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Institutional, economic and cultural factors affecting the
decision of having a child in European countries. A
couple's approach

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-CHAPTER ONE-

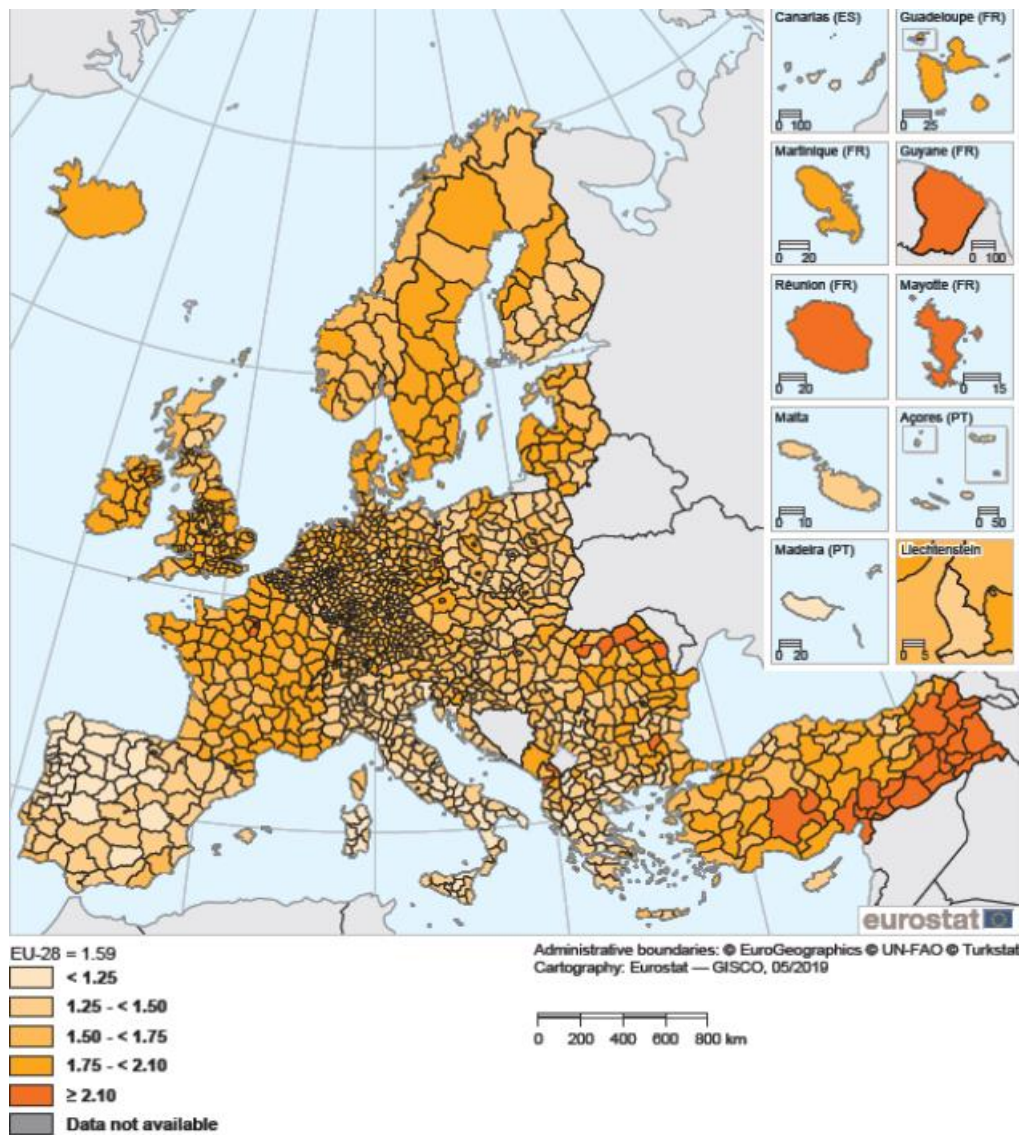
Introduction

1.1. Europe: the continent with the lowest fertility

If there is a characterization that would suit the European continent in terms of its demographic situation, this is "the continent with the lowest fertility" (ESHRE Capri Workshop Group, 2010). Europe is the only continent having a Total Fertility Rate below the replacement rate: 1.6 children per woman in 2018 (Figure 1.2; Eurostat database accessed in December 2020).

This situation does not reflect an occasional trend. It is the result of a long-lasting process that begins with the first demographic transition, and accelerates rapidly with the second one. More specifically, with the first demographic transition begins the decline below the natural fertility among European countries (Cervellati and Sunde, 2011; Praz, 2006), while the second demographic transition is associated with fertility rates below the replacement level of generations (2.1 children per woman). This process has as foundation the change of values of European societies and their orientation towards "self-realization" (Kertzer et al., 2006). Besides low fertility, its other main features are the increasing age at motherhood, increased divorce rates and births out of wedlock. By the mid-nineties, all the European countries had a Total Fertility Rate below the replacement level of generations, while countries such as Germany, Spain and Italy reached fertility rates under 1.3 children per woman (Adsera, 2005). Beginning in 2000, an increase in fertility rates was observed, but the 2008 economic crisis interrupted this trend (Figure 1.2).

Figure 1.1 Total Fertility Rate, by NUTS 3 regions, 2019 (average number of live births per woman)



Source: Eurostat

This dissertation aims at *studying the impact of key institutional, economic and cultural factors on the decision of having a child in European countries, at the micro level*. The literature shows that fertility is linked with economic conditions (Fahlén et Olah, 2018; Comolli, 2017), with family policies (Luci-Greulich and Thévenon, 2013; Naldini and Jurado, 2013), and with cultural background (Bein et al., 2020; King et al., 2013; King, 2003). In the condition of the economic crisis that preceded this pandemic of covid-19 and started in 2008, these three factors remained decisive on shaping the Europeans' demographic behaviour. The literature revealed that employed women with high education and non-employed women with low education had the highest fertility rates (Bagavos and Tragaki, 2017). In addition, during the 2008 economic crisis, broad and long-standing family

policies contributed to support fertility (such as in France; Thévenon, 2016). Moreover, in certain cultural contexts, the 2008 economic crisis produced a greater gender equality or a strengthening of family ties. For example, some authors observed a greater involvement of men in housework tasks in Sweden (Goldscheider et al., 2015). A reinforcement of intergenerational relations in Southern European countries was also found (Golaz et al., 2018).

In *chapter two*, I focus on how economic uncertainty (a basic factor of low fertility in Europe; Barbieri and Bozzon, 2016) affects the transition to first birth in Greece before and after the onset of the 2008 economic crisis. Greece is a country of exceptional interest on this issue, having the highest rates of youth unemployment in European Union (Eurostat accessed in July 2019), poor welfare provisions for family, gender inequity into the household and the labor market, and one of the lowest total fertility rates of Europe (Figure 1.2; Barbieri and Bozzon, 2016; Balbo et al., 2013).

Social beliefs on family and on gender roles are broadly shaped by the cultural context of religion (King, 2003). More specifically, previous studies show that in contexts with high religiosity the informal support (such as that of family) affects more decisively fertility related behavior than formal provisions, while in countries with low religiosity the opposite happens (Guetto et al., 2015; Balbo et al., 2011). The reason may be found on the fact that “religious teachings and beliefs emphasize and support the centrality of the family and the importance of positive family relationships” (King and Elder, 1999: S318). *Chapter three* of this dissertation studies how religious practice affects fertility intentions, and explores the intermediate/modification effect of the grandparental childcare on this relationship. As about why I study fertility intentions and not fertility behavior the reason is that fertility intention is more directly shaped by religious teachings than fertility behavior (Hayford and Morgan, 2008).

Economic conditions and beliefs can affect fertility related behavior directly or jointly with family policies. For example, how couples use family policies may be linked with their cultural background and economic situation (Geisler and Kreyenfeld, 2019), and inversely the economic situation of a couple may be related with the existence of welfare provisions (Solera and Bettio, 2013). Several European countries are adopting family friendly policies to reverse their population decline (Naldini and Jurado, 2013). Some of them, such as public childcare provisions or paternal leave, have as aim to help couples on balancing the work and family life (Gonzalez et al., 2009). The most recent reform came from Germany in 2007. With this reform Germany implemented policies whose aim was to reinforce gender equity

Source: own elaboration from Eurostat, Geostat and OECD. More specifically, all data come from Eurostat excluding the data of 2000-2005 and 2011-2018 for Russia coming from OECD, as well as the data 2000-2005 and 2011-2013 for Georgia coming from Geostat.

1.2.Theoretical aspects on fertility

1.2.1. Fertility: only economic conditions?

One of the most cited researcher of the relationship between economic conditions and fertility is Gary Becker. Becker in his first article (Becker, 1960) refers to Malthus' theory. Malthus supported that the relationship between income and fertility is positive because an increase in income would cause a decline in child mortality and allow people to marry earlier and to not abstain while married (Becker, 1960). However, Becker's view is that child mortality is so low in modern society that the change in income has a very little effect on the number of survivors. According to Becker, fertility is determined by income, child costs, knowledge of contraception, uncertainty, and "tastes" (Becker, 1960: 231). The tastes or preference for children are determined by religious beliefs, race and age (Becker, 1960). However, Becker focuses strictly on an economic view of fertility trends and introduces the concepts of "quantity" and "quality" (that is the amount spent by parents for children) in fertility choice (Becker, 1960: 211), as well as the idea of a tradeoff between them. The axis of his thought in the article of 1960 could be said to be the following excerpt: "an increase in income should increase both the quantity and quality of children, but the quantity elasticity should be small compared to the quality elasticity" (Becker, 1960: 212). This position of Becker seems to become clearer in his next article with H. Gregg Lewis in 1973 where he claims that a higher income is associated with a greater investment in the quality of the children, and thus negatively correlated with the quantity of children (Becker and Lewis, 1973). In short, we could say that in Becker's view there is no positive relationship between income and fertility.

A similar argument is found in Freedman's theory (Freedman, 1965 and 1979). Freedman supported that the main factor of the decrease of fertility in developed societies is the "perception" of parents that having fewer children is a more advantageous situation for them,

perception shaped by “some change in life conditions” (Freedman, 1979: 15): “the costs of children increased [...] because the improving standards of living, the increased education, and the opportunities in the new expanded system of interaction led to rising aspirations” (Freedman, 1979: 2). Thus, according to Freedman better economic conditions are negatively linked with fertility.

Other empirical results also show that the relationship between economic conditions and fertility can be ambivalent. Articles studying the link between the type of work contract and fertility show that both partners’ having a permanent contract positively affect fertility (Barbieri et al., 2015). However, other studies show a positive link of male breadwinner couples (with inactive women) with fertility (Del Boca et al., 2005). Also, a higher fertility has been observed for those couples where men are more involved in household tasks (and work less on the labour market; Pinelli and Fiori; 2008). In other terms, some empirical studies reveal that the better economic conditions are not necessarily positively related with fertility.

Moreover, in Becker’s work on fertility behaviour, we find reference to non-economic factors. In an article written in 1988 with Robert J. Barro (“A reformulation of the economic theory of fertility”), Becker affirms, from one side, that the net cost of children, the expansion of social security, and the growth rate of transfer payments (to the elderly) negatively affect the number of descendants; on the other side, he states that “fertility in open economies depends positively on [...] the degree of altruism (of parents)” (Becker and Barro, 1988). So, it seems that in this reformulated Becker’s theoretical approach, everything that could reduce net income of parents (such as children’s cost or taxes) has a negative effect on fertility, but he points out the existence of a variable that can change the relationship between economic conditions and fertility: the parents’ altruism. Based on that, in the next section, I will try to present theories that explain how this parents’ “altruism” is formulated, and how it is correlated with fertility. What remains to be pointed out at the end of this chapter is that economic theories themselves reveal the need for a more global view of how two people decide to have a child. All in all, in the matter of having a child, money does not bring happiness too.

1.2.2. Fertility: the importance of sharing responsibilities between partners

In his successive articles, Becker argues that due to the fact that the objective of families is to maximize their income, the specialization of roles among partners is the most efficient division of labor between partners (Becker, 1981): the partner who is more efficient in maximizing the family's income spend less time on the household tasks than the other partner. Moreover, he stated that this specialization of roles is positively linked with fertility (Becker, 1985), while the partner who is more often specialized in household tasks is the female one (Becker, 1985). The idea that the partner who earns more money from paid work should be less involved in family related tasks, and the opposite, is closely related to the relative resources' theory, supported, among others, by Goñi-Legaz and colleagues (Goñi-Legaz et al., 2010).

However, what recent studies seem to be concerned about is not so much whether the theory of relative resources is valid (this seems to be generally accepted), but what conditions guarantee an egalitarian division of labour. The most recent approach on this issue comes from Goldscheider and colleagues (Goldscheider et al., 2015) in their article "*The Gender Revolution: A Framework for Understanding Changing Family and Demographic Behavior*". Goldscheider and colleagues state that the increase in women's participation in the labour market, the negative trends in fertility and the disruption in unions' stability are not a completed process related to the second demographic transition, but the first half of the broader process of "gender revolution" (Goldscheider et al., 2015: 229). The second half of the process is constituted by men's involvement in household tasks, higher rates of unions' stability, and higher fertility (Goldscheider et al., 2015: 229), since men's involvement in housework supports the active participation of women in the labour market, favouring fertility and unions stability. A similar approach can be found in Naldini and Jurado (2013) and Gonz  les (et al., 2013). Naldini and Jurado find that despite the 2008 economic crisis the rates of women's inactivity have fallen in Spain (while they remained stable in Italy). Based on that, they argue that in Spain the high women's employment rates will remain, together with the more gender egalitarian attitudes since they are part of permanent change (Naldini and Jurado, 2013: 56). However, similarly to Goldscheider and colleagues (2015: 230), they recognize that some societies may be either "unwilling" or "unable" to accept this reverse in gender relations.

The transformations during the 2008 economic crisis, and more specifically the changes in the division of labour among partners, could be considered to ascertain the persistence of gender equality only in some European countries. In the case of Northwestern European countries, and especially in Sweden, Goldscheider and colleagues (2015) observed an

increase in men's involvement in housework. In the case of France, Golaz and colleagues found that the reaction on the crisis was the enhancement of the intergenerational relations (Golaz et al., 2018). As already mentioned about Spain, Naldini and Jurado showed that despite the shrinkage of the welfare state and the strong traditional values of the society, the reaction on the economic crisis was different from other Southern European countries (where women's participation in the labour market decreased) and the process of the increasing women's participation in the labour market hasn't stop (Naldini and Jurado, 2013).

However, Julie Brines (1994) supported the idea that social pressure can limit the process of a more active men's involvement in housework. Brines, based on findings from United States' survey, asks the question why housework remain a women's work despite the more active women's participation in the labour market, and she points out the example of unemployed men of working class who do less housework and childcare (Brines, 1994). Her explanation on this phenomenon is that in the working class' context exists "an ethic of exaggerated masculinity" and that men's housework is an evidence of "failure at the male provider role" (Brines, 1994: 682). As about why the social pressure on the specialization of gender roles exempts female breadwinners, she adopts an anthropological view that "across cultures" manhood is identified with a "developmental accomplishment", an achievement, while womanhood "is more often seen as a natural condition" (Brines, 1994: 683), in part because women's physiology and reproductive capacity place them closer to the nature. Consequently, Brines is not optimistic about a solution of a compromise among partners, and she supports the second demographic transition's approach: where traditional norms compete with the idea of a compromise, a solution is that of divorce (Brines, 1994). Equally, pessimistic on the perspective of a more egalitarian share of household tasks is Goñi-Legaz (et al., 2010). Concerning the degree of "altruism" (Becker and Barro, 1988) the theories presented above focus, as Gary Becker, on partners, and do not consider the support by grandparents, probably because its role seems determinant mainly in Southern European countries (Di Gessa et al., 2016). In this context where women increase their participation in the labour market and men still held traditional attitudes, grandparental support in childcare is a key factor for parents to balance work and family life (Fiori, 2011). Indeed, this behavior is linked with a higher religiosity in these countries that according to King and Elder (1999) has a positive effect on the intergenerational support and, by extension, on the fertility behaviour (Aasve et al., 2012).

Therefore, the importance of sharing responsibilities between partners, as well as the role of parents to balance work and family, seem according to the above theories decisive in

partners' fertility behavior. However, the differentiations of how partners share their responsibilities between European societies and of how the intergenerational relationships are shaped, push us to look for deeper cultural causes such as that of religion. In conclusion, the study of the mechanisms that shape fertility behavior across Europe, especially in the conditions of the 2008 economic crisis, seems to be one of the main contributions of this dissertation.

1.2.3. Fertility: the role of the cultural background

Before studying the impact of religion on family relationships and fertility, we must first present the evolution of religiosity in European countries and especially in Northern and Western Europe. The reduction of the influence of religion and its institutions both on the formation of individual attitudes and on the public sphere (e.g. state policies) begins in the early nineteenth century in regions where Protestantism prevails (Praz, 2006). In these regions (such as the French-speaking cantons of Switzerland), state institutions, influenced by Malthusianism, play an increasingly important role in shaping family life, while the influence of religion is gradually reduced to the influence of political elites through religious values. The regions where Catholicism prevails are far from this evolution. In these regions, governments maintain close ties with religious institutions, giving them areas such as education (Praz, 2006). This differentiation also consolidates a differentiation in the demographic behaviour of these societies: throughout the process that demographers describe as the First Demographic Transition, the fertility rates of Catholics are consistently higher than those of Protestants (Kertzer et al., 2006). Of course, there is the specificity of France in Western Europe. France is a country with very high percentages of religious affiliation (with the great majority being Catholics) until today, but it is also a pioneer country in the First Demographic Transition (Baudin, 2015). It seems that French Revolution was a catalyst in shaping secularism ("laïcité") as "a cardinal value" in this country (Gunn, 2004).

