussion see Kreyenfeld, Hornung and Kubisch 2013). Nevertheless, knowing this allows me to compare to what extent the same happens in SHARE. Figure M4.3 provides a country wise overview on cohort fertility based on the three fertility measures (SHARE, GGS alive, and GGS dead and alive) for all countries where the three measures are available. As demonstrated by Figure M4.3, there are some differences between the fertility measures based on SHARE and GGS, while differences between the two measurements derived from GGS are in most countries negligible. Interestingly, in several cases the cohort fertility reported in SHARE is higher than fertility in GGS, while for Italy the reported levels of fertility are more or less the same. This is especially the case in Belgium, Germany, and Hungary, where differences are even more pronounced in the older birth cohort groups, and in the Czech Republic, where differences are larger for the mid birth cohort groups. This indicates that cohort fertility for the older birth cohorts is not necessarily underestimated in SHARE. Nevertheless, in France, in Sweden (cohort 1941-50), and especially in Estonia I find the opposite. While in France the differences between SHARE and GGS are relatively small, in Estonia the cohort's fertility is seemingly underreported based on SHARE. However, data evaluations of the French GGS sample suggest that it underreports deceased children (Régnier-Loilier 2014). Accordingly, for France the differences between SHARE and GGS (dead and alive) will be greater.