The First Demographic Transition is reversed with the process that demographers described as the Second Demographic Transition (SDT). This process began in the early sixties and coincided with a profound change of values of Western societies with an orientation towards values defined as "self-realization" (Kertzer et al., 2006). As mentioned above, the main features of the SDT are the increasing age at motherhood, increased divorce rates, the

dissemination of unions and births out of wedlock and, finally, a universal decrease of fertility below the replacement level of generations (2.1 children per woman; Kertzer et al., 2006). SDT evolved simultaneously with secularization, which determined a universal decline in the influence of religion on social life and at the individual level (Philipov and Berghammer, 2007).

However, despite the considerable decline of religious practice (between 6 and 12% in Western and Northern Europe, about 15% in Southern Europe; Pew Research Center, 2018), in 2010 the vast majority of citizens of the European Union were affiliated (81% according to the Pew Research Center) and the effect of religiosity on fertility remains (Pew Research Center, 2010). This means that, although limited to small collectives of members, religion in Europe continues to exhibit different attitudes into the private lives of believers. The differences in behavior (private or public) between religious and non-religious people were defined by McQuillan (2004), listing the prerequisites that must be met for religion to affect fertility. According to McQuillan (2004:49), religion must “articulate behavioral norms” linked to higher fertility, possesses “the means to communicate its teachings” and create a “sense of attachment” to the members of religious institutions. For this reason, modern researchers of the influence of religion on the family attitudes and behavior focus mainly on the influence of religious practice (Steinbach and Silverstein, 2020; Bein et al., 2017; King et al., 2013; Berghammer, 2009).

Recent studies show, as mentioned above, that religious people are still differentiated today not only in their fertility behaviour, but also in the general organization of their family life. More specifically, a study by Valarino and her colleagues (Valarino et al., 2018) for Spain showed that individuals who are non-religious, who are positive about maternal employment and politically positioned on the Left are less favourable to grandparental childcare than individuals in the opposite situation. Similarly, a study for Germany (Steinbach and Silverstein, 2020) as well as by King and her colleagues (King et al., 2013) for the United States of America showed that religiosity is positively associated with intense intergenerational relationships. Thus, the fact of the relationship between religiosity and fertility, as well as the relationship between religiosity and intergenerational solidarity leads us to study in this dissertation how all three of the above components interact.

Although, at the micro level, intense intergenerational relationships and religiosity have a positive effect on fertility (Bein et al., 2020; Aasve et al., 2012), it seems a contradiction the fact that, at the macro level, the countries with the highest religiosity are the ones that exhibit the phenomenon of Lowest Low Fertility (Kertzer et al., 2009). This is a contradiction if we

do not consider studies showing that intense intergenerational relationships operate in a complementary manner with public expenditures in family policies: the higher the investment in family policies, the lower the intergenerational support, and vice versa (Igel and Szydlik, 2011).

1.3. Research aims and novelties

As I stated above, this dissertation aims at *studying the impact of key institutional, economic and cultural factors on the decision of having a child in European countries, at the micro level*. The main factors shaping fertility behavior are economic conditions, family policies, and cultural background. Previous empirical evidences on the link between socioeconomic characteristics and the use of family policies (Geisler and Kreyenfeld, 2019 and 2011) or on the link between economic conditions and fertility behavior (Del Boca et al., 2005) confirm the importance of the theory of relative resources: more than the characteristics of the man himself or of the woman herself, what seems to determine more decisively the decision of using a welfare provision or to have another child is the combination of characteristics of the two partners.

A main novelty of this dissertation (chapters two and four) is the adoption of a systematic couple's approach, accounting for characteristics of both partners. I will firstly consider how economic conditions and cultural background are correlated with fertility related behavior (chapters two and three), and subsequently, I will consider the main determinants of the use of family policies (chapter four), observing that the fathers' use of parental leave is strictly related to the economic conditions and of the cultural background of both partners (Geisler and Kreyenfeld, 2019 and 2011).

Among the three main factors shaping fertility related behavior –economic conditions, family policies and cultural background– the first one seems the most decisive in Southern European countries. These countries are characterized by the highest rates of youth unemployment in the European Union, very poor welfare provisions for vulnerable social groups, gender inequality and very low fertility rates (Barbieri and Bozzon, 2016; Balbo et al., 2013; Goldstein et al., 2009). Among these countries, Greece was the most affected by the 2008 economic crisis showing the highest youth unemployment in 2013 (58.3%; Eurostat database accessed in August 2019), while its TFR was among the lowest in the European

Union: 1.3 children per woman in 2013 (Eurostat database accessed in August 2019). The specificity of Greece therefore lies in the fact that among the European countries it suffered the most violent economic crisis since 2008. This fact, in combination with the fact that from the 90's until today it has a lowest-low fertility, led me to study the relationship of economic conditions and fertility in this country. At my knowledge few articles have focused on the relationship between economic uncertainty and fertility in Greece and even fewer on how this relationship has been modified by the 2008 economic crisis (Kotzamanis, 2018; Bagavos and Tragaki, 2017; Tragaki and Bagavos, 2014). Moreover, previous articles adopt a macro approach and they did not study the effect of the 2008 Great Recession at the micro-level. As a result, the first two research questions of my dissertation are the following:

(1) Does couples' economic uncertainty affect their fertility in Greece?

(2) How did the Great Recession affect couple' fertility in Greece?

Besides economic conditions, previous literature shows that religious practice positively affects fertility (Buber-Ennsner and Berghammer, 2021; Bein et al., 2020; Peri-Rotem, 2020; Baudin, 2015). Religiosity is also positively linked with strong family support (Dykstra and Fokkema, 2011). Moreover, previous literature shows that, in countries with high religiosity, informal support has a greater impact on fertility than the formal one (Balbo and Mills, 2011; Guetto et al., 2015). These findings lead me to the third and the fourth research question:

(3) Does religious practice have a positive effect on fertility intentions?

(4) Is the grandparental childcare an intermediate variable in the association between religious practice and fertility intentions?

I study fertility intentions because they are more directly shaped by religious teachings than fertility behavior (Hayford and Morgan, 2008). The latter is the result, not only of norms, but also of other variables, such as the economic position (Balbo and Mills, 2011). Moreover, the fact that I study how the association of religious practice with fertility intentions changes by level of informal (grandparental) support constitutes another novelty of this dissertation.

As stated above, in order to help couples on balancing work and family life, as well as to reverse their population decline, several developed countries have adopted policies such as implementation of childcare infrastructures or parental leave (Luci- Greulich and Thévenon, 2013; Naldini and Jurado, 2013; Lappegård, 2010). However, previous literature shows that identical policies have not been equally effective in different societies: for example, while paternity leave has a positive effect in Scandinavian countries, it does not seem to be equally

effective in Southern European countries (Luci-Greulich and Thévenon, 2013). The reasons are to be found in different social norms concerning the gender roles and the support on family formation (Mussino et al., 2018; Balbo and Mills, 2011). Germany, a country previously considered as having gender traditional norms, has recently introduced (in 2007) a reform adopting a parental leave policy favoring father's involvement in childcare. The most important was the implementation of a parental leave quota reserved for fathers (Schober, 2014). Taking into account that there are few studies showing a differentiation on the use of this policy by social group (Geisler and Kreyenfeld, 2019 and 2011; Reich, 2011), and fewer adopting a couple's approach the two last research questions of this dissertation are:

(5) What are the main determinants of father's parental leave uptake in Germany, throughout the country, but also between West and East Germany?

(6) How did the reform of 2007 affect the fathers' use of parental leave and how did the partners' determinants of use of parental leave change after 2007?

1.4. Methodologies and data

For the purposes of this dissertation, we use data from the EU-SILC survey (EU Statistics on Income and Living Conditions), from the Generations and Gender Survey (GGS) and from the G-SOEP (German Socio-Economic Panel). The EU-SILC survey collects comparable and multidimensional micro-level data on income, poverty, social exclusion, housing, work, education and health, the GGS collects comparable and multidimensional microlevel data on fertility, partnership, generations, economic activity, and care duties, while that of G-SOEP acts in Germany as an observatory for a wide range of social phenomena.

Regarding the estimation methods, it is not advisable to use ordinary logistic regression with panel data because of the correlation between observations for the same person, which can cause biased standard errors. The use of logistic random effects regression models in the chapters using panel data (chapters 2 and 4) allows us to consider this correlation (Li et al., 2011; Mood, 2010; Rabe-Hesketh and Skrondal, 2008). Other models that account for this correlation, such as the fixed effects model with conditional likelihood, have the inconvenience of estimating coefficients only for the time-varying explanatory variables.

However, for the purposes of the chapter 3 (research questions 3 and 4), where the information about religion is available only in the first wave of the survey, a logistic regression is used to measure the association between fertility intentions and religiosity (Hilbe, 2014).

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-CHAPTER TWO-

Transition to first birth during the Great Recession: the case of Greece¹

2.1. Introduction

Since the 1960s, developed countries have been characterized by a decline in fertility. This process has been associated with an ideational change, defined as the second demographic transition and characterized by a process of secularization and a greater emphasis on individual self-realization (Lesthaeghe, 2010). Starting in the 1960s, we have also observed a massive entrance of women in the labour market that is negatively correlated with fertility (Engelhardt, Kögel and Prskawetz 2004; Engelhardt, Prskawetz, 2004; Kögel, 2004). In addition, modern societies are characterized by a process of globalization that has contributed to the deterioration of the socio-economic situation of young adults and that has delayed family formation (Comolli, 2017; Aasve et al., 2013; Buchholz et al., 2009; McDonald 2006).

In the general framework of low fertility and societal changes, Southern European countries present specific features. First, Southern European countries exhibit the highest rates of youth unemployment. In Southern Europe, uncertainty might be particularly strong because the dominant form of the welfare state is a familistic one characterized by poor institutional support for vulnerable social groups (the unemployed, youth, etc.) that must rely on family support (Barbieri and Bozzon, 2016; Aasve et al., 2006). The consequences are a considerable increase in poverty risk for young adults, late departure from the parental home, late entry into the labour market, and low fertility (Barbieri and Bozzon, 2016; Balbo et al., 2013; Goldstein et al., 2009; Billari, 2008; Mills and Blossfeld, 2005; Dalla Zuanna and Micheli, 2004; Kohler et al., 2002; Dalla Zuanna, 2001). Second, since the 1980s, the negative link between female labour force participation and fertility has been weakened in non-Southern European countries. However, this negative association remains strong in Southern European countries (Kögel, 2004), pointing to limitations in family-friendly policies.

In the 2000s, fertility was slightly increasing in developed countries as an effect of the partial recovery of the fertility choices of generations that had previously postponed having a child

(Sobotka, 2011; Goldstein, Sobotka & Jasilioniene 2009; Bongaarts & Feeney 1998). This effect was also observable in Southern European countries (Caltabiano, Castiglioni, Rosina, 2009). However, the 2008 Great Recession halted this trend.

In this study, we focus on Greece. Our first aim is to demonstrate the association between the economic uncertainty of partners and first birth. Since economic uncertainty concerns mostly young people in Southern Europe, we focus on the first stages of family formation and consider the transition to first birth. In line with previous findings, we consider how first birth is affected by occupational status, type of contract, income, and education (Fahlén and Oláh, 2018; Vignoli et al., 2012; Santarelli, 2011; Kreyenfeld, 2010). Our perspective on couples, jointly considering characteristics of both partners, has rarely been applied in the previous literature.

The second aim of this study is to ascertain the effect of the Great Recession on first birth. Previous studies have shown that economic recessions particularly affect younger cohorts and first birth (Golaz et al., 2018; Comolli, 2017; Goldstein et al., 2013; Neels et al., 2013; Adsera, 2011). However, few studies have focused on how the relationship between couples' economic uncertainty and first birth has changed as a result of the recent economic recession (Kotzamanis, 2018; Tragaki and Bagavos, 2014). To our knowledge, no studies on Greece have addressed this issue by conducting multivariate and longitudinal analyses or by considering multiple indicators of economic uncertainty for both partners.

Our analysis is based on longitudinal data from the EU-SILC survey (EU Statistics on Income and Living Conditions) for Greece. We select a sub-sample of childless couples and consider survey waves from 2005 to 2013, a period overlapping with the current economic crisis.

In the EU-SILC data, information about the level of income, education, occupational status, and type of contract (permanent or not) is available for both partners. In our sample, which includes only couples, most men (92%) are employed and have permanent contracts, which is already notable and indicates that for men, being employed and having a permanent contract might be preconditions for entering into a union.

Our study is structured as follows. After describing the Greek context in section 1, we present the theoretical and empirical background in section 2, together with our hypotheses. We consider the previous literature on how men's and women's economic uncertainty affects first birth. We also examine economic uncertainty as an aggregate phenomenon and focus on previous studies of economic recession and fertility. In section 3, we present our data, the operationalization of concepts and the methods that account for the panel structure of the data.

In section 4, we present our results. Finally, in the conclusion, we interpret the results and note the limitations of our study.

It may be useful here to anticipate the main limitations of our study. Since we studied couples, our study did not include people who were unable to leave their parental homes because of their economic uncertainty. Moreover, we compared transition to first birth before the crisis (2005-2009) and during the crisis (2010-2013), but because of the sample size, we were unable to consider each individual year.

2.2. The Greek context

In Greece, from the mid-1990s to 2003, the total fertility rate (TFR) was less than 1.3 children per woman (Eurostat database accessed in August 2018). As in other Southern European countries, the postponement of marriage and fertility has been observed, while new forms of unions and births out of wedlock remain exceptions (Gavalas et al., 2014). In 2013, Greece was the only European country in which the percentage of births out of wedlock was still less than 10% (Eurostat database accessed in July 2019). Beginning in 2004, the increase in fertility ushered in a new trend. Greece's TFR increased from 1.3 children per woman in 2004 to 1.5 in 2008 (Eurostat database accessed in March 2019). This trend was interrupted by the recent economic crisis: the number of births decreased by 15.2% (Vrachnis et al., 2014), and the TFR decreased to 1.3 in 2013 (Eurostat database accessed in July 2019). In a recent study, Salvati (2018) showed that during the recession, economic conditions worsened in all Greek districts and led to a decline in the growth rate of the population, except in certain coastal and tourist districts.

In addition to low fertility, another feature that Greece has in common with other Southern European countries is youth and female labour precariousness. In 2008, youth unemployment (15- to 24-year-olds) was already double the national average, reaching 28.3% (Kretsos, 2014; Eurostat database accessed in August 2018). In the same year, female unemployment was decreasing but still high compared to that in other European countries (11.5% in 2008, Eurostat database accessed in August 2018). The economic crisis exacerbated this situation. The youth (15- to 24-year-olds) unemployment rate reached 58.3% in 2013 (Eurostat database accessed in July 2019).

Regarding female employment, Greece experienced a greater decline than other Southern countries, with an employment rate reaching 40% in 2013. A dramatic decline was also observed for Greek men, with an employment rate of 49% in 2013 (Figures 2.1. and 2.2.).

As an effect of the crisis, dual-earner households with children decreased by 9% between 2008q2 and 2012q2, from 55.1% to 46%. The percentage of households with children in which the man is the provider and the woman is inactive in the labour market decreased by 10% in the same period, from 34 to 24% (Karamessini, 2014). Meanwhile, the share of male breadwinner households with unemployed women increased by 6%, and the share of female breadwinner households increased by 5% (Karamessini, 2014).

Austerity measures have contributed further to worsening the economic conditions of young people (Kretsos, 2014). These policies have resulted in reductions in public expenditures and in the social security system. Moreover, firing costs were reduced, together with unemployment benefits for seasonal workers. A special employment regime for young people was also implemented in 2009, with a reduction in the minimum wage for workers younger than 25 years old (Kretsos, 2014). In addition, if the economic crisis deprived young Greek adults of their salaries, according to Matsaganis (2011), the crisis also deprived them of their parents' pensions. Already by 2008, the government had introduced a series of austerity measures with changes in the pension system that reinforced the links between contributions and pensions and increased the age of retirement (Papadopoulos Roumpakis, 2013). Moreover, a 6% pension reduction penalty for each year of early retirement was introduced into the pension calculation (Papadopoulos Roumpakis, 2013). Given the high percentage of young adults living with their parents in Greece (Albertini et al., 2007), such measures were not without influence and might have contributed, between 2009 and 2010, to the increase in poverty rates by 12.6% among the unemployed (Tzannatos and Monogios, 2013).

Public spending on families in Greece, among the lowest in Europe before the crisis, was also affected. In 2009, family benefits in cash stopped increasing, and in 2010, public spending on services for families, amounting to approximately 0.43% of the GDP, started decreasing (OCDE, Family database accessed in February 2019).

Researchers enquiring into the consequences of the economic crisis in Greece have typically identified 2008 as the beginning of the crisis (Tragaki and Bagavos, 2014; Vaughan-Whitehead, 2013; Papadopoulos and Roumpakis, 2008). In this year, unemployment started increasing (Goldstein et al., 2013), and the first austerity measures emerged. Studies taking 2009 as the starting point of the crisis have been less frequent (Tzannatos and Monogios, 2013). Fertility time series for Greece were increasing before 2008, stabilized in 2008 and 2009, and

then started decreasing (Goldstein et al., 2013). To capture the negative trend, in our study, we refer to 2010 as a critical year.

2.3. Economic uncertainty and first birth

At the individual level, economic uncertainty is usually defined with reference to unemployment, job instability and low income (Oppenheimer 1988; Kreyenfeld et al., 2012). Over the last two decades, the process of globalization has caused economic deregulation that has primarily affected young adults and increased their economic uncertainty (Comolli, 2017; Aasve et al., 2013; Buchholz et al., 2009; McDonald, 2006). Economic uncertainty does not affect states or regions in the same way, but it is related to “institutional filters” (Mills and Blossfeld, 2005).

In this study of the effects of economic uncertainty on fertility, we focus on *first birth*. As stated in the introduction, economic uncertainty particularly affects young adults who might choose to postpone parenthood to obtain a more stable position in the labour market (Fahlén and Oláh, 2018; Vignoli et al., 2012; Santarelli, 2011; Kreyenfeld, 2010).

The relationship between economic uncertainty and fertility can differ between men and women. Using several indicators of economic uncertainty in developed countries, Blossfeld et al. (2005) found a negative relation between economic uncertainty among men and first birth, while more contradictory results were found for women. However, studies considering the joint effects of both partners’ characteristics remain rare. Accounting for a joint effect of partners’ economic uncertainty on first birth means acknowledging the process of negotiation, accumulation or compensation for partners’ resources. In this process, traditional or egalitarian norms concerning gender-based economic roles can play a role.

In addition to the individual level, economic uncertainty “may also be conceptualized as an aggregate phenomenon, reflecting general uncertainties felt by all people during, for example, an economic recession” (Sobotka et al., 2011). It has been shown that economic recessions and adverse economic contexts affect younger cohorts and first birth (Golaz et al., 2018; Comolli, 2017; Goldstein et al., 2013; Neels et al., 2013; Adsera, 2011). In this study, our assumption is that the association between economic uncertainty and first birth changed with the Great Recession.

In the next section, we present theoretical insights and empirical results from previous studies on the relation between first birth and economic uncertainty. We place special emphasis on the joint effects of partners' characteristics on first birth and on studies referring to Southern Europe. We also present the theoretical reasoning and some previous empirical evidence concerning how the Great Recession changed the relation between economic uncertainty and first birth.

2.4. Theoretical background

2.4.1. Partners' incomes and first birth

In its initial formulation, Becker's economic theory maintained a positive relation between men's income and number of children and posited that for women, factors other than income determine fertility (such as knowledge of contraception or living in rural/urban areas, Becker, 1960). Later, he emphasized the quantity-quality trade-off (Becker and Lewis 1973). In particular, a higher income is associated with greater investment in the "quality of children" and thus negatively correlated with the quantity of children. For the first child, however, we could assume the absence of the quality-quantity trade-off, and we could expect a positive relationship between men's income and fertility.

In accordance with Becker's view, Oppenheimer (1988) emphasized the importance of men's earnings and socio-economic characteristics in family formation. According to the work of Oppenheimer, age at marriage increases when men have more difficulty establishing their careers (1988). This phenomenon has been called the "uncertainty hypothesis." Although Oppenheimer's theoretical model was applied to marriage, it also reasonably applies to first birth. According to Oppenheimer (1988), even in periods when female labour force participation becomes increasingly important, men's economic stability remains important (Oppenheimer, 1994; Oppenheimer, 1988). This trend is especially true in contexts with stronger specialization of roles in the family (Oppenheimer, 1988). In accordance with these theories and focusing on the Southern European area, Vignoli et al., (2012) found a strong, positive effect of men's income on first birth for Italy. Because of the persistence of the male breadwinner model in this area, it might be more important for men to become established professionally before having children.

In his successive works, Becker stated that high income for women is negatively associated with fertility because opportunity costs, or the indirect costs of raising children, are higher for women than for men (Becker, 1981). According to Joshi (1998), women's opportunity costs associated with higher income affect early childbearing in particular. An alternative view is presented by Oppenheimer (1994). Women's work, and thus income, protects households from risky life events, particularly the loss of the partner's job. However, for Italy, Rondinelli et al. (2010) found a negative relationship between women's income and first birth, showing that in Southern Europe, women with higher incomes might have high opportunity costs already with their first children.

Other studies have favoured the positive effect of high income of partners when jointly considered. In particular, a high household income can be positively associated with outsourcing strategies (Schneider and Hastings, 2017; De Ruijter et al., 2005). Thus, we might expect that both partners having high incomes has a positive effect on first birth because of outsourcing strategies, especially in a context such as Greece, where family policies are limited.

Our first hypothesis is the following: because of their higher financial resources and their outsourcing strategies, couples in which both partners have high incomes have a higher probability of having a first child than other couples. However, because of women's opportunity costs, couples in which the man has a high income are more likely to have a first child than couples in which the woman has a high income (and the man a low income). Note that, according to our assumptions, high income can have a positive or negative effect on fertility according to the combination of partners' income. We assume that the positive income effect on fertility prevails when both partners have a high income. This positive income effect should also exist when only the male partner has a high income. However, when only the female partner in the couple has a high income, we assume a negative effect of opportunity costs on fertility.

2.4.2. Partners' work contracts and first birth

Transition to parenthood is an irreversible choice producing long-term effects; thus, the stability of work of both partners (defined here as having a permanent contract) offers the best framework for parenthood. However, it has been assumed that women's instability (having a temporary contract) can have a positive effect on first birth. According to Friedman et al.'s (1994) theory of reduction of uncertainty, in periods of life uncertainty, for example, with

reference to the labour market, parenthood can be a strategy to reduce uncertainty (see also Vignoli et al. (2016) for an application of the theory to transition to marriage). While the individual cannot control labour market conditions, parenthood is an available strategy producing permanent effects, thus reducing life uncertainty. This strategy applies especially to women, for whom the consequences of parenthood are more compelling.

Previous empirical findings regarding job instability and first birth did not support Friedman et al.'s (1994) theory of reduction of uncertainty. Studies of Italy and Spain showed that both partners having permanent contracts has positive effects on the birth of the first child (Barbieri et al., 2015; Vignoli et al., 2012; Barbieri, 2011). Pailhé and Solaz (2013), for France, and Liefbroer (2005), for the Netherlands, showed that having a permanent contract is more important for women than for men in the decision to have a first child. One explanation is that women with fixed-term contracts might risk losing their jobs after having children, so they prefer to find stable jobs before having their first child (Barbieri et al., 2015).

Thus, *our second hypothesis* is that in Greece, couples in which at least one partner has a temporary work contract are less likely to have a first birth than other couples.

2.4.3. Partners' activity status and first birth

Friedman et al.'s (1994) theory of reduction of uncertainty likely better applies to women who are inactive or unemployed. Unemployed women might seek to reduce their uncertainty in the labour market by becoming mothers. Inactive women might also have had difficulties in the labour market, or their devotion to the family might have been in anticipation of their difficulties. In both cases, becoming a mother represents the full achievement of their identity as a housewife and might be a strategy to reduce their uncertainty. According to another theoretical framework, inactive women might simply have preferences for caring for the family instead of investing in careers (Hakim, 2016). Also according to this view, they should be more likely to have a first child.

Becker's economic models showed that the specialization of roles, with one partner devoted to paid labour and the other to unpaid labour, favours fertility (Becker, 1985). The partner specializing in unpaid labour is more often the female partner. This trend is observable especially in Greece, where women perform 92% of housework (Ruppanner, 2010).

These theories were confirmed by previous empirical studies showing that in Italy, an unemployed woman is more likely to have a first child than a working woman (Cazolla et al., 2016). The same result was obtained by Cooke (2009) for Italy and Spain. Pailhé's and Solaz (2012) showed that inactive women have considerably higher chances of having a first child than women with any other employment status (working, unemployed, student or in short-term employment). A requirement for the positive association between a woman's inactivity and fertility is, however, her partner's employment (Pailhé and Solaz, 2012; Vignoli et al., 2012; Santarelli, 2011).

In our third hypothesis, we expect that couples in which women are inactive or unemployed and men are employed are more likely to have a first child than other couples.

2.4.4. Partners' education and first birth

The level of education is generally considered a proxy for income. Even when information about income is available, as in our study, education can still inform researchers about long-term economic prospects (Trimarchi and Van Bavel, 2017). Because of their investment in human capital and high expectations for the future, educated people might seek to establish themselves in their careers before having a first child. This mechanism could be observed especially for highly qualified women: since women still have the main responsibility for caring for the family (Ruppanner, 2010), more educated women's perceptions of opportunity costs (Joshi, 1998; Becker, 1981) might delay the birth of the first child. Moreover, according to Becker's quality-quantity tradeoff, more educated couples may prefer to wait before entering parenthood to accumulate sufficient resources to improve the "quality" of the child (Becker and Lewis 1973).

While some studies did not find a significant effect of education on first birth (Vignoli et al., 2012; Skirbekk, 2008), Gutiérrez-Domènech (2008) found that a man's high education positively affects the likelihood of first birth. For highly educated women, a strong inverse relationship with the timing of first birth has generally been found (Balbo et al., 2013; Pailhé and Solaz, 2012; Gutiérrez-Domènech, 2008).

More generally, partners' education can inform us about partners' attitudes. According to the second demographic transition (SDT) theory, people delay entry into parenthood to promote self-realization (Vignoli, 2016; Lestaege 2010). In the typical path of diffusion underlined by the SDT, more educated people are the forerunners of the process, as well as those more

concerned with the achievement of higher-order needs. Thus, according to this theory, a negative relationship between education and first birth can be assumed.

Fertility has been proposed to be more affected by gender relations than by adherence to higher-order needs (Goldscheider et al., 2015). From this perspective, we examine education as a proxy of partners' gender attitudes. More educated partners are found to be more likely to share household tasks more equally (Goldscheider et al., 2015; Davis and Greenstein, 2009; Coltrane, 2000). A highly educated male partner is more likely to be involved in family work, while a highly educated female partner might hold more power in the negotiation of this involvement (Lundberg and Pollak, 1996). The gender equity theory of fertility (McDonald, 2000) assumes a positive association between gender equity and fertility.

Thus, we should expect a positive relationship between fertility and the education levels of both partners.

Empirical studies of partners' education and first birth have not supported the gender theory of fertility. Some empirical studies that jointly considered the effect of the education of both partners on first birth did not find significant effects (Corijn et al., 1996; Jalovaara and Miettinen, 2013). An overall negative educational gradient of first birth was found by Trimarchi and Van Bavel (2017) and by Nitsche et al. (2018). For Greece, Bagavos (2017) showed that couples in which women are highly educated have later first births, especially if the men are less educated. These results support SDT, opportunity cost theory, the human capital argument, and preference of the quality of the child. Thus, in the *fourth hypothesis* of this study, we expect that homogamous, highly educated couples and highly hypogamous couples are less likely to have a first child than other couples.

2.5. The Great Recession and fertility

Not only individual economic uncertainty but also economic uncertainty as an aggregated phenomenon can affect the arrival of the first child. We can identify at least three mechanisms of the influence of the economic recession on first birth. First, economic recessions increase unemployment and job instability among young people, causing the objective economic conditions of families to deteriorate and thus depressing fertility. For Greece, it has been shown that the decline in male fertility during economic recessions is primarily due to the decrease in the proportion of employed men (Tragaki and Bagavos, 2014). A strong effect of

unemployment on first birth has been found for the periods of 2001-2011 (Goldstein et al., 2013) and 2000-2013 (Comolli 2017).

Second, a period of economic recession can worsen expectations about the future. This may result in an amplification of the effect of objective individual economic conditions on fertility (Sobotka et al., 2011). Thus, during economic recessions, couples in which partners have temporary contracts might be even less inclined to make irreversible choices, such as having a first child. Moreover, it is especially during economic recessions that women who are unemployed, inactive and minimally educated might find parenthood more attractive than facing uncertainty in the labour market (Sobotka et al., 2011). In this respect, with reference to Greece, Bagavos and Tragaki (2017) showed that the pre-crisis period was characterized by strong differences in fertility rates between employed and non-employed men, but these differences were unimportant among women. After the onset of the crisis, employed women with high education and non-employed women with low education had the highest fertility rates (Bagavos and Tragaki, 2017).

In a third mechanism of the influence of economic recessions on first birth, the reconciliation of work and family can become more difficult because of the shrinkage of the welfare state and, in particular, of family policies (see the section on the Greek context), thus reducing the likelihood of a first birth. In the context of shrinkage of the welfare state, wealthier and more educated people are more likely to have alternative strategies to balance family and work. Wealthier couples might outsource family work and therefore be in a more favourable position to have a first child than other couples.

Because of worsening expectations about the future, in our *fifth hypothesis*, we assume that during the economic recession the likelihood of having a first child decreases.

In our *sixth hypothesis*, we assume that the recent economic recession can amplify or diminish the effect of some couples' characteristics on first birth. In particular, we expect that the crisis magnifies the positive effect of the male breadwinner model (employed men and women inactive or unemployed) on first birth. In other words, in an economic recession, staying at home and having a child can become more attractive, also because of the Greek welfare shrinkage occurring during the crisis that affected family policies. Finally, the recession should also amplify the positive effect of being in a couple where both partners have a high income and of being in a couple where both partners have a permanent contract. This amplification should happen because of partners' greater ability to outsource care activities compared to the ability of lower-income couples, who are more affected by the Greek welfare shrinkage occurring during the recession. In addition, the worsening expectations about the future that

come with a recession should be less severe for these high-income and economically stable couples.

2.6. Data and methods

For the purposes of this paper, we used longitudinal data from the EU-SILC survey (EU Statistics on Income and Living Conditions). The EU-SILC survey was launched in 2003 as the continuation of the European Community Household Panel survey (ECHP, 1994–2000). The survey is the instrument used by the European Union to monitor progress on its Europe 2020 strategy, the main objective of which is to reduce poverty. To these ends, the EU-SILC survey collects comparable and multidimensional micro-level data on income, poverty, social exclusion, housing, work, education and health. In Greece, the EU-SILC survey has been conducted since 2004, collecting longitudinal data on 3,500 households and 7,250 individuals per wave.

In this study, we focused on the period of 2005–2013, including 67,493 person-years of the Greek EU-SILC. We selected couples whose partners are childless and younger than 50 years old. We assumed that the possibility of having a first child in Greece exists almost exclusively for couples, (see section “2.2. The Greek context”). For the sake of simplicity, we excluded individuals who live with children born from previous unions. As in Santarelli (2011), we excluded individuals living with adults other than their spouses because they might provide economic support to the household. Our final sample consists of 1,974 couple-years and 1,185 couples. For the period of analysis, we observed 136 first births. In the EU-SILC database, new births are identified under the variable “Membership status” in the category “Newly born into the household since the last wave.” We created the variable “First birth,” which takes the value of 1 when there is a new-born (variable ...) in a household included in the previous wave by two members (variable “hx040”) being in partnership (variable “pb200”).

To study the effect of individual income, we first grouped men’s and women’s income into two categories based on their median yearly incomes: €6,403 in the case of women and €13,871 in the case of men. Subsequently, we created the new variable “couples’ income,” which includes four categories: (1) “High-Low” couples, in which the male partner’s income is high ($>€13,871$) and the female partner’s income is low ($\leq €6,403$); (2) “Low-High” couples, in which the male partner’s income is low ($\leq €13,871$) and the female partner’s income is high ($\leq €6,403$); (3) “Low-Low” couples, in which both partners have a low income; and (4) “High–

High” couples, in which both partners have a high income. For problems related to the size of the sample, models 1-3 of Table 2 are estimated for all men and women. Thus, the income information includes zero income.

The variable “Couple’s contract duration” contains two categories: (1) At least one partner temporary and (2) Woman’s permanent-Man’s permanent. Moreover, by combining the variables of women’s activity status with those of their partners, we created the variable “Couple’s activity status,” which is recoded into four categories: (1) Inactive or Unemployed woman - Employed man; (2) Employed woman - Employed man; (3) Employed woman - Inactive or Unemployed man; and (4) Inactive or Unemployed man - Inactive or Unemployed man.

For couples’ education, we referred to the variable “Highest ISCED level attained” (International Standard Classification of Education). We first grouped individuals into three categories: (1) low educational level, including pre-primary, primary (Demotiko) or lower secondary school (Gymnasio) education; (2) intermediate educational level, including upper secondary (Lykeio) or non-tertiary education; and (3) high educational level, including tertiary education (bachelor’s, master’s or doctorate degrees). We then created a new variable to represent a couple’s education, with five categories: (1) couples in which the male partner’s educational level is higher (“Man’s higher”); (2) couples in which the woman’s educational level is higher (“Woman’s higher”); (3) homogamous couples with a low education level (“Low–Low”); (4) homogamous couples with a medium education level (“Medium–Medium”); and (5) homogamous couples with a high education level (“High–High”). To study how the economic crisis affected fertility, we created the variable “Calendar time.” In this study, we chose to define 2008 as the year in which the crisis began. For this reason, this variable contains two categories: (1) 2005-2009 and (2) 2010-2013.

Our control variables are the woman’s age, marital status, region of residence and degree of urbanization. Age is recoded into five categories: (1) up to 24 years; (2) 25 to 29 years; (3) 30 to 34 years; (4) 35 to 39 years; and (5) 40 to 49 years. The variable “union” is coded as follows: (1) union with a legal basis and (2) union without a legal basis (de facto partners living in the same household). Regarding the place of residence of the respondents, we used two variables: “Region” and “Degree of urbanization.” Concerning the region of residence, in the SILC database, a NUTS 1 classification of territorial units is available. NUTS 1 corresponds to four “development areas” that aggregate Greece’s thirteen regions (without necessarily constituting official administrative units): (1) Northern Greece (Anatoliki Makedonia, Thraki, Kentriki Makedonia, Dytiki Makedonia, and Thessalia); (2) Central Greece (Ipeiros, Sterea Ellada,

Dytiki Ellada, and Pelopponisos); (3) Attiki; and (4) the Aegean Islands and Crete (Voreio Aigaio, Notio Aigaio, and Kriti). Regarding the degree of urbanization, we used three categories corresponding to those proposed by the EU-SILC: (1) sparsely populated area; (2) intermediate area; and (3) densely populated area.