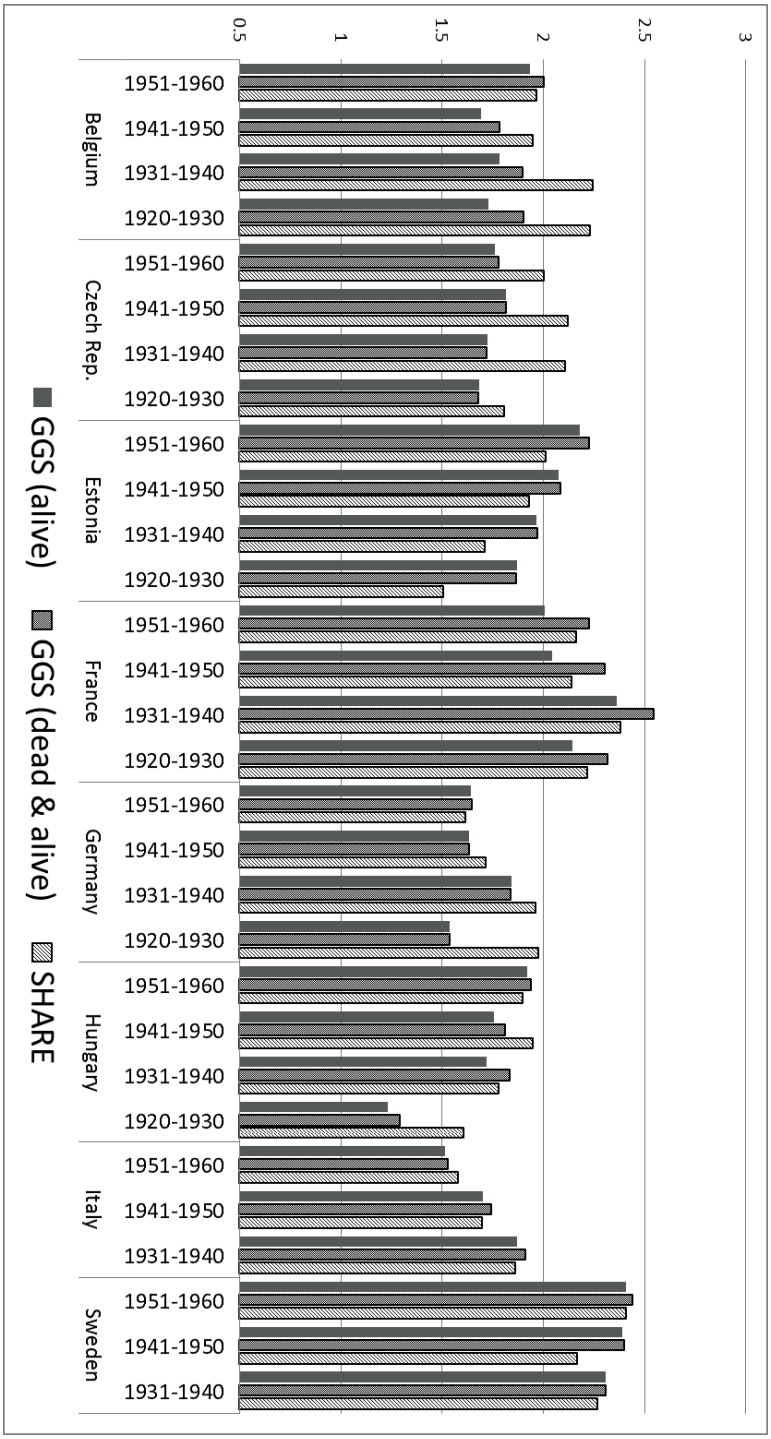

Figure M4.3: Average fertility in GGS and SHARE per country and birth cohort group (weighted data)

My results suggest that differential mortality did not led to an underestimation of cohort fertility in SHARE in all countries. In fact, fertility measures in SHARE often lies close to or above the levels of fertility reported in GGS, which may again indicate an overestimation of the fertility of younger birth cohorts like in Germany (Kreyenfeld, Hornung and Kubisch 2013). Still, this means that for most countries my original assumption regarding differential mortality seems to hold. This might be linked to the sampling procedure of SHARE which focused on older respondents which had already completed their fertility careers. However, for France, Estonia, and partly for Sweden, this is different and cohort fertility is underestimated. This might be due to fertility in SHARE being underreported due to deceased children. In addition, one alternative explanation could be a selection effect regarding the respondent who entered SHARE. Respondents with high fertility may face greater risk of dying earlier (Hurt, Ronsmans and Thomas 2006; Bulled and Sosis 2010), and it could thus be that especially older respondents with fewer children entered SHARE. On the contrary, recent research suggests no consistent pattern in the association between mortality and number of births among women who have completed their childbearing (Hurt, Ronsmans and Thomas 2006). Moreover, life expectancy seems to vary according to regional socio-economic contexts that also influence fertility (Bulled and Sosis 2010). Taking these aspects into account, it seems unclear why fertility is underestimated in some of the SHARE countries.

Regarding the differences in levels of fertility between GGS and SHARE, two possible solutions would have been to either exclude the oldest birth cohort group from the analysis, or to exclude the problematic countries (Estonia and France). However, since cohort fertility is seemingly not underestimated for only the oldest birth cohort group (see Estonia), and differences between reported fertility in SHARE and GGS appear to be comparatively small (see France), I decided to keep all countries and cohort groups in my analysis to raise the effective number of cases.

M5 Family systems and offspring's fertility (Chapter 5)

In chapter 5, I explained respondent's offspring's family size (G2) based on my family system indicators. This seems partly problematic, because regional family systems were identified for respondent's (G1) current place of residence, while respondent's children (G2) might live in a different place. Unfortunately, the SHARE data does not provide any information on respondents' children's place of residence which could have help to solve this issue. Nevertheless, regarding the data on spatial proximity between parents and their children suggests that most children live very close to their parental household (Hank 2007: 162-164). Taking the first and second SHARE wave (regarding only the first observations of panel cases), 69.89% of all children in SHARE live up to 25km away from their parents (Figure M5.1). Less than one third (30.11%) of the children lives further away from their parents; with 13.09% of children living at a distance of between 25km and 100km (Figure M5.1).

Looking at the spatial proximity between parents and their children for the each country separately reveals that there are important country differences. These differences might indicate greater problems of estimating the link between regional family systems and offspring's family size (G2) in specific parts of Europe. Nevertheless, the observed country differences reflect the earlier described European pattern of family organization (Chapter 2), suggesting a clear north-south and east-west-divide (Figure M5.2). In this context, the spatial proximity between parents and their children is on average much closer in countries in which regional disparities among family systems occurred to be greater (Figure M5.2), such as Spain or Italy (Chapter 2). In countries where most children live further away from their parents, such as Sweden or Denmark, regional variations in family systems again occur to be minor (Chapter 2).