Regarding the estimation method, it is not advisable to use ordinary logistic regression with panel data because of the correlation between observations for the same person, which can cause biased standard errors. The use of logistic random effects regression models in this study allows us to consider this correlation (Li et al., 2011; Mood, 2010; Rabe-Hesketh and Skrondal, 2008). Other models (not used here) that account for this correlation, such as the fixed effects model with conditional likelihood, have the inconvenience of estimating coefficients only for the time-varying explanatory variables.

Finally, childbearing is the result of a decisional process in which economic factors influence first birth with a delay of at least nine months. According to Pailhé (2010), demographic trends follow economic trends with a one- or two-year lag. In this study, we assumed that the decision to have a first birth is made one year earlier, and the relevant explanatory factors are lagged by 1 year.

2.7. Results

2.7.1. Descriptive analysis of our sample

In our sample composed of childless couples, 87% are in legal unions (Table 2.1.). Hypogamy is more frequent than hypergamy: the female partner has a higher education level than the male partner in 21% of couples, while the male partner has a higher education level than the female partner in 15% of couples (Table 2.1.), confirming recent empirical evidence of a “reversal of gender inequality in education” in developed countries in recent years (Van Bavel, 2012).

In 29% of couples, the man is employed, and the woman is inactive or unemployed. In 52.5% of couples, both partners are employed. In addition, among employed partners, in 70.7% of cases, both have permanent contracts (Table 2.1.). This relatively high percentage shows that young adults without a stable employment status are more likely to avoid entering into a union (Aasve et al., 2006).

When comparing the period of 2005-2009 with the period of 2010-2013, we observed that some notable changes occurred with the economic crisis. While the share of dual-earner couples decreased from 58% to 46%, the share of male breadwinner households (employed man – unemployed/inactive woman) increased from 27% to 31%, together with the share of female breadwinner couples (employed woman – unemployed/inactive man), from 7% to 14% (Table 2.3.). Couples where both partners have a high income decreased from 34% to 28%, while we observed an increase in couples where women have a higher income than the median and men a lower income than the median, from 20% to 24% (Table 2.3.).

2.7.2. The effect of economic uncertainty on first birth

The estimated random effects models (Table 2.2., models 1-5) showed strong and statistically significant effects on first birth due to the economic crisis, partners' education levels, partners' incomes, and partners' activity status.

As expected, the economic crisis affected couples' choice to have a first child. Couples had a 2.1 times higher probability (equal to $1/0.47$) of having a first child during the pre-crisis period of 2005-2009 than during the crisis period of 2010-2013 (Table 2.2., model 1 without interactions).

Contrary to our expectations, we observed that the higher the parents' education level was, the greater the likelihood of their having their first child (Table 2.2., model 1). Couples in which the woman is more educated than the man are also more likely to have a first child than couples in which the man is more educated (Table 2.2., model 1). Moreover, couples' income significantly affects first birth. In particular, couples where both partners have a high income are 2.1 times more likely to have a first child than couples where both partners have a low income (Table 2.2., model 1).

Our results also showed the impact of couples' activity status on the occurrence of a first birth. Dual-earner couples have a greater likelihood of having a first birth than couples in which the male partner is unemployed or inactive ($OR=5.5=1/0.18$, Table 2.2., model 4). Regarding the interaction between the couple's activity status and the dummy "2010-2013," male breadwinner couples are less likely to have a first child during the economic crisis than couples where both partners are employed in the period 2005-2009 (Table 2.2., model 3). The interaction indicates an OR lower than zero (or negative coefficient). Summing the coefficients ($\ln OR$) of the main effect of this variable with the coefficients of the interaction with the period,

we observe that the total effect of the male breadwinner model during the economic crisis is negative, corresponding to an $OR = \exp(-1.15) = 0.32$.

Finally, regarding the type of contract, couples where both partners have a permanent contract seem more likely to have a first birth, although the result is not statistically significant (Appendix 2.4., model 9). However, the effect becomes statistically significant in interaction with the variable “period” (Table 2.2., model 5). In this case, summing for this variable the coefficients ($\ln OR$) of the main effect and of the interaction effect, we obtain -0.37, giving an $OR = \exp(-0.37) = 0.69$. The OR equal to $1/0.69 = 1.44$ indicates a surprising result: during the economic crisis, couples with at least one partner with a temporary work, usually the woman, have an odds to have a first child 44% higher than couples where both partners have a permanent work in the period 2005-2009.

Overall, when looking at nested models in the appendix, we observe that the main effects of the explanatory variables only slightly change when the control variables are added to the model, indicating robustness in the value and direction of the effect on first birth (Table 2.4.).

2.8. Discussion and conclusions

Our study showed that individual economic uncertainty strongly affects the arrival of the first child in Greece. However, the effect depends on the indicators that we consider. Having both partners with a high income favours the arrival of the first birth, partially confirming our *first hypothesis* and emphasizing that the decision to have a first child can be made in consideration of their ability to outsource care work and household tasks (Schneider and Hastings, 2017; De Ruijter et al., 2005; Coltrane, 2000). Couples where both partners have a permanent contract are also more likely to have a first child, supporting our *second hypothesis* and previous studies (Barbieri, 2015; Vignoli, 2012; Barbier, 2011). However, contrary to our *third hypothesis*, we do not find statistically significant evidence of a higher likelihood of having a first child for male breadwinner couples than for dual-earner couples.

When considering the level of education, we found that highly homogamous couples are more likely to have a first child than hypergamous couples (where the man’s education is higher). This finding was in opposition to our *fourth hypothesis* and to previous empirical studies. Nische et al. (2018) found a negative effect of education on first birth in Nordic and Western European countries but not in Southern Europe. This result by European regions may be explained by studies showing the tendency of young people to delay exiting the parental home

in Southern European countries (Hank 2007; Aasve et al., 2006). Thus, in these countries, the accumulation of resources could be a prerequisite for entry into unions (or marriages), especially for the more educated. Thus, once they marry, more educated couples might already be prepared to have a first child and more quickly become parents. Our observation of a positive effect on first birth in the case of hypogamous couples (where women are more educated) might mean that preconditions for marriage, such as satisfactory resources and returns on human capital, can be especially important for women. Other plausible explanations for the positive effects of high homogamy and high hypogamy on first birth are the greater involvement in the family by highly educated men (Goldscheider et al., 2015; Coltrane, 2000), the greater power of highly educated women in negotiating this involvement, and the higher propensity to purchase domestic and care services (Coltrane, 2000).

Regarding economic uncertainty as an aggregate phenomenon, we found that the Great Recession had a strong, negative effect on first birth: during the years 2010-2013, the likelihood of having a child decreased to half the value in the period of 2005-2009, supporting our *fifth hypothesis*. Moreover, the economic recession interacts with some couples' characteristics, although our *sixth hypothesis* is not supported. In fact, during the economic recession, male breadwinner couples became even less likely to have a first child than couples where both partners are employed. These results contradict our previous assumptions based on the shortage of work and shrinkage of the welfare state. Moreover, surprisingly, couples in which both partners had a permanent contract were less likely to have a first birth during the Great Recession. One interpretation is that lower prospects during the crisis may have convinced temporary workers, more often women, to have a first child.

In summary, our study showed the negative role of individual economic uncertainty on first birth in Greece. Greek couples where both partners are employed, have a high income or are highly educated are in a more favourable position to have a first child. We also demonstrated the overall negative effect of the Great Recession on transition to first birth, indicating the worsening of partners' expectations about the future. Moreover, male breadwinner couples were less likely to have a first child during the Great Recession (2010-2013) than dual-earner couples in the previous period (2005-2009). This may be explained by the vulnerability of single-earner couples in the recession period, when the consequences of losing one's job may be more critical for the sole earner.

To conclude, we must remember the main limitations of our study. First, since we consider couples living independently of their parents, our sample could include individuals who were able to leave the parental home. Second, because of the small size of our sample, we are unable

to disentangle the effect of a single year of the crisis. Despite these limitations, this study is one of the rare studies investigating fertility in Greece and shows the effects of the recent economic recession.

Since 2014, the negative trend in fertility seems to have stopped (Eurostat database accessed in May 2019). However, the demographic situation in Greece remains dire, with its fertility rate among the lowest in Europe. It is an appropriate time to remember that “the kingdom belongs to a child” (Heraclitus).

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Figures and Tables

Figure 2.1. - Male employment rate, 2005-2013

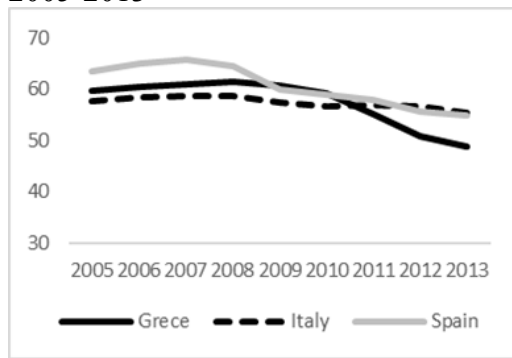
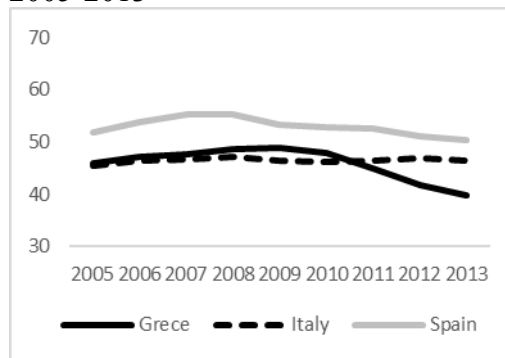


Figure 2.2. - Female employment rate, 2005-2013



Source: OECD (2019), Employment rate (indicator). doi: 10.1787/1de68a9b-en (Accessed in 26 February 2019)

Table 2.1. Descriptive statistics for the variables used in the study

	%	Obs.	1st child
Couple's Education			
Man's Higher	14.58%	254	6
Woman's Higher	20.72%	361	32
Low-Low	17.34%	302	11
Medium-Medium	25.32%	441	38
High-High	22.04%	384	46
Couple's Activity Status			
Unemployed/Inactive Woman-Employed Man	28.59%	500	36
Employed Woman-Employed Man	52.48%	918	92
Employed Woman-Unemployed/Inactive Man	10.18%	176	2
Unemployed/Inactive Woman-Unemployed/ Inactive Man	8.75%	153	3
Couple's Income			
Woman's High-Man's Low	21.82%	378	32
Man's High-Woman's Low	20.79%	360	20
Low-Low	26.15%	453	24
High-High	31.24%	541	56
Calendar Time			
2005-2009	54.46%	1075	98
2010-2013	45.54%	899	38
Woman's Age			
Up to 24	5.92%	101	13
24-29	17.42%	297	33
30-34	21.29%	363	64
35-39	14.84%	253	19
40-49	40.53%	691	7
Marital Status			
Legal Union	87.11%	1601	125
Other Union	12.89%	237	11
Area of Residence			
Voreia Ellada (Northern Greece)	36.34%	668	52
Kentriki Ellada (Central Greece)	21.16%	389	20
Attiki	32.54%	598	46
Aigaio and Kriti (Aegean Islands and Crete)	9.96%	183	18

Table 2.1. (continued)

	%	Obs.	1st child
Couple's Education			
Degree of Urbanization			
Densely Populated Area	42.6%	783	60
Intermediate Area	12.84%	236	25
Sparsely Populated Area	44.56%	819	51
Couple's Type of Contract			
At Least One Partner Temporary	29.26%	158	10
Woman's Permanent-Man's Permanent	70.74%	382	41

Source: Authors' own calculations based on the European Union Statistics on Income and Living Conditions 2013

Table 2.2. Transition to first child in Greece. Random effects models.

	Model 1	Model 2	Model 3	Model 4	Model 5
	OR	OR	OR	OR	OR
<i>MAIN VARIABLES</i>					
Couple's Activity Status					
(Ref= Employed Woman- Employed Man)					
Unemployed/Inactive Employed Man	1.11	1.08	1.09	1.66	
Employed Unemployed/Inactive Man	0.18**	0.17**	0.21*	0.56	
Unempl./Inactive Unempl./Inactive Man	0.38	0.38	0.31	0.16*	
Couple's Income (Ref= Low- Low)					
Man's High-Woman's Low	1.89	1.42	1.89	1.96	2.73
Woman's High-Man's Low	1.76	2.31*	1.72	1.77	2.91
High-High	2.12*	1.57	2.11*	2.26*	3.69
Couple's Type of Contract (Ref= At Least One Partner Temporary)					
Woman's Permanent- Permanent					3.65**
Couple's Education (Ref=Man's higher)					
Woman's higher	2.97**	2.95*	5.47**	3.01*	4.2
Low- Low	2.41	2.27	5.72**	2.56	
Medium- Medium	2.62*	2.73*	3.64*	2.57*	6.99*
High- High	3.56**	3.66**	5.28**	3.57**	10.14**
Calendar Time (Ref= 2005- 2009)					
2010- 2013	0.47***	0.43**	1.57	0.67	2.82

Table 2.2. (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
	OR	OR	OR	OR	OR
<i>Interaction TERMS</i>					
Couple's Education * Time					
Woman's Higher* Time		0.18			
Low- Low* Time		/			
Medium- Medium* Time		0.43			
High- High* Time		0.36			
Couple's Activity Status * Time					
Unempl./Inactive Woman-Empl. Man* Time			0.29**		
Employed Woman-Employed Man * Time			/		
Empl. Woman-Unempl./Inactive Man* Time			4.47		
Partners' Income * Time					
Woman's Income High-Man's Low * Time				1.94	
Man's Income High-Woman's Low * Time				0.14	
Woman's and Man's Income High * Time				2.06	
Couple's Type of Contract * Time					
Woman's Permanent-Man's Permanent* Time					0.19*
No. of couples	1592	1592	1492	1497	482
Log Pseudolikelihood	-362.8	-357.4	-357.9	-357.3	-137.3

Notes: *** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$. Control variables are woman's age, marital status, area of residence, and degree of urbanization. Model 5 refers to working women.

Table 2.3. Descriptive statistics for the variables used in the study (2005- 2009; 2010- 2013)

	2005 -	2009	2010 -	2013
Couple's Education	%	Obs.	%	Obs.
Man's Higher	13.68%	128	15.63%	126
Woman's Higher	20.19%	189	21.34%	172
Low-Low	19.02%	178	15.38%	124
Medium-Medium	23.93%	224	26.92%	217
High-High	23.18%	217	20.72%	167
Couple's Activity Status				
Unemployed/Inactive Woman-				
Employed Man	26.54%	250	30.98%	250
Employed Woman-Employed Man	57.96%	546	46.1%	372
Employed Woman-				
Unemployed/Inactive Man	7.11%	67	13.75%	111
Unemployed/Inactive Woman-				
Unemployed/Inactive Man	8.39%	79	9.17%	74
Couple's Income				
Woman's High-Man's Low	19.83%	185	24.16%	193
Man's High-Woman's Low	21.01%	196	20.53%	164
Low-Low	24.97%	233	27.53%	220
High-High	34.19%	319	27.78%	222
Calendar Time				
2005	8.56%	92		
2006	15.81%	170		
2007	21.58%	232		
2008	32.74%	352		
2009	21.3%	229		
2010			33.04%	297
2011			31.15%	280
2012			18.91%	170
2013			16.91%	152
Woman's Age				
Up to 24	6.11%	57	5.7%	44
24-29	18.65%	174	15.93%	123
30-34	23.37%	218	18.78%	145
35-39	14.15%	132	15.67%	121
40-49	37.73%	352	43.91%	339

Table 2.3. (continued)

	2005 -	2009	2010 -	2013
Couple's Education	%	Obs.	%	Obs.
Marital Status				
Legal Union	86.1%	855	88.28%	746
Other Union	13.9%	138	11.72%	99
Area of Residence				
Voreia Ellada (Northern Greece)	37.87%	376	34.56%	292
Kentriki Ellada (Central Greece)	17.22%	171	25.8%	218
Attiki	34.94%	347	29.7%	251
Aigaio and Kriti (Aegean Islands and Crete)	9.97%	99	9.94%	84
Degree of Urbanization				
Densely Populated Area	45.82%	455	38.82%	328
Intermediate Area	13.49%	134	12.07%	102
Sparsely Populated Area	40.68%	404	49.11%	415
Couple's Type of Contract				
At least One Partner Temporary	29.19%	101	29.38%	57
Both Partners Permanent	70.81%	245	70.62%	137

Source: Authors' own calculations based on the European Union Statistics on Income and Living Conditions 2013

Table 2.4. Transition to first child in Greece. Nested random effects models (without interactions).

	Model 1 OR	Model 2 OR	Model 3 OR	Model 4 OR	Model 5 OR
Couple's Activity Status (Ref=Employed Woman- Employed Man)					
Unemployed/Inactive Woman-Employed Man	0.61*	0.98	1.03	1.15	1.09
Employed Woman-Unemployed/Inactive Man	0.05***	0.06***	0.07***	0.1***	0.18**
Unemployed/Inactive Woman- Unemployed/Inactive Man	0.1***	0.17***	0.21**	0.27*	0.39
Couple's Income (Ref= Low- Low)					
Man's High-Woman's Low		1.94	1.31	1.41	1.59
Woman's High-Man's Low		0.93	0.86	0.83	1.69
High-High		2.01*	1.29	1.26	1.73
Couple's Education (Ref=Man's higher)					
Woman's Higher			5.94***	4.66***	3.27**
Low- Low			1.93	1.67	3.08**
Medium- Medium			5.42***	4.42***	2.81***
High- High			8.01***	5.95***	3.42**
Calendar Time (Ref= 2005- 2009)					
2010- 2013				0.41***	0.49***
Woman's Age (Ref= 30-34)					
Up to 24					1.2
24-29					0.6*
35-39					0.39***
40-49					0.04***
Marital Status (Ref= Other union)					
Legal Union					
Area of Residence (Ref= Attiki)					
Voreia Ellada (Northern Greece)					
Kentriki Ellada (Central Greece)					
Aigaio and Kriti (Aegean Islands and Crete)					
Degree of Urbanization (Intensely populated area)					
Intermediate Area					
Sparsely Populated Area					
Couple's Type of Contract (Ref= At Least One Partner Temporary)					
Woman's Permanent- Man's Permanent					
No. of Couples	1749	1729	1719	1719	1592
Log Pseudolikelihood	-449.5	-443.6	-432.7	-425.9	-378.1

Table 2.4. (continued)

	Model 6	Model 7	Model 8	Model 9
	OR	OR	OR	OR
Couple's Activity Status (Ref=Unempl./Inact. Woman- Unempl./Inac. Man)				
Unemployed/Inactive Woman-Employed Man	1.09	1.09	0.86	
Employed Woman-Unemployed/Inactive Man	0.18**	0.17**	0.09***	
Unemployed/Inactive Woman-Unemployed/Inactive Man	0.4	0.36	0.13**	
Couple's Income (Ref= Low- Low)				
Man's High-Woman's Low	1.83	1.89	1.16	1.88
Woman's High-Man's Low	1.61	1.76	0.87	1.94
High-High	1.78	2.1*	0.67	2.31
Couple's Education (Ref=Man's higher)				
Woman's Higher	3.36**	3.09**	2.97**	3.92
Low- Low	2.63*	2.41	2.41	
Medium- Medium	2.76*	2.69*	2.62*	6.48*
High- High	3.62**	3.49**	3.56**	9.59*
Calendar Time (Ref= 2005- 2009)				
2010- 2013	0.48***	0.47***	0.47***	0.81
Woman's Age (Ref= 30-34)				
Up to 24	1.94	1.89	1.79	1.23
24-29	0.72	0.67	0.66	0.54
35-39	0.37***	0.36***	0.36***	0.83
40-49	0.04***	0.04***	0.04***	0.05***
Marital Status (Ref= Other union)				
Legal Union	4.62***	5.03***	4.58***	1.9
Area of Residence (Ref= Attiki)				
Voreia Ellada (Northern Greece)		2.28***	2.13**	2.15*
Kentriki Ellada (Central Greece)		1.65	1.59	1.69
Aigaio and Kriti (Aegean Islands and Crete)		2.27**	2.13*	2.36
Degree of Urbanization (Intensely populated area)				
Intermediate Area			1.56	1.13
Sparsely Populated Area			1.26	2.36*
Couple's Type of Contract (Ref= At Least One Partner Temporary)				
Woman's Permanent- Man's Permanent				1.92
No. of Couples	1592	1592	1592	461
Log Pseudolikelihood	-369.1	-363.9	-362.8	-137.5

Notes: *** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$

-CHAPTER THREE-

The association between religiosity and fertility intentions via grandparenting: Evidence from GGS data²

3.1. Introduction

Europe has been defined as “the continent with the lowest fertility” (The ESHRE Capri Workshop Group, 2010). The decline in fertility below the replacement level of generations (2.1 children per woman) has been associated with the second demographic transition (SDT) process (Kertzer et al., 2009; Lesthaeghe, 2010; Zaidi and Morgan 2017; Lesthaeghe, 2020). In addition to low fertility, the other main features of the SDT are an increasing age at motherhood, an increase in divorce rates, and the spread of out-of-wedlock unions and births. This process began in the early sixties and coincides with a profound change in the values of Western societies with an orientation towards values of "self-realization" (Lesthaeghe, 2010). In this process, secularization – a decline in the influence of religion on social life and at the individual level – plays a major role (Philipov and Berghammer, 2007; Voas, 2009; Lesthaeghe, 2010).

Despite the considerable decline in religiosity, according to Pew Research Center, in 2010, 81.2% of citizens of the European Union were affiliated with a religion, and 74.5% declared themselves Christians. Researchers have detected not only a "Christian renewal" but also a change in religiosity, with an increase in "believing without belonging" (Philipov and Berghammer, 2007: 276). At the macro level, the effect of religiosity on fertility remains important (Pew Research Center, 2010). However, the association between religiosity and fertility is complex, as many EU countries with high religiosity have very low birth rates (see Poland, Italy, Greece and Romania). Also, for this reason, researchers have focused mostly on religiosity's effect at the micro level. Previous literature shows that at the individual level, religious practice exerts a strong and positive effect on fertility (Buber-

² This chapter has been written in collaboration with Ester RIZZI and Thomas BAUDIN for submission to a scientific journal. At present, it has been accepted for publication as a working paper in the journal of the Centre DEMO (Catholic University of Louvain) entitled *Démographie et sociétés*. Available on the website <https://uclouvain.be/fr/instituts-recherche/iacchos/demo/documents-de-travail.html>

Ennser and Berghammer, 2021; Bein et al., 2020; Peri-Rotem, 2020; Bein et al., 2017; Peri-Rotem, 2016; Régnier- Loilier and Prioux, 2015; Baudin, 2015; Berghammer, 2012 and 2009; Régnier- Loilier and Prioux, 2008; Adsera, 2006).

Religious practice is also positively linked to strong family support (Dykstra and Fokkema, 2011), defined as “familialism”. In the case of intergenerational relations, Dykstra and Fokkema (2011:557) identify the following features of “descending” familism: “living nearby, frequent contact, endorsement of family obligation norms, and primarily help in kind from parents to children”. Previous studies show a positive association of religiosity and grandparental childcare, especially when religiosity is measured through attendance of religious services (Dykstra and Fokkema, 2011; King and Elder, 1999). Moreover, the literature shows that grandparental childcare is positively linked with both fertility intentions (Taskanen and Rotkirch, 2014) and the actual number of children (Taskanen et al., 2014).

Based on these findings, the main aim of this article is to study whether grandparenting is an intermediate variable in the association between religiosity and fertility. In other words, we posit that religiosity may be associated with grandparental help, which in turn is associated with fertility. Grandparenting could also be a modifying variable, meaning that the strength of the association between religiosity and fertility could vary depending on whether grandparents help (or not) with grandchildren. In particular, we posit that religious grandparents might be especially focused on having a positive relation with their adult children and grandchildren (King and Elder, 1999). Even if the literature studying the association between religiosity and fertility-related behaviour in European countries is already quite extended (Bein et al., 2020; Bein et al., 2017; Peri-Rotem, 2016; Baudin, 2015; Berghammer, 2009 and 2012; Régnier- Loilier and Prioux, 2008; Adsera, 2006), studies that explore the mechanisms of action of religiosity, particularly the intervening role of grandparental childcare, are rare.

Regarding our choice to study fertility intentions instead of realized fertility, few studies address the effect of religious practice on fertility intentions (Buber-Ennser and Berghammer, 2021; Bein et al., 2020; Bein et al., 2017; Philipov and Berghammer, 2007). Moreover, compared to the actual number of children, fertility intentions are shaped more strongly by religious teachings (Charton et al., 2009; Hayford and Morghan, 2008). Indeed, the actual number of children might be more the result of economic constraints than cultural factors (Balbo and Mills, 2011; Hayford and Morghan, 2008). Additionally, in the study of the relationship between religiosity and fertility behaviour, reverse causality might be an issue: men and women might practise their beliefs more when they have children instead of

having children because they practise more (Frejka and Westoff, 2008). This risk is limited in the context of fertility intentions.

In this article, we study the link between religiosity and the intention to have a second or a third child. Previous literature shows that the effect of religiosity is greater for the latter (Philipov and Berghammer, 2007). In our study, we do not consider the intention to have a first child. The effect of religiosity on the intention to have a first child may be underestimated due to lower rates of nonmarital fertility among the most religious (Hayford and Morgan, 2008). Another reason to focus on the intention to have a second or third child is that contemporary low fertility in European countries is due mainly to the low percentages of couples with second- and higher-order children (Philipov and Berghammer, 2007).

To measure the association between religiosity and fertility intentions, we use the first wave of the Generations and Gender Survey (GGS) for eleven European countries (Bulgaria, Russia, Georgia, Germany, France, Romania, Austria, Lithuania, Poland, Czech Republic and Sweden) for which information on religiosity, religious affiliation, and grandparenting is available.

This study is structured as follows. First, in section 3.2., we present the theoretical and empirical background, together with our hypotheses. We consider how men's and women's attendance of religious services affects their intentions to have a second or third child. In section 3.3., we present the data and methods and the operationalization of concepts. In section 3.4., we present our findings. Finally, in the conclusion, we discuss our results and the limitations of our study.

3.2. Theoretical background and previous findings

Religiosity and fertility

McQuillan (2004:49) identifies three elements of religion's influence on fertility: the "sense of attachment" to a religious group, the "behavioral norms of a religion ... that have linkages to fertility", and religion's "means to communicate its teachings". It has been assumed that religious teachings affect norms, the organization of family life, and fertility ideals and behaviours (Stonawski et al., 2015; Baudin, 2015; Adsera, 2006). Moreover, these teachings are conveyed in a context of socialization where couples receive support from other members of their religious community, or church members in the case of Christian (Philipov and

Berghammer, 2007; Myers, 2004). According to Myers (2004: 68), “the overall collectivism of religious values creates an expectation that religious individuals provide support and assistance to other individuals”.

In previous literature, two main indicators are employed to capture these dimensions: religious affiliation and attendance of religious services. Previous studies indicate a positive association between religious affiliation and fertility, although this link might depend on the national context (Philipov and Berghammer, 2007; Berghammer, 2009; Baudin, 2015; Pew Research Center, 2015). In particular, this effect is weak in countries where the vast majority of people belong to one denomination (Adsera, 2006). However, according to Adsera (2006), members of a religious denomination who do not actively participate are less likely to be “committed” to its teachings, and it is attendance of religious services that more strongly affects fertility (Baudin, 2015; Berghammer, 2009; Philipov and Berghammer, 2007; McQuillan, 2004). This is thus the indicator of religiosity taken into account in this study.

Some studies also show that men’s religiosity has a stronger effect on fertility ideals than women’s religiosity (Adsera, 2006; Hubert, 2015). This may be linked to the fact that the percentage of nonreligious individuals is higher among men than among women in most countries. The minority status of religious men probably indicates more conscious participation in religious services than that of religious women. Consequently, it is no surprise that religious men have more distinctive fertility behaviour than nonreligious men.

Thus, following previous studies, *we posit that religious practice is positively associated with fertility intentions (H1) and that this association is stronger for men than for women (H2).*

Religiosity and grandparenting

Previous studies indicate a positive effect of religiosity – measured with several indicators – on grandparental childcare (Dykstra and Fokkema, 2011; King and Elder, 1999). In particular, Dykstra and Fokkema (2011), in a comparative study on European countries, show that religiosity (specifically, praying) is positively associated with descending familialism (as defined above). The reason may be found in the fact that “religious teachings and beliefs emphasize and support the centrality of the family and the importance of positive family relationships” (King and Elder, 1999: 318).

It should be noted that these studies take into account the religiosity of grandparents, while in our study, only information on the religiosity of adult children is available. However, the

literature shows a strong correlation between the religiosity of adult children and that of their parents (e.g., Petts, 2015; Bengtson et al., 2009; Myers, 1996; Glass et al., 1986), making plausible the approximation of grandparents' religiosity with adult children's religiosity.

Grandparenting and fertility

Previous studies also show that grandparental support is positively associated with fertility-related behaviour (Aasve et al., 2012; Taskanen et al., 2014; Taskanen and Rotkirch, 2014). More specifically, grandparental involvement in childcare has a positive effect on both fertility intentions (Taskanen and Rotkirch, 2014) and the actual number of children (Taskanen et al., 2014).

For this reason, and considering previous findings on the associations between religiosity and fertility and between religiosity and grandparenting, *we hypothesize that family support in childcare is an intermediate variable in the association between religious practice and fertility intentions; i.e., grandparenting partially mediates the effect of religiosity on fertility intentions (H3). Alternatively, we propose the existence of a modification effect, i.e., that the effect of grandparenting on fertility intentions is greater among the most religious grandparents (H4).* As mentioned above, one possible mechanism could be that because of their stronger familism, religious grandparents put more effort into establishing a positive family relation with adult children and grandchildren (King and Elder, 1999). Because of this greater help, they might more favourably affect their children's fertility intentions than nonreligious grandparents.

3.3. Data and method

For the purposes of this paper, we use data from the Generations and Gender Survey (GGS), collecting comparable and multidimensional microlevel data on fertility, partnership, generations, economic activity, and care duties. The first wave of the GGS was conducted between 2004 and 2013 in 20 countries. An average of 9,000 individuals were interviewed per country. The first wave is the only wave with information on religiosity for a large number of countries. In particular, for this study, we use data from eleven European countries: Bulgaria, Russia, Georgia, Germany, France, Romania, Austria, Lithuania, Poland, the Czech Republic and Sweden. The selected countries are the only ones for which

information on religious affiliation, attendance of religious services, and grandparenting is available. Other countries in the GGS lack information on religion or religiosity; e.g., for Australia, Italy and Estonia, information on religion affiliation is not available, while for the Netherlands and Hungary, data on attendance of religious services are lacking. In Italy, information on grandparenting is also not available.

We focus on men and women who have one or two children and who are aged 20–49 years and partnered (married or in cohabitation). Because of the small sample size at the country level, we pool the data from the eleven countries. Once we remove individuals with missing information, the final sample consists of 6,919 individuals having one child and 8,935 individuals having two children. We observe 3,984 individuals who intend to have a second child and 1,050 individuals who intend to have a third child within 3 years. As in other surveys, there are more women respondents than men (Fokkema et al., 2016), either due to men's refusal to answer or due to their unavailability.

We investigate the relationship between religiosity and fertility intentions. For the dependent variable, we group the four categories – 1 “definitely not”, 2 “probably not”, 3 “probably yes” and 4 “definitely yes” – of the variable “Intention to have a/another child during the next three years” under a binary variable where the value 1 represents a positive answer and the value 0 a negative one. The reason for focusing on fertility intentions “during the next three years” is that those who declare an intention of having a child “within 3 years” have almost decided to have another child. This answer reflects a real interest in having another child and reduces the possibility of a change in intentions (Hayford and Morgan, 2008).

Regarding religiosity, our main explanatory variable, by combining the variables on attendance of religious services and religious denomination, we create a new variable that contains three categories: (1) at least monthly attendance; (2) less than monthly attendance; (3) no religious affiliation. In this study, we refer to this variable as both “attendance of religious services” and “religious practice”. We must point out that among the affiliated, Christian denominations represent 94.7% of the sample of parents with one child and 92.7% of the sample of parents with two children. Thus, our results mostly refer to the Christian denominations. In our robustness check, a second indicator of religiosity referring to the importance of religious ceremonies in case of birth, marriage and death is used.

Concerning grandparental childcare, we have two options: using either the variable on grandparents' regular help or the variable on weekly help. First, we use regular help from grandparents, as it is the most common practice among parents: in our sample, 37.7% of parents with one child receive regular grandparental help, while only 19.5% receive weekly

help. The GGS questionnaire asks, “Do you (also) get regular help with childcare from relatives or friends or other people for whom caring for children is not a job?” In case of an affirmative answer, the survey also asks, “From whom do you get this help?” This allows us to create a dichotomous variable (yes/no) on grandparents’ regular help. For childcare by grandparents, we include childcare by great-grandparents, who help more than 8% of the couples in our sample. Second, to check the robustness of our results, we replicate our analysis with the weekly help indicator (see the “Robustness check” section).

The control variables are age, marital status, educational level, sex, and activity status. Respondents’ age is recoded into four categories: (1) 20 to 29 years; (2) 30 to 34 years; (3) 35 to 39 years; and (4) 40 to 49 years. Concerning the age of the youngest child, we create a new variable containing three categories: (1) 0 to 1 year; (2) 2 to 4 years; and (3) 5+ years. To create the variable marital status, we combine the GGS variables *marital status respondent* and *current partner status*. This variable includes two categories: (1) married and (2) in cohabitation. Regarding educational level, we create a variable with three categories: (1) low (preprimary level, primary level, lower secondary level); (2) medium (upper secondary level, postsecondary nontertiary level); and (3) high (first stage of tertiary, second stage of tertiary). Finally, we recode the variable *activity status respondent* and create a new variable with three categories: (1) employed/self-employed; (2) unemployed; and (3) inactive. Another control variable is the country of residence (see countries presented above).

Regarding the estimation method, a logistic regression analysis is used to measure the association between the intention to have another child within three years and religiosity at the time of the survey (Hilbe, 2014). To find support for our hypotheses, we estimate nine models for each parity (Table 3.5. and Table 3.6.). In the first model, we study the association between religiosity and the intention to have another child. In models 2–7, we add control variables. In model 8, we include grandparental childcare: if the effect of religiosity on fertility intentions varies once we add grandparental childcare to the model, this would represent the first evidence of the intermediate effect of grandparenting. In model 9, we add the age of the youngest child, an important predictor of fertility intentions.

A further model includes the interaction Religiosity*Grandparental childcare to verify whether the effect of religiosity on fertility intentions is modified by receipt of regular help from grandparents (Table 3.7.). Another model includes the interaction Religiosity*Sex to ascertain whether the effect of religiosity on fertility intentions varies with the sex of the respondent (Table 3.7.).

To check the robustness of our results, the interaction models are estimated with an alternative indicator of religiosity referring to the importance placed on religious ceremonies in case of birth, marriage or death (Table 3.8.). Finally, to check the robustness of the results, in Table 3.9., we use weekly help from grandparents instead of regular help.

3.4. Results

3.4.1. Descriptive analysis for parents with one child

In the sample of individuals with one child, 51.8% of people want another child (Table 3.1.). However, there are sharp differences among countries. For Georgia and Sweden, the percentages of people who want a second child are 73.4% and 75.2%, respectively; for Germany and Romania, they are 39.9% and 41%, respectively (Table 3.2.).