Finally, it seems reasonable to assume that especially the family systems of the region in which respondent's generation (G1) is residing, is of major importance to their children's fertility behaviour (G2). First of all, these regions were often the regions in which the majority of respondents grew up (see Methodological Appendix M3). In addition, these were the regions in which most of respondent's children (G2) probably grew up and spend their childhood. Accordingly, these family systems can be assumed to have framed respondent's children's socialization and their family orientation (Litwak 1960). In addition, the

measured family systems can be assumed to have affected respondent's (G1) ideas concerning their relationships to their children (G2). Accordingly, as assumed the measured family systems should influence the link between parents and their children's completed family size.

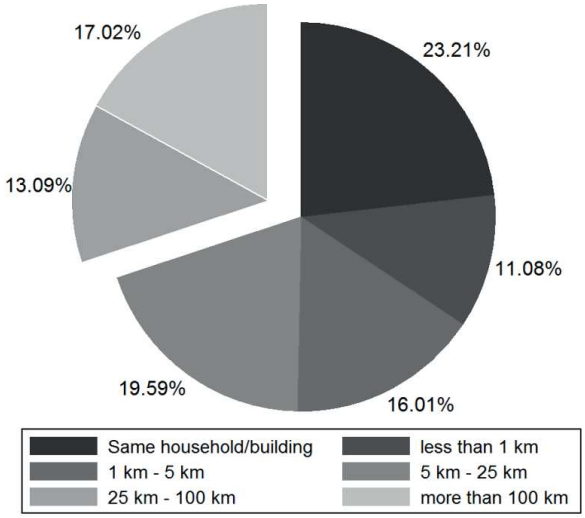

Figure M5.1: Spatial proximity between parents and their Children according to SHARE, percent of children (Source: SHARE wave 1 and wave 2)

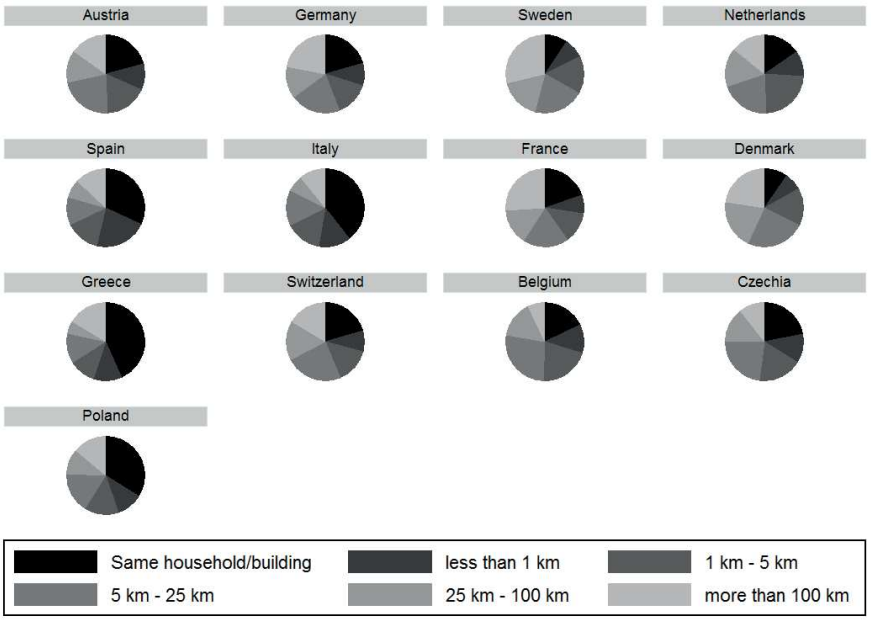

Figure M5.2: Spatial proximity between parents and their Children according to SHARE, percent of children per country (Source: SHARE wave 1 and wave 2)

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Summary

This thesis studies the role of regional family organization principles, so called family systems, for explaining fertility behaviours in different parts of Europe. Studying family systems and its impact on fertility is important, because many aspects of societal life, such as the organization of welfare, are influenced by the institution of the family, its procreation and its underlying organizational principles (Sussman and Burchinal 1962: 235-236; Bahle 2008: 102-104; Grandits 2010; Alesina and Giuliano 2014). To better understand differences, for example, in welfare organization, the role of family systems and its variations need to be further understood. Family systems, for example, regulate where kin is located in terms of spatial distance and who else in the kinship network is available. Thereby, family systems influence the organization of kinship networks and impact on degrees of social support that have been observed to influence demographic processes, such as child survival (Sear and Mace 2008: 11; Sear and Coall 2011: 91-93; Strassmann and Gerrard 2011; Snopkowski and Sear 2013: 134-135). In addition, family systems relate to norms and ideals about the life course and the 'normal life' (Neugarten, Moore and Lowe 1965: 711; Livi-Bacci 2001: 149; Plath 2009: 71). Accordingly, family systems need to be included to understand when and why certain kin relationships gain of importance and when and why fertility occurs in people's life courses.