Regarding religiosity, and considering all the countries in our sample, 28.4% of people attend religious ceremonies at least monthly, 57.9% attend less than monthly, and 13.7% have no religious affiliation (Table 3.1.). Variations among countries are important. In Poland, 67.3% of people attend religious ceremonies at least monthly. This group makes up 44.1% in Georgia and 40.7% in Romania (Table 3.2.). In Sweden and the Czech Republic, the percentages of individuals attending religious ceremonies at least monthly are only 4.1% and 6.6%, respectively (Table 3.2.).

Concerning regular grandparental (and great-grandparental) help with childcare, 37.7% of parents receive regular help (Table 3.1.). The countries with the highest percentages of grandparental childcare are Austria and Russia (54.8% and 48.2%; Table 3.2.), while those with the lowest percentages are Romania and Lithuania (21.7% and 25.2%; Table 3.2.). In Romania, this low percentage could be related to the fact that this country has one of the highest rates of women's labour force inactivity among the countries in our sample (Table 3.2.); it is likely that nonworking women are less in need of help from grandparents than working women.

Finally, our descriptive analysis shows that the percentages of grandparenting do not vary by level of religiosity (see the Appendix).

3.4.2. Descriptive analysis for parents with two children

In the sample of individuals with two children, 10.6% want a third child within the next three years (Table 3.3.). Georgia and France have the highest percentages (25% and 16%, respectively) of individuals who intend to have a third child and Bulgaria (3.8%) and Romania (4.3%) the lowest (Table 3.4.).

Regarding religiosity, Poland and Romania are the countries with the highest percentages of individuals who attend religious services at least monthly (79.5% and 45.8%, respectively; Table 4). In these countries, the percentage of people with no religious affiliation is between 0 and approximately 1% (Table 3.4.), while the Czech Republic and Sweden are the countries with the highest percentage of persons with no religious affiliation (72.9% and 21.6%, respectively; Table 3.4.). Overall, we could say that with the exception of Poland and the Czech Republic, in all countries, the majority of people are practising, albeit less than once per month (Table 3.4.).

Overall, the percentage of those who receive regular help with childcare from either grandparents or great-grandparents is 30.9% (Table 3.3.). Austria has the highest percentage (50.4%) and Romania the lowest (15%; Table 3.4.).

Finally, in all cases at the aggregate level and for respondents with two children, the percentages of grandparenting do not seem to vary according to the levels of religiosity (see the Appendix).

3.4.3. The effect of religious practice on the intention to have a second child

We run a logistic regression on the sample of individuals with one child (Table 3.5.). Our findings show that religiosity is positively associated with the intention to have a second child. The association is statistically significant ($p < 0.01$), and it is particularly strong for people who attend religious services at least monthly in comparison to people with no religious affiliation (OR=1.88, Table 3.5., Model 9). The odds of intending to have a second child are also higher for those who attend less than monthly than for those who have no affiliation (OR=1.44, Table 3.5., Model 9).

Grandparental childcare help is positively associated with fertility intentions as well. The results are statistically significant ($p < 0.05$) and show that those who benefit from grandparental help have odds of intending to have a second child that are 13% higher than those of parents who do not benefit from grandparental help (Table 3.5., Model 8). However, once we control for the age of the youngest child, the effect of grandparental help with childcare is no longer significant (Table 3.5., Models 8–9). This result could depend on the fact that the age of the youngest child might be a confounding variable simultaneously affecting grandparental childcare and intentions to have a second child.

Adding the variable on grandparenting does not change the results about religiosity, contradicting our hypothesis about an intermediate role of grandparenting. However, the interaction Religiosity*Grandparental childcare is positive and statistically significant. This signifies that the association between religiosity and fertility intentions is modified by regular grandparental help with childcare. When grandparents do not help regularly with childcare, the odds of the intention to have a second child among those who attend religious services at least monthly are 64% higher than those among parents who have no religious affiliation ($OR = 1.64$, $p < 0.01$, Table 3.7., Model 1). When grandparents help regularly with childcare, the odds of the intention to have a second child are magnified by more than double ($OR = 2.29 = \exp(0.50 + 0.33 * 1)$, $p < 0.10$, Table 3.7., Model 1). A modification effect of grandparenting is also observed for those who practise less than monthly: $OR = 1.30$ when grandparents do not help regularly ($p < 0.05$) and 1.68 when grandparents do help regularly ($OR = \exp(0.26 + 0.26 * 1) = 1.68$, Table 3.7., Model 1), although the results are not significant.

Finally, the interaction Religiosity*Sex is positive and statistically significant, meaning that the association between religiosity and fertility intentions varies according to the sex of the respondent. Women who attend religious services at least monthly have odds 53% higher than those of women with no religious affiliation ($OR = 1.53$, $p < 0.01$). The odds are much higher for men: in the comparison of male respondents who attend at least monthly with male respondents with no religious affiliation, the OR is equal to 2.41 ($OR = \exp(0.42 + 0.46 * 1) = 2.41$, Table 3.7., Model 2). Finally, although less strong, a modification effect of sex is also observed for those who practise less than monthly: the OR is equal to 1.20 for women (but not significant) and 1.72 for men ($OR = \exp(0.18 + 0.36 * 1) = 1.72$, $p < 0.10$, Table 3.7., Model 2).

3.4.4. The effect of religious practice on the intention to have a third child

Religious practice is also positively associated with the intention to have a third child (Table 6). As already observed for the intention to have a second child, people who attend religious services at least monthly have higher odds than those with no affiliation (OR=1.95, $p<0.01$, Table 3.6., Model 9).

We find a weak positive association between grandparental childcare and fertility intentions, but the result is not significant (Table 3.6., Model 9). Adding the grandparental childcare variable to the model does not change the odds ratios of religiosity, contradicting our hypothesis about the intermediate role of grandparenting. Regarding the interaction Religiosity*Grandparenting, the results are not statistically significant (Table 3.7., Model 3), failing to support our hypothesis about a modification effect of grandparenting.

Similarly, the interaction Religiosity*Sex is not statistically significant (Table 3.7., Model 4).

The comparative interpretations of these results and those observed for the intention to have a second child are discussed in the final section.

3.4.5 Robustness check

Several robustness checks are performed. First, our nested models (Table 3.5. and Table 3.6.) show that the positive effect of religiosity on fertility intentions slightly increases after we add control variables. In particular, adding the country of residence changes the religiosity coefficient the most. A model with interactions between religiosity and each country is also estimated. We expect a greater impact of religiosity (representing encouragement from religious teachings and religious communities) and of grandparental help on fertility intentions in countries where family policies are limited. However, no consistent pattern is detected (results not shown but available on request). We also run a model interacting religiosity, grandparenting, and country of residence. Again, no consistent results appear (results not shown but available on request).

Second, we try an alternative coding of the main explanatory variable: in addition to people with no religious affiliation, we add religious people who do not practise to the reference category. In this case, the interaction with regular grandparenting is no longer statistically significant. In other words, the joint effect of monthly attendance of religious services and

grandparenting must be compared to the effect on those without an affiliation to detect a significant difference.

Third, we build an alternative indicator of religiosity. Specifically, we consider three variables measuring the importance that respondents attach to religious ceremonies in the case of births, weddings, and funerals. Then, we build an indicator summing the three variables. Generally, our results hold even if the magnitude of coefficients is smaller than those obtained when religiosity is measured as attendance of religious services (Table 3.8.). This result is expected, as people's preference for religious ceremonies in the case of births, weddings and funerals might depend more on tradition than on religiosity, resulting in a weaker impact on fertility intentions. Baptism is a Christian practice; thus, Muslims might not respond to the question or declare that a ceremony related to birth is not important (Hubert, 2015), which could explain the smaller effects of this new indicator of religiosity on fertility intentions. Nevertheless, this is not the case in our sample: Muslims who do not respond are only 2.2% in the sample of one-child parents and 2.1% in the sample of two-children parents. Moreover, the percentage of Muslims saying that the ceremony is not important is not substantially different from that for respondents of other denominations (results not shown).

Finally, a further model is estimated with a different indicator for grandparenting. In this supplementary analysis, we use a dichotomous variable for grandparenting, where the value 1 designates receipt of grandparental help at least weekly, while 0 corresponds to no help or receipt of help less than weekly. This is a more demanding criterion than that used to construct the indicator in the previous analysis, where grandparenting is equal to 1 in the case of receipt of regular help. With the new indicator, the joint effect of grandparenting and monthly religious practice on the intention to have a second child becomes larger: OR=2.51 ($p<0.10$, Table 3.9.) instead of 2.29 when the previous indicator on regular grandparenting is used. When the religious practice is less than monthly and grandparenting is weekly, OR=1.29 ($p<0.05$, Table 3.9.).

3.4.6 Other results

Those who cohabit without being married are more likely to intend to have a third child than those who are married (Table 3.6., Models 3–9). This is in line with previous studies showing that many of those who have two children and cohabit are divorced and want a further child

in the new union (Thomson et al., 2012). We conduct a descriptive analysis confirming the higher propensity of divorced people who cohabit to intend to have a third child. In our study, among those who cohabit and have two children, 11% are divorced people. Divorced persons who cohabit and have two children want a third child in 29.8% of cases; nondivorced cohabitants who want a third child are 16.2%, while married persons who want a third child are 9.6%.

We also observe that educational level is positively associated with intention to have a second or a third child (Table 3.5. and Table 3.6., Models 4–9). Some previous studies show no consistent result for parities higher than one; however, other studies show a positive educational gradient in Sweden (Berinde 1999), Estonia (Klesment and Puur 2010), and France (Köppen 2006).

We observe that men are more likely to intend to have a second or a third child than women (Table 3.5. and Table 3.6.). In this respect, previous literature is ambivalent, showing, in some countries, higher fertility intentions for men and, in other countries, higher intentions for women (e.g., Lappegard et al., 2015; Berrington, 2004).

Finally, inactive persons are more likely to intend to have a third child than employed and unemployed persons (Table 3.6., Model 6–8), echoing previous studies that show that women's labour force inactivity is positively related to fertility (Cooke, 2009; Paihlé and Solaz, 2012; Cazzola et al., 2016).

3.5. Discussion and conclusion

This study explores the association between fertility intentions, religiosity and grandparenting, pulling together data from eleven European countries. Our *first hypothesis* was that attendance of religious services is positively associated with fertility intentions. The hypothesis was supported by our results: those who attend religious services at least once per month are more likely to intend to have a second or a third child than those who have no religious affiliation. In other words, religious teachings promote pronatalist ideals, norms and behaviour (Stonawski et al., 2015; Baudin, 2015 Adsera, 2006), and those who attend religious services are more committed to these teachings and receive emotional and practical support from congregants (Philipov and Berghammer, 2007; Myers, 2004).

Our *second hypothesis* was also supported by our findings. Men who attend religious services at least monthly are more likely to intend to have a second child than women, confirming previous results from Adsera (2006) and Hubert (2015). As highlighted above, this evidence may be linked to the fact that in most countries, religious men constitute a small minority (Adsera, 2006), which probably indicates more conscious participation in religious services than religious women, together with a more distinctive fertility decision process than that of men with no religious affiliation. However, a statistically significant result was observed only for the intention to have a second child.

In our *third hypothesis*, we posited that grandparental support is an intermediate variable in the association between religious practice and fertility intentions, and in our *fourth hypothesis*, we proposed that the effect of grandparenting on fertility intentions is greater among the most religious persons. To our knowledge, no previous studies have explored these mechanisms. In line with our fourth hypothesis, we found evidence for an interaction between religiosity and grandparenting but only for the intention to have a second child. Assuming that the religiosity of adult children could be taken as an approximation of their parents' religiosity, one mechanism that we already mentioned above could be that because of their stronger familism, most religious grandparents put more effort into establishing a positive family relation with adult children and grandchildren (King and Elder, 1999), thus favouring fertility intentions. Another explanation is that adult children who are more religious might be more receptive to encouragement to have another child and that this encouragement might come from their parents, especially when the latter help with childcare. Why would these mechanisms appear more clearly for the second child? Previous studies have shown that although grandparenting is beneficial for the health of grandparents (Danielsbacka et al., 2019), this is not the case when grandparenting is intensive (Arpino and Gómez-León, 2020). Moreover, grandmothers and grandfathers are older (the average years of birth are 1946 and 1942, respectively) in the sample of parents with two children than in the sample of parents with one child (the average years of birth are 1949 and 1946). Thus, encouragement to have a third child could be less likely from these older grandparents.

One limitation of our study is that only a restricted number of countries is considered. A larger number of countries would allow us to group them according to the welfare state typology and verify the role that the welfare state plays in the association between religiosity, grandparenting and fertility intentions. Another limitation concerns the lack of information on the religiosity of grandparents, inferred here from the religiosity of adult children (the respondents). Despite these limitations, studies on the association between religiosity and fertility intentions in European countries are rare, and even rarer are those exploring the

mechanisms of the association while considering, in particular, grandparental help in childcare as a modifier.

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Tables

Table 3.1. Distribution of variables, one child

Intentions to have a second child during the next 3 years	%	Obs.
Does not want	48.20%	3396
Wants	51.80%	3649
Religiosity		
At least monthly attendance	28.40%	2364
Less than monthly attendance	57.90%	4826
No religious affiliation	13.70%	1146
Age		
20–29	31.90%	2659
30–34	31.80%	2647
35–39	22.70%	1896
40–49	13.60%	1134
Marital status		
Married	83.10%	6929
Cohabitant	16.90%	1407
Educational level		
Low	9.40%	779
Medium	58.40%	4873
High	32.20%	2684
Sex		
Female	54.60%	4554
Male	45.40%	3782
Activity status		
Employed/Self- Employed	80.80%	6734
Unemployed	9%	750
Inactive	10.20%	852
Countries		
Bulgaria	15.30%	1275
Russia	11.10%	918
Georgia	7.50%	626
Germany	6.70%	561
France	5.30%	443
Romania	12.50%	1043
Austria	6.40%	537
Lithuania	9%	749
Poland	16.70%	1393
Czech Republic	6%	498
Sweden	3.50%	293
Grandparenting regular		
Yes	37.70%	3143
No	62.30%	5193
Age of the youngest child		
0–1 year	25.70%	2141
2–4 years	28.90%	2405
5+ years	45.40%	3787

Table 3.2. Distribution of independent variables by country, one child

	Bulgaria		Russia		Georgia		Germany		France	
	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.
Intentions to have a second child during the next 3 years										
Does not want	53.80%	616	57%	462	26.60%	132	60.10%	258	33.80%	121
Wants	46.20%	529	43%	349	73.40%	365	39.90%	171	66.20%	237
Religiosity										
At least monthly attendance	20.20%	257	7.80%	72	44.10%	276	13%	73	6.10%	27
Less than monthly attendance	72.50%	224	70.70%	649	55.10%	345	62.20%	349	78.10%	346
No religious affiliation	7.30%	94	21.50%	197	0.80%	5	24.80%	139	15.80%	70
Age										
20–29	32.30%	412	46.20%	424	44.30%	277	20.90%	117	25.30%	112
30–34	37%	472	31.20%	286	25.90%	162	28.10%	158	30.30%	134
35–39	20.90%	266	14.70%	135	15.60%	98	26.20%	147	27.50%	122
40–49	9.80%	125	7.90%	73	14.20%	89	24.80%	139	16.90%	75
Marital status										
Married	87.40%	1114	90.20%	828	65.70%	411	84.50%	474	58.90%	261
Cohabitant	12.60%	161	9.80%	90	34.30%	215	15.50%	87	41.10%	182
Educational level										
Low	12.20%	156	5.10%	47	7.70%	48	11.10%	62	10.80%	48
Medium	57%	727	49.80%	457	53.30%	334	63.80%	358	49.40%	219
High	30.80%	392	45.10%	414	39%	244	25.10%	141	39.80%	176
Sex										
Female	59.40%	757	56.90%	522	49.80%	312	62%	348	54%	239
Male	40.60%	518	43.10%	396	50.20%	314	38%	213	46%	204
Activity status										
Employed/Self- Employed	77.40%	987	82.40%	756	46.20%	289	80.90%	454	84%	372
Unemployed	18.40%	234	5.40%	50	23.80%	149	5.70%	32	10.40%	46
Inactive	4.20%	54	12.20%	112	30%	188	13.40%	75	5.60%	25
Grandparenting regular										
Yes	45%	574	48.20%	442	31.30%	196	31.90%	179	39.50%	175
No	55%	701	51.80%	476	68.70%	430	68.10%	382	60.50%	268
Age of the youngest child										
0–1 year	18.90%	241	19.20%	176	29.40%	184	28.20%	158	39.50%	175
2–4 years	24.80%	316	28.10%	258	34%	213	29.60%	166	32.70%	145
5+ years	56.30%	717	52.70%	484	36.60%	229	42.20%	237	27.80%	123

Table 3.2. (continued)