Previous research that studied patterns of household organization, has primarily focused on households or patterns of inheritance to identify family systems, often ignoring influential relationship that reach beyond the co-residence unit (Le Play 1884; Murdock 1949; Laslett and Wall 1972; Goody 1976, 1996; Hajnal 1982; Laslett 1983; Wall 1983, 1998; Moring 1998; Todd 1990, 2011; Polla 2006; Iacovou and Skew 2011). However, in many cases important economic and social interdependencies exist among family and kin residing outside the household (Georgas et al. 2001: 299; Jappens and Van Bavel 2012: 103-104; Lee 1985; Yorburg 1975). Over the last decade, such relationships got increasingly recognized and indicators identifying family systems have shifted to those reflecting the social relatedness between kin (Heady and Kohli 2010: 21; Micheli 2012: 19; Viazzo 2010b). However, many studies, such as the influential work of Reher (1998), focused mainly on the general picture of family structures in Europe, while there is only little

information about sub-regional differences (Wall 1983; Kalmijn and Saraceno 2008: 503; Viazzo 2010b: 152). Accordingly, there is a need for more detailed regional work on family systems.

In addition, previous research that studied the effects of family systems on demographic outcomes often did not test for the hypothesized effects using statistical models (Das Gupta 1997; Skinner 1997; Viazzo 2010a, 2010b; exceptions are Kok 2009, Rotering and Bras 2015). Moreover, empirical studies based on qualitative or quantitative approaches that analysed kin effects mainly focused on the effects of specific kin relationships, such as grandparents and siblings, on fertility, without taking the underlying regional pattern of family organisation into account (for an overview see Bernardi and Klärner 2014). Accordingly, there is little empirical evidence charting the effects of family systems on fertility, while recent research calls for greater attention to macro-level influences and for micro–macro analyses to explain differences in fertility behaviours (Morgan and Bachrach 2011; Harknett, Billari and Medalia 2014: 3; Philipov, Klobas and Liefbroer 2015; Liefbroer et al. 2015b).

Addressing these research gaps, this thesis raises the question (1) how patterns of European family organization (family systems) can be described, when we use regional measures of social relatedness and geographical proximity that go beyond households. Moreover, it tries to (2) explain differences in fertility behaviours and levels of fertility among European regions by differences in family systems. To describe family systems on a region level (NUTS 2) while using measures of social relatedness, this thesis utilizes information on spatial proximity and frequency of contact between kin reported in the 'Survey of Health, Aging and Retirement in Europe' (SHARE) (for a detailed description see the Methodological Appendix M1). Aggregating the information on kin relationships at regional levels provides reliable indicators of regional family systems that are highly correlated with indicators used by other researchers (Methodological Appendix M2), such as regional differences in attitudes towards children's independency, attitudes towards marriage, or average household size (compare Reher 1998). Regarding the distribution of the family system indicators, the picture of strong and weak ties in Europe became more divers and more colourful. While the results support the overall picture of a north-south divide between strong and weak family regions (Reher 1998; Hank 2007: 162-163), the ways how families are organized turned out to be complex at regional

levels (see Chapter 2). Using, for example, average frequency of social contact between kin as a criterion, cohesive family bonds are observed even in the Northern European regions. Accordingly, my results support the idea that regional family systems are made up of multiple dimensions (Viazzo 2010a p: 282/283; Viazzo 2010b: 148).

Testing to what extent differences in these family system indicators explain people's fertility behaviour, this thesis demonstrates that regional family systems are an integral part of the environments in which fertility behaviour takes place. Family systems structure the organization of individuals in social groups of kin and relate to different degrees of kin interaction and kin support (Skinner 1997; Reher 1998). Thereby, family systems open up possibilities for kin and non-kin influencing each other's fertility behaviours, allowing for social influence (Tooby and Cosmides 1989: 46). As a consequence, family systems impact on the degree to which son's fertility reflects that of his parents (Chapter 5). In addition, regional family systems function as guidelines, as ideal types of how families should be organized (Chapters 2 and 4), while these ideals influence people's attitudes towards children and their opinions about expected and accepted demographic behaviours (Chapter 3). Although families often do not adhere to these ideals, deviations mostly occur within a certain range (Chapter 4). The existence of these ideals has important implications. Since actual patterns of family organization seem to change faster and easier than values regarding family organization (Inglehart 2000, 2008), these ideals lead to cultural lags (Ogburn 1922: 200ff.; Woodard 1934) that can be described as discrepancies between family systems and actual patterns of family organization. In this context, my results (Chapter 4) support the idea that the more people's individual family networks differ from regional family systems, the more likely they postpone or lower their fertility (compare Régnier-Loilier and Vignoli 2011). While fertility is higher in countries and regions where the fit between family ideals and realities is better, such as Sweden (Chapter 4), my results still suggest that there is no 'good' or 'bad' family system per se. The effect of family systems on fertility rather depends on the individual's and the regional socio-economic context, and changes over people's lives (Chapter 6). Accordingly, family system alone cannot explain regional differences in fertility either. Instead, my results support the notion that "It is not structure or culture but rather structure and culture that affect our [demographic] outcomes" (Bachrach 2014: 4).

About the Author

Bastian Mönkediek was born in Osnabrück, Germany, on the 26th of October 1982. He obtained a Bachelor's degree in Social Sciences at the University of Osnabrück (2006), and a Master's degree in Sociology and Empirical Social Research at the University of Bremen, Germany (2009).

Between October 2008 and March 2010, he worked as a lecturer and research assistant at the faculty of Social Sciences at the University of Osnabrück, teaching quantitative research methods and statistics. In Osnabrück he started to develop first ideas for a PhD project and pre-tested an online questionnaire that studied the effects of characteristics of people's social network on their fertility intentions.

In April 2010 he moved to Tübingen and joined the DFG-project 'Historical developments of social reproduction in Germany', granted to Prof. Dr. Steffen Hillmert. While he was working as research assistant at the Institute of Sociology, in August 2010 he became PhD student at the University of Tübingen focussing on the role of kin affecting the intergenerational transmission of family size.

To improve his knowledge about methods analysing kin effects, in 2011 he attended the Essex Summer School, University of Essex, England, and learned about Social Network Analysis (SNA).

In October 2011, after the DFG-Project in Tübingen was finalized, he joined the VIDI-Project 'The Power of the Family', granted to Prof. Hilde Bras, and became PhD candidate at the Radboud University Nijmegen, The Netherlands. In January 2014, when Prof. Bras attained her professorship, he became a member of the Sociology of Consumption and Households Chair Group, Wageningen University, The Netherlands. At the same time, he continued being guest researcher at the Radboud University Nijmegen.

During his PhD training in Nijmegen and Wageningen, he obtained the N.W. Posthumus Basic (2013) and the N.W. Posthumus Advanced Training Diploma (2014) at the N.W. Posthumus Institute.

Since October 2015, Bastian Mönkediek is working as an Assistant Lecturer at the University of Duisburg-Essen.

PUBLICATIONS

Articles in refereed journals

Mönkediek, B. and Bras, H. (2016). Family Systems, social networks and fertility. What does it mean to be different? Economic History of Developing Regions, 31(1), 136-166.

Mönkediek, B., Rotering, P. and Bras, H. (2015). Regional differences in the intergenerational transmission of family size in Europe. *Population, Space and Place*. Online First, DOI: 10.1002/psp.2003.

Mönkediek, B., Kok, J. and Mandemakers, K. (2015). The Impact of Family Setting and Local Opportunities on Leaving Home and Migration Destinations of Rural Youths, The Netherlands 1860-1940. *Historical Life Course Studies*, Online First.

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Buis, M. L., Mönkediek, B. and Hillmert, S. (2012). Educational expansion and the role of demographic factors: The case of West Germany. *Population Review*, 51(2).