	Romania		Austria		Lithuania		Poland		Czech Republic	
Intentions to have a second child during the next 3 years	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.
Does not want	59%	572	45.90%	218	46.70%	292	43.70%	493	44.60%	183
Wants	41%	397	54.10%	257	53.30%	333	56.30%	635	55.40%	227
Religiosity										
At least monthly attendance	40.70%	424	21.20%	114	18.40%	138	67.30%	938	6.60%	33
Less than monthly attendance	59.30%	619	62.00%	333	74.10%	555	30.30%	422	19.30%	96
No religious affiliation	0%	0	16.80%	90	7.50%	56	2.40%	33	74.10%	369
Age										
20–29	20.50%	214	27.80%	149	38.90%	291	31.80%	443	32.90%	164
30–34	32.20%	316	26.80%	144	30.40%	228	32.70%	456	35.50%	177
35–39	34.30%	358	24.90%	134	19.80%	148	24.10%	336	18.90%	94
40–49	13%	135	20.50%	110	10.90%	82	11.40%	158	12.70%	63
Marital status										
Married	95.30%	994	67.60%	363	90.30%	676	89.90%	1252	81.50%	466
Cohabitant	4.70%	49	32.40%	174	9.70%	73	10.10%	141	18.50%	92
Educational level										
Low	16.90%	176	8.80%	47	8.30%	62	4.20%	59	12.90%	64
Medium	66.70%	696	71.30%	383	59.40%	445	56%	780	68.70%	342
High	16.40%	171	19.90%	107	32.30%	242	39.80%	554	18.40%	92
Sex										
Female	46.50%	485	60.70%	326	47.80%	358	55.10%	767	55.80%	278
Male	53.50%	558	39.30%	211	52.20%	391	44.90%	626	44.20%	220
Activity status										
Employed/Self- Employed	82.70%	862	89%	478	91.20%	683	80.60%	1192	92.60%	461
Unemployed	4.20%	44	3.50%	19	3.90%	29	8.20%	114	4.60%	23
Inactive	13.10%	137	7.50%	40	4.90%	37	11.20%	157	2.80%	14
Grandparenting regular										
Yes	21.70%	226	54.80%	294	25.20%	189	41%	571	37.20%	185
No	78.30%	817	45.20%	243	74.80%	560	59%	822	62.80%	313
Age of the youngest child										
0–1 year	15.50%	162	36.10%	194	22.70%	170	31.30%	435	19.70%	98
2–4 years	23.40%	244	28.10%	151	29%	217	32.10%	447	33.50%	167
5+ years	61.10%	637	35.80%	192	48.30%	362	36.60%	510	46.80%	233

Table 3.2. (continued)

Sweden		
Intentions to have a second child during the next 3 years	%	Obs.
Does not want	24.80%	49
Wants	75.20%	149
Religiosity		
At least monthly attendance	4.10%	12
Less than monthly attend	64.20%	188
No religious affiliation	31.70%	93
Age		
20–29	19.10%	56
30–34	32.10%	94
35–39	19.80%	58
40–49	29%	85
Marital status		
Married	51.20%	150
Cohabitant	48.80%	143
Educational level		
Low	3.40%	10
Medium	45.10%	132
High	51.50%	151
Sex		
Female	55.30%	162
Male	44.70%	131
Activity status		
Employed/Self- Employed	92.20%	270
Unemployed	3.40%	10
Inactive	4.40%	13
Grandparenting regular		
Yes	38.20%	112
No	61.80%	181
Age of the youngest child		
0–1 year	50.70%	148
2–4 years	27.70%	81
5+ years	21.60%	63

Table 3.3. Distribution of variables, two children

Intentions to have a third child during the next 3 years	%	Obs.
Does not want	89.40%	8139
Wants	10.60%	965
Religiosity		
At least monthly attendance	31.40%	3311
Less than monthly attendance	56%	5900
No religious affiliation	12.60%	1327
Age		
20–29	10.80%	1139
30–34	24.80%	2617
35–39	33.30%	3508
40–49	31.10%	3274
Marital status		
Married	88.50%	9323
Cohabitant	11.50%	1215
Educational level		
Low	11.10%	1168
Medium	61.20%	6455
High	27.70%	2915
Sex		
Female	57.10%	6015
Male	42.90%	4523
Activity status		
Employed/Self- Employed	77.80%	8202
Unemployed	9.70%	1016
Inactive	12.50%	1320
Countries		
Bulgaria	13.50%	1418
Russia	6.60%	693
Georgia	11.10%	1169
Germany	7.70%	814
France	8.50%	900
Romania	8.90%	933
Austria	8.10%	859
Lithuania	7.30%	767
Poland	15.10%	1596
Czech Republic	7.60%	797
Sweden	5.60%	592
Grandparenting regular		
Yes	30.90%	3252
No	69.10%	7286
Age of the youngest child		
0–1 year	16.70%	1762
2–4 years	24.10%	2541
5+ years	59.20%	6235

Table 3.4. Distribution of independent variables by country, two children

	Bulgaria		Russia		Georgia		Germany		France	
	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.
Intentions to have a third child during the next 3 years										
Does not want	96.20%	1257	91.70%	560	75%	736	92%	563	84%	665
Wants	3.80%	50	8.30%	51	25%	245	8%	49	16%	127
Religiosity										
At least monthly attendance	18.10%	257	7.50%	52	41.40%	484	24.30%	198	9.10%	82
Less than monthly attendance	75.10%	1064	75.30%	522	57.60%	673	58.50%	476	79.10%	712
No religious affiliation	6.80%	97	17.20%	119	1%	12	17.20%	140	11.80%	106
Age										
20–29	15.20%	216	13.00%	90	17.30%	202	8.10%	66	4.50%	41
30–34	30.40%	431	30.30%	210	27%	316	16.10%	131	23.10%	208
35–39	33%	468	32.60%	226	27.10%	317	30.60%	249	33.70%	303
40–49	21.40%	303	24.10%	167	28.60%	334	45.20%	368	38.70%	348
Marital status										
Married	87.30%	1234	93.40%	647	78.50%	918	94.20%	767	79.40%	715
Cohabitant	12.70%	180	6.60%	46	21.50%	251	5.80%	47	20.60%	185
Educational level										
Low	22.30%	316	6.60%	46	6.20%	72	10.10%	82	12.90%	116
Medium	55.60%	789	51.70%	358	59.20%	692	60.30%	491	48.80%	439
High	22.10%	313	41.70%	289	34.60%	405	29.60%	241	38.30%	345
Sex										
Female	61.90%	878	59.60%	413	52.50%	614	63%	513	55.90%	503
Male	38.10%	540	40.40%	280	47.50%	555	37%	301	44.10%	397
Activity status										
Employed/Self- Employed	71.90%	1020	80.50%	558	50.40%	589	73.10%	595	89%	801
Unemployed	24.10%	341	7.10%	49	19%	222	5.90%	48	5%	45
Inactive	4%	57	12.40%	86	30.60%	358	21%	171	6%	54
Grandparenting regular										
Yes	34.40%	488	33.30%	231	22.10%	258	22.40%	182	40.40%	364
No	65.60%	930	66.70%	462	77.90%	911	77.60%	632	59.60%	536
Age of the youngest child										
0–1 year	13.80%	196	18.50%	128	15.70%	184	17.20%	140	20.10%	181
2–4 years	20.90%	297	22.50%	156	22.90%	268	28%	228	27.60%	248
5+ years	65.30%	925	59%	409	61.40%	717	54.80%	446	52.30%	471

Table 3.4. (continued)

	Romania		Austria		Lithuania		Poland		Czech Republic	
Intentions to have a third child during the next 3 years	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.
Does not want	95.70%	818	87.10%	644	92.20%	616	90%	1227	92%	645
Wants	4.30%	37	12.90%	95	7.80%	52	10%	137	8%	56
Religiosity										
At least monthly attendance	45.80%	427	33.10%	284	22%	169	79.50%	1268	7.90%	63
Less than monthly attendance	54.10%	505	57.80%	497	71.70%	550	19.50%	311	12.20%	153
No religious affiliation	0.10%	1	9.10%	78	6.50%	48	1%	17	72.90%	581
Age										
20–29	9.70%	90	9.40%	81	10.60%	81	10.50%	168	10.70%	85
30–34	21%	195	22.10%	190	24.80%	190	27%	431	29.70%	237
35–39	44.90%	419	32.40%	278	33.10%	254	34.40%	549	32%	255
40–49	24.40%	229	36.10%	310	31.50%	242	28.10%	448	27.60%	220
Marital status										
Married	96%	896	87.10%	748	94.40%	724	94.70%	1511	94%	749
Cohabitant	4%	37	12.90%	111	5.60%	43	5.30%	85	6%	48
Educational level										
Low	22.70%	212	10.20%	88	9.50%	73	5.50%	87	8%	64
Medium	68.10%	635	70.60%	606	67.10%	515	66.50%	1061	76.80%	612
High	9.20%	86	19.20%	165	23.40%	179	28%	448	15.20%	121
Sex										
Female	47.40%	442	65.10%	559	49.80%	382	58.90%	940	54.50%	434
Male	52.60%	491	34.90%	300	50.20%	385	41.10%	656	45.50%	363
Activity status										
Employed/Self- Employed	75.80%	707	88.50%	760	87.10%	668	76.30%	1218	90.30%	720
Unemployed	4.70%	44	2.10%	18	6.10%	47	9.40%	150	6%	48
Inactive	19.50%	182	9.40%	81	6.80%	52	14.30%	228	3.70%	29
Grandparenting regular										
Yes	15%	140	50.40%	433	19.70%	151	33.70%	538	26.90%	214
No	85%	793	49.60%	426	80.30%	616	66.30%	1058	73.10%	583
Age of the youngest child										
0–1 year	13.10%	122	21%	180	12.40%	95	21.10%	336	11.50%	92
2–4 years	22.40%	209	27%	232	20.90%	160	25.30%	404	22.70%	181
5+ years	64.50%	602	52%	447	66.70%	512	53.60%	856	65.80%	524

Table 3.4. (continued)

Sweden		
Intentions to have a third child during the next 3 years	%	Obs.
Does not want	86.10%	408
Wants	13.90%	66
Religiosity		
At least monthly attendance	4.60%	27
Less than monthly attendance	73.80%	437
No religious affiliation	21.60%	128
Age		
20–29	3.20%	19
30–34	13.20%	78
35–39	32.10%	190
40–49	51.50%	305
Marital status		
Married	69.30%	410
Cohabitant	30.70%	182
Educational level		
Low	2%	12
Medium	43.40%	257
High	54.60%	323
Sex		
Female	56.90%	337
Male	43.10%	255
Activity status		
Employed/Self- Employed	95.60%	566
Unemployed	0.70%	4
Inactive	3.70%	22
Grandparenting regular		
Yes	42.70%	253
No	57.30%	339
Age of the youngest child		
0–1 year	18.20%	108
2–4 years	26.70%	158
5+ years	55.10%	326

Table 3.5. Logistic regression models for the intention to have a second child within 3 years

	Model 1 OR	Model 2 OR	Model 3 OR	Model 4 OR	Model 5 OR	Model 6 OR	Model 7 OR	Model 8 OR	Model 9 OR
Religiosity (Ref=No religious affiliation)									
At least monthly attendance	1.38***	1.48***	1.54***	1.53***	1.61***	1.62***	1.90***	1.89***	1.88***
Less than monthly attendance	1.13*	1.15*	1.18**	1.18**	1.19**	1.20**	1.46***	1.45***	1.44***
Age (Ref=30–34)									
20–29		1.11*	1.09	1.13**	1.19***	1.20***	1.24***	1.23***	0.97
35–39		0.46***	0.46***	0.46***	0.44***	0.44***	0.41***	0.42***	0.49***
40–49		0.17***	0.17***	0.17***	0.16***	0.16***	0.13***	0.13***	0.16***
Marital status (Ref=Cohabitant)									
Married			0.78***	0.75***	0.74***	0.74***	1.12	1.12	1.2***
Educational level (Ref=Low)									
Medium				1.14	1.16*	1.15	1.02	1.02	0.99
High				1.64***	1.76***	1.73***	1.48***	1.45***	1.32***
Sex (Ref=Female)									
Male					1.49***	1.49***	1.51***	1.51***	1.38***
Activity status (Ref=Inactive)									
Employed/Self-employed						1.02	1.10	1.09	1.1
Unemployed						0.90	0.88	0.88	0.89
Countries (Ref=Bulgaria)									
Russia							0.75***	0.75***	0.77***
Georgia							3.45***	3.51***	3.25***
Germany							1.18	1.19	0.99
France							3.33***	3.34***	2.74***
Romania							0.87	0.89	0.86
Austria							2.05***	2.03***	1.7***
Lithuania							1.22*	1.25**	1.2*
Poland							1.37***	1.37***	1.2*
Czech Republic							2.11***	2.13***	1.98***
Sweden							6.82***	6.85***	5.13***
Grandparenting regular (Ref=No)									
								1.13**	1.09
Age of the youngest child (Ref=0–1 year)									
2–4 years									0.95
5+ years									0.49***
No.=	7043	7043	7043	7043	7043	7043	7043	7043	7043
Log likelihood=	-4868	-4562	-4555	-4530	-4500	-4499	-4325	-4323	-4261

***p<0.01 **p<0.05 *p<0.1

Table 3.6. Logistic regression models for the intention to have a third child within 3 years

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	OR	OR	OR	OR	OR	OR	OR	OR	OR
Religiosity (Ref=No religious affiliation)									
At least monthly attendance	1.66***	1.69***	1.80***	1.70***	1.81***	1.73***	1.94***	1.94***	1.95***
Less than monthly attendance	1.32**	1.35**	1.36**	1.31**	1.35**	1.31**	1.40**	1.40**	1.38**
Age (Ref=30–34)									
20–29		1.43***	1.34***	1.50***	1.59***	1.53***	1.55***	1.55***	1.34***
35–39		0.54***	0.55***	0.53***	0.50***	0.51***	0.51***	0.51***	0.59***
40–49		0.31***	0.32***	0.29***	0.26***	0.26***	0.23***	0.23***	0.31***
Marital status (Ref=Cohabitant)									
Married			0.54***	0.51***	0.51***	0.51***	0.70***	0.70***	0.74***
Educational level (Ref=Low)									
Medium				1.30**	1.31**	1.36**	0.93	0.93	0.91
High				2.39***	2.50***	2.67***	1.56***	1.56***	1.41**
Sex (Ref=Female)									
Male					1.62***	1.77***	1.67***	1.68***	1.57***
Activity status (Ref=Inactive)									
Employed/Self-employed						0.64***	0.83*	0.82*	0.81*
Unemployed						0.70**	0.96	0.96	0.96
Countries (Ref=Bulgaria)									
Russia							2.37***	2.38***	2.32***
Georgia							7.05***	7.09***	7.13***
Germany							3.22***	3.24***	2.87***
France							6.31***	6.31***	5.7***
Romania							1.25	1.26	1.2
Austria							4.73***	4.70***	4.23***
Lithuania							2.45***	2.46***	2.44***
Poland							2.60***	2.60***	2.36***
Czech Republic							3.35***	3.37***	3.3***
Sweden							5.77***	5.76***	5.13***
Grandparenting regular (Ref=No)									
								1.04	1.01
Age of the youngest child (Ref=0–1 year)									
2–4 years									0.86
5+ years									0.55***
No.=	9104	9104	9104	9104	9104	9104	9104	9104	9104
Log likelihood=	-3068	-2950	-2929	-2890	-2868	-2860	-2724	-2724	-2705

***p<0.01 **p<0.05 *p<0.1

Table 3.7. Logistic regression models for the intention to have a second or a third child within 3 years (with interactions)

	Model 1 OR	Model 2 OR	Model 1 OR	Model 2 OR
	1 child sample		2 children sample	
MAIN EFFECTS				
Religiosity				
At least monthly attendance	1.64***	1.53***	1.77***	1.66**
Less than monthly attendance	1.3**	1.2	1.37*	1.29
INTERACTION TERMS				
Religiosity*Grandparenting				
At least monthly attendance* Grandparenting regular	1.39*		1.28	
Attendance less than monthly* Grandparenting regular	1.29		1.04	
Religiosity*Sex				
At least monthly attendance* Male		1.58***		1.30
Attendance less than monthly* Male		1.43**		1.1
No. =	7043	7043	9104	9104
Log likelihood=	-4259	-4257	-2704	-2705

Note: Control variables are religiosity, age, marital status, educational level, sex, activity status, country, grandparental childcare, and age of the youngest child.

***p<0.01 **p<0.05 *p<0.1

Table 3.8. Logistic regression models for the intention to have a second or a third child within 3 years (interactions using the importance of religious ceremonies variable)

	Model 1 OR	Model 2 OR	Model 1 OR	Model 2 OR
	1 child sample		2 children sample	
MAIN EFFECTS				
<i>Importance of religious ceremonies</i>	1.05***	1.06***	1.05***	1.05***
INTERACTION TERMS				
<i>Importance of religious ceremonies*Grandparenting regular</i>	1.09**		1.12***	
<i>Importance of religious ceremonies*Sex</i>		1.08		1.09*
No. =	7002	7002	9057	9057
Log likelihood=	-4230	-4232	-2688	-2691

Note: Control variables are religiosity, age, marital status, educational level, sex, activity status, country, grandparental childcare, and age of the youngest child.

***p<0.01 **p<0.05 *p<0.1

Table 3.9. Logistic regression models for the intention to have a second or a third child within 3 years (interactions using the grandparenting weekly variable)

	Model OR 1-child sample	Model OR 2-children sample
MAIN EFFECTS		
Religiosity		
At least monthly attendance	1.75***	1.91***
Less than monthly attendance	1.33***	1.46**
INTERACTION TERMS		
Religiosity*Grandparenting		
At least monthly attendance * Grandparenting weekly	2.51*	2.16
Less than monthly attendance* Grandparenting weekly	2.01**	1.12
No. =	7043	9104
Log likelihood=	-4258	-2703

***p<0.01 **p<0.05 *p<0.1

APPENDIX

Table 3.10. Regular grandparenting according to the level of religiosity, one-child and two-children samples

One child		Religiosity		
		At least monthly attendance	Less than monthly attendance	No religious affiliation
Grandparental childcare				
Yes		36.50%	37.80%	39.70%
No		63.50%	60.30%	60.30%
Two children		Religiosity		
		At least monthly attendance	Less than monthly attendance	No religious affiliation
Grandparental childcare				
Yes		30.80%	30.70%	31.90%
No		69.20%	69.30%	68.10%

-CHAPTER FIVE-

Conclusion

5.1. Research aims

The main research question of this dissertation was *which are the key institutional, economic and cultural factors affecting the decision of having a child in European countries, at the micro level*. According to previous studies, fertility behavior across Europe is linked to economic conditions (Fahlén et Olah, 2018), family policies (Naldini and Jurado, 2013) and cultural background (King, 2003). Cultural and economic background affect fertility related behavior directly (chapters two and three), but also indirectly, through family policies (chapter four).