Articles in edited volumes

Mandemakers, K., Mönkediek, B. and Kok, J. (2016). De rol van gezin en bedrijf bij de migratie van Nederlandse boerenkinderen tussen 1850 en 1940. In: Puschmann, P., Paping, R. and Matthijs, K. (eds.). Familie en levenskansen in het verleden. Leuven: Acco: 25-56.

Book chapters

Mangnus, E., Mönkediek, B., Dekker, M. (2015). Trading cereals in rural Mali: The role of social relations in N'golobougou. In: Mangnus, E. (ed.). *Organising Trade*. Dissertation, Wageningen University, p. 89-114.

Monographs

Mönkediek, B. (2011). *Unsicherheit Familiengründung – Eine empirische Analyse zur Bedeutung von finanziellen Ressourcen für den Kinderwunsch und die Timingintention der ersten Elternschaft*. 2. edition. Osnabrück: Verlag Dirk Koentopp.

Mönkediek, B. (2009). *Wenn die Entscheidung fürs Kind zum Problem wird – Eine empirische Analyse zur Abhängigkeit der Timingintention der ersten Elternschaft von Elementen biographischer Sicherheit*. Osnabrück: Verlag Dirk Koentopp.

Technical reports/Other papers (non-refereed)

Hillmert, S., Buis, M. and Mönkediek, B. (2012). *Description of the REPRO File*. Tübingen: University of Tübingen.

Mönkediek, B. (2010). *Projektbericht Netzwerk und Elternschaft*. Osnabrück: Universität Osnabrück. urn:nbn:de:gbv:700-201004296238

Mönkediek, B./Schwerthelm, L. (2006). *SoWis unter sich. Gruppenstrukturen bei Studierenden des Fachbereichs Sozialwissenschaften*. Osnabrück: Universität Osnabrück. urn:nbn:de:gbv:700-201001304550

Bastian Mönkediek
Wageningen School of Social Sciences (WASS)
Completed Training and Supervision Plan

Name of the learning activity	Department/Institute	Year	ECTS*
A) Project related competences			
Social Network Analysis – Theory and Applications	Essex Summer School	2011	1.3
Event History Analysis in R	WOG workshop	2011	0.3
Analysis of large-scale data on social connections	WOG workshop	2012	0.2
Posthumus Masterclass II (E.Todd)	NW Posthumus Institute	2014	2.0
B) General research related competences			
Posthumus Seminar 1: My Project in a Nutshell	NW Posthumus Institute	2012	2.0
Posthumus Seminar 2: Work in progress	NW Posthumus Institute	2012	6.0
NW Posthumus Conference 2012	NW Posthumus Institute	2012	0.3
ESTER Research Design Course	NW Posthumus Institute	2012	8.0
Posthumus Masterclass I	NW Posthumus Institute	2013	2.0
NW Posthumus Conference 2013	NW Posthumus Institute	2013	1.0
NW Posthumus Conference 2014: *Regional variation in intergenerational continuities in childbearing*	NW Posthumus Institute	2014	1.0
Family Systems, Welfare Regimes and Fertility Behavior in Contemporary Europe from a Social Network Perspective	SSHA Conference, Vancouver, Canada	2012	1.0
Flight from the land? Migration flows of the rural population of the Netherlands, 1850-1940	FRESH, University of Essex	2013	1.0
Family Networks and the Intergenerational Transmission of Fertility Behavior and organised a session	SSHA Conference, Chicago, USA	2013	2.0
The intergenerational transmission of social inequalities in Sweden - a long term perspective	ISA, Tilburg University	2015	1.0
Family systems and the timing and spacing of children	Power of the Family workshop, Wageningen University, The Netherlands	2015	1.0
C) Career related competences/personal development			
Advanced conversation (in English)	Radboud In'to languages	2012	1.5
Academic writing (in English)	Radboud In'to languages	2012	3.0
Scientific Writing	Wageningen In'to languages	2015	1.3
NW Posthumus Individual Assessment	NW Posthumus Institute	2013	1.0
Reviewed an article for 'The History of the Family' journal	HISFAM	2013	0.1
Reviewed an article for the Journal of Rural and Community Development	JRCD	2015	0.1
Reviewed an article for the Journal of Open Research Software	JORS	2015	0.1
Total			**37.2**

*One credit according to ECTS is on average equivalent to 28 hours of study load