In the second chapter I focused on *how economic uncertainty* (a basic factor of low fertility in Europe; Barbieri and Bozzon, 2016) *affects the transition to first birth in Greece before and after the onset of the 2008 economic crisis*. Greece is of interest because is the country with the highest rates of youth unemployment in European Union (Eurostat accessed in July 2019), with poor welfare provisions for family, gender inequity into the household and the labor market, and one of the lowest total fertility rates of Europe (Barbieri and Bozzon, 2016; Balbo et al., 2013).

In the third chapter, we assume that religiosity affects fertility by enhancing sociability of active members of religious institutions and the support among them (King and Elder, 1999). Moreover, literature shows that in contexts with high religiosity the informal support (such as that of family) affect more decisively fertility related behavior than formal provisions, while in countries with low religiosity it happens the opposite (Guetto et al., 2015; Balbo et Mills, 2011). Thus, two more research questions of this dissertation were *how religious practice affects fertility intentions*, and *whether the grandparental childcare is an intermediate variable in the association between religiosity and fertility intentions*. I studied fertility intentions and not fertility behavior because fertility intention is more directly shaped by religious beliefs than fertility behavior (Hayford and Morgan, 2008).

In the fourth chapter, I focused on the 2007 German reform that aims to reinforce gender equity both in the household and in the labor market (Geisler and Kreyenfeld, 2019). My research

questions were *what are the main determinants of father's parental leave uptake in Germany, throughout the country, but also between West and East Germany, and how did the reform of 2007 affect the fathers' use of parental leave and how did the partners' determinants of use of parental leave change after 2007.*

For the purposes of these research questions I used databases from three surveys: (1) EU- SILC (European Union Statistics on Income and Living Conditions), (2) GGP (Generations and Gender Programme), and (3) G-SOEP (German Socio-Economic Panel). The first survey collects comparable and multidimensional micro-level data on income, poverty, social exclusion, housing, work, education and health across Europe. The GGP survey collects comparable and multidimensional micro-level data on fertility, partnership, the transition to adulthood, economic activity, care duties and attitudes in twenty developed countries (eighteen among them are European). G-SOEP provides information on “objective living conditions, values, willingness to take risks, current social changes, and the relationships and interdependencies among all these areas” in Germany.

The conclusion of the dissertation is structured as follows. In the second section, I discussed how economic uncertainty and the 2008 economic crisis affected fertility behavior in Greece. In the third section, the results on the impact of religious practice on fertility intentions in eleven European countries were examined. In the fourth section, I discussed results on the link between socio-economic characteristics and men's use of parental leave in Germany. Finally, in the fifth section, I point out the limitations of this dissertation, and based on its findings I propose future research.

5.2. Economic uncertainty and fertility behavior

The research questions concerning the effect of economic uncertainty on fertility behavior and how this association changed with the 2008 economic crisis were considered in the second chapter. Our findings show that Greek couples in which both partners are employed with a permanent contract, have a high income, or are highly educated are in a more favourable position to have a first child. These results show the importance of economic stability to have a first child in the Greek context. Moreover, these findings seem to confirm the theory of relative resources: highly educated women are in a well bargaining position, and this fact allows them

to negotiate partner involvement in family work (Goldscheider et al., 2015; Coltrane, 2000). The fact that in Southern European countries the accumulation of resources is a prerequisite for educated persons for entry into unions (Hank, 2007), do not allow us to conclude whether the higher fertility of more educated couples is the result of their cultural specificities (in particular gender attitudes), or whether higher education means also greater economic conditions. The fact that we control for income in our study should favor the gender attitudes hypothesis.

Concerning the 2008 economic crisis, there are two findings: firstly, the likelihood to have a first child decreased strongly after 2009. This may be related to the worsening of economic indicators, and more specifically to the increase of youth unemployment (that reached 58.3% in 2013; Eurostat accessed in July 2019) and of the women's unemployment (that reached 31.4% in 2013; Eurostat accessed in July 2019). Secondly, concerning the effect of the Great Recession on social groups, male breadwinner couples were particularly penalized in their transition to have a first child. Surprisingly, couples with at least one temporary worker, usually the woman, were encouraged to have their first child compared to couples where both partners have a permanent contract. One interpretation is that lower prospects during the crisis may have convinced temporary workers, more often women, to have a first child.

5.3. The effect of religious practice on fertility intentions

The research question “Does religious practice have a positive effect on fertility intentions?” was considered in the third chapter. In this chapter, I focused on eleven European countries chosen with the criterion of their level of religiosity and family support: Georgia and Romania represent countries with high level of religiosity and informal support, while Czech Republic and Sweden have opposite features (Di Gessa et al., 2016; Thévenon, 2011; Blum, 2009). The results show that religious practice is positively related to fertility intentions. This result confirms previous literature showing that religious teachings promote ideals, norms and behavior linked with higher fertility (Stonawski et al., 2015; Baudin, 2015; Adsera, 2006a), and those who are more affected by these teachings are active members of a religious affiliation (Philipov and Berghammer, 2007). The most important results concern the fourth research question of this dissertation: “Is the grandparental childcare an intermediate variable in the association between religiosity and fertility intentions?”. The study does not confirm this hypothesis. However, it shows the modifying role of the grandparental childcare on the

relationship between religiosity and fertility intentions. Our study enriches the still scarce literature on mechanisms of action of religiosity. Based on these results, I can conclude that due to their stronger familism, most religious grandparents try to establish a positive family relationship with adult children and grandchildren, promoting fertility intentions.

5.4. The determinants of the use of parental leave by men

The research questions concerning the socio-economic characteristics of men's use of parental leave in Germany are answered in the fourth chapter. The results of the multi-level analysis (random effects models) show, firstly, that the reform had a clear positive effect on the men's use of parental leave. Thus, I can conclude that the benefits introduced with the reform of 2007 created a more advantageous economic situation for men, reducing their opportunity costs and allowing them to use the parental leave (Schober, 2014).

However, with the reform, the increase of the use of parental leave by men was not the same in all the social groups. The results showed that the reform increased the chances of using the parental leave for men in highly educated homogamous couples. We can say that the parental leave policy affects more strongly men who already have equal gender attitudes, such as highly educated men (Geisler and Kreyenfeld, 2019). Other results of our study showed that men are more prone to use the parental leave when their female partner has a higher income compared to low-low couples. The results confirm the theory of relative resources: more than the characteristics of the father himself, the comparison of opportunity costs between the two partners determines more decisively his decision to obtain the parental leave (Geisler and Kreyenfeld, 2011). However, this effect was greater before than after the reform. This probably indicates how favorable the reform was for the "low-low" couples as well (Schober, 2014).

Men in couples where both partners have German nationality are also more prone to use parental leave. The reasons could be economic and cultural since German nationality is associated with more equal gender attitudes and with more stable employment status compared to non-Germans (Frattini, 2017).

Overall, on the base of these findings, men's use of parental leave in Germany seems to be related to their lower opportunity costs and to couples' cultural background (education and nationality).

5.5. Limitations of the dissertation and future research

The dissertation has some limitations. Most of them are related to the information available in the data sets and to the small samples.

In the analysis of the second chapter, taking into account the fact that Greece is among the countries with the highest percentages of young adults living with their parents in Europe (Eurostat accessed in August 2019), a considerable part of adults is excluded from my analysis. Another limitation is that, because of the small size of our sample, we are unable to disentangle the effect of the single year of the crisis. Despite these limitations, Greece has been rarely taken into consideration by demographers, especially, after the onset of the 2008 economic crisis. Future studies could extent the research on the post-crisis period (e.g. on the COVID-19 recession).

Concerning the analysis of the third chapter, the main limitation is the lack of information on religion in several countries. For example, countries, such as Australia, do not have questions on religion, while Netherlands and Hungary lack information on attendance at religious services. This reason limited the number of countries to eleven: Bulgaria, Russia, Georgia, Germany, France, Romania, Austria, Lithuania, Poland, Czech Republic and Sweden.

Additionally, as in previous studies focusing on the association between religiosity and fertility related behavior, there is the possibility of a reverse causality: the question is whether men and women have higher fertility intentions because they are more religious, or the formation of a family led them to a more active religiosity (Frejka and Westoff, 2008). Even with these limitations, comparative studies on men's religiosity and fertility intentions in Europe are still rare, and even rarer are those focusing on the mechanisms of the association between religiosity and fertility. In particular, at my knowledge, the modification effect of grandparenting has not been considered before. Considering that the sources of informal support (such as that of family) are complementary to those of formal support (Balbo and Mills, 2011), a potential future

research could study how the effect of religiosity on fertility related behavior varies by type of welfare state.

As about the fourth chapter, the number of men in parental leave is very small, even after the reform of 2007. This could explain why the interaction of the period with, respectively, contract duration and nationality has no statistically significant effect on the men's use of parental leave. Another limitation of this analysis is that an important share of men declare themselves inactive even when they are on leave, and, for this reason, I could not study also the effect of the couple's employment status.

Moreover, as already stated, the main novelty of the dissertation is the couple's approach. Even if this approach allowed me to observe how the interactions and the negotiations between partners affect their decisions on family related issues, it limited my analysis to partnered persons only. Specifically, in the analysis of the father's parental leave uptake, I did not observe the behavior of single fathers (who constitute a considerable part of fathers in developed countries). This could be an interesting topic for a future analysis.

Despite these limitations, as I stated above, the study of the fourth chapter is one of the rare focusing on the determinants of the father's leave uptake after the reform of 2007, and, at my knowledge, the first one that used G-SOEP database. Based on that, I should point out that future studies could extent the research on the effects of the German reform of 2007 on men's gender attitudes. This is particularly important considering that the policies introduced with the reform of 2007 are in contradiction with the tradition of a German welfare state that until 2007 was supporting the male- breadwinner family (Geisler and Kreyenfeld, 2019).

The association between Europeans' socio-economic characteristics and fertility behavior have changed in the last fifty years. At least two processes can be identified: the first concerned the second demographic transition and the second the gender revolution. A more recent change in the association is related to the 2008 economic crisis. On this respect, recent studies show a different reaction of each European society on the new conditions. In some cases, the reaction resembles a return to traditional attitudes, such as the reinforcement of intergenerational relations in some Mediterranean countries; Golaz et al., 2018). In other cases, such as Spain and Sweden, the crisis did not cancel the main changes of the last fifty years: the more active participation of women in the labour market in Spain (Naldini and Jurado, 2013) or the greater involvement of men in household tasks in Sweden (Goldscheider et al., 2015). All the three processes have been taken into account in the present thesis. Future studies concerning the post-

crisis demographic behavior in Europe should more systematically consider how the 2008 economic crisis (but also the recent pandemic crisis) modified the association between cultural and socio-economic characteristics and fertility behavior across Europe in a comparative perspective.

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-APPENDIX-

Variable's name in the dissertation	Variable's name in the initial database	Code	Question (if available)
EU Statistics on Income and Living Conditions			
Woman's age	Age at the end of the income reference period	px020	
Woman's marital status	Consensual Union	pb200	
Woman's region of residence	Region (NUTS 1 or 2 (CZ, ES, FI, FR: NUTS2))	db040	
Degree of urbanisation	Degree of urbanisation (EE,LV:lbl 2,1=1 ; MT:lbl 2,3=2)	db100	
Period	Year of the Survey	pb010	
Couple's Education	Highest ISCED level attained (Top coding at 5/500 for year <2014)	pe040	
Couple's Activity Status	Self-defined current economic status	pl030	
	Status in employment	pl040	
	Most recent change in the individuals activity status	pl180	
	Main activity status during the income reference period	rb170	
Couple's Income	Employee cash or near cash income(net)	py010n	
	Non-Cash employee income(net)	py020n	
	Contributions to individual private pension plans(net)	py035n	
	Cash benefits or losses from self-employment(net)	py050n	
	Pension from individual private plans(net)	py080n	

Variable's name in the dissertation	Variable's name in the initial database	Code	Question (if available)
Couple's Contract Duration	Unemployment benefits(net)	py090n	
	Old-age benefits(net)	py100n	
	Survivors Benefits (net)	py110n	
	Sickness Benefits(net)	py120n	
	Disability Benefits(net)	py130n	
	Education-related allowances	py140n	
	Type of contract	pl140	

Variable's name in the dissertation	Variable's name in the initial database	Code	Question (if available)
Generations and Gender Programme			
Fertility intentions to have a third child during the next 3 years	Intention to have a child during next 3 yrs	a622	<i>Do you intend to have a/another child during the next three years?</i>
Age	Age Responent	aage	
Marital status	Marital Status Respondent	amarstat	
	Current Partner Status	aparstat	
Education	Highest Education Level of Respondent	aeduc	
	Highest reached education level (country-spec. list)	a148	<i>What is the highest level of education you have successfully completed?</i>
Religiosity	Religion (should be countryspec. list)	a1101	<i>Which religious denomination do you adhere to, if any?</i>
	Number of time attending religious service	a1102	<i>How often, if at all, do you attend religious services (apart from weddings, funerals, baptisms, and the like)?</i>
	Time unit of religious service attendances	a1102u	<i>How often, if at all, do you attend religious services (apart from weddings, funerals, baptisms, and the like)?</i>
	Frequency of religious service attendances per month	a1102mnth	<i>How often, if at all, do you attend religious services (apart from weddings, funerals, baptisms, and the like)?</i>
Grandparental childcare	Regular help with child care (for whom caring for children is not a job)	a204a	<i>Do you (also) get regular help with childcare from relatives or friends or other people for whom caring for children is not a job?</i>
	Person 1 from whom help is received	a204b_1	<i>From whom do you get this help?</i>
	Person 2 from whom help is received	a204b_2	
	Person 3 from whom help is received	a204b_3	
	Person 4 from whom help is received	a204b_4	
	Person 5 from whom help is received	a204b_5	
	Person 6 from whom help is received	a204b_6	

Variable's name in the dissertation	Variable's name in the initial database	Code	Question (if available)
German Socio-Economic Panel database			
Leave	Maternity, Paternity Leave	plb0019	<i>Are you currently on maternity leave (Mutterschutz) or on statutory parental leave (Elternzeit)?</i>
Age	Year of birth	ple0010	<i>In which year and month are you born?</i>
Period	Survey Year	syear	
Region	Region of Residence	l11102	
Partnership status	Status of partnership	parinfo	
Number of children	Number of Children in Household	d11107	
Age of children	Number of Household members age 0-1	h11103	
	Number of Household members age 2-4	h11104	
	Number of Household members age 5-7	h11105	
Sex	Gender	pla0009	<i>Please give details of the target subject</i>
Couple's income	Net Income Last Month	plc0014	<i>How much is your earned income from your work last month? If you had extra income in the last month, e.g.: vacation pay or subsequent payments, please do not include these. But please include overtime payments. If you are self-employed, please estimate your monthly income before and after tax. If possible, please state both: your gross income, which means income before tax and social security deductions and your net income, which means income after tax, social security, unemployment and health insurance deductions.</i>
Couple's nationality	German Nationality	plj0014	<i>Do you have German citizenship?</i>
	Nationality	plj0015	
	Country Of 2. Nationality	plj0023	
	Nationality	plj0025	<i>What is your country of citizenship?</i>
Couple's education	Amount of education or training (in years)	pgbilzeit	
Couple's contract duration	Duration of work contract	plb0037	<i>Do you have a fixed-term or permanent employment contract?</i>

Summary

In order to answer the research questions of this thesis, three chapters are produced. The first is devoted to the association between economic uncertainty and the transition to first birth in Greece. The second chapter tries to investigate if religious practice correlates with fertility intentions in eleven European countries (Bulgaria, Russia, Georgia, Germany, Romania, Austria, Lithuania, Poland, Czech Republic and Sweden). Finally, the third chapter is devoted to the link between the socioeconomic characteristics of the couple and the use of parental leave by the father in Germany.

In the second chapter, I answer the research questions regarding the effect of couples' economic uncertainty on their fertility in Greece, and how the 2008 Great Recession has affected the fertility of couples in the same country. In this chapter, the database used is EU-SILC (European Union Statistics on Income and Living Conditions), and more precisely the waves from 2005 to 2013, in order to cover the period prior to the economic crisis of 2008 and the period of crisis. The results show a double path towards the first birth as a Greek specificity. First, couples where both partners have a high income are more likely to have a first child, while couples where both partners have a permanent contract are also more likely to have a first child. Second, high educational homogamy and hypogamy are positively associated with first birth. This result could indicate an advantage for educated women in negotiating partner involvement in family work and / or in the outsourcing of family work. Finally, during the Great Recession of 2008, all types of household organization - even couples where both partners work with a permanent contract - decreased their likelihood of having a first child. This result allows me to conclude that an economic recession can worsen expectations about the future and reduce the likelihood of having a child, even for people in good jobs. Particularly in the case of Greece, where the shrinking of the welfare state during the crisis of 2008 made the balance between work and family even more difficult.

The research question on the association of religious practice with fertility intentions is dealt with in the third chapter. In this chapter, in order to measure the link between religious practice and fertility intentions, I used data from the GGP (Generations and Gender Program) for eleven European countries, and I used the first wave of these databases. The results show that there is a positive correlation between religious practice and fertility intentions: People who attend

religious services at least once a month are more likely to want a second and third child than those who attend less. This result confirms previous literature showing that religious teachings promote pronatalist ideals, norms and behaviours, and those who attend religious services are more attached to these teachings. In addition, the results verify that the association between religiosity and fertility intentions is modified by the grandparents' regular help with childcare in the case of the transition to the second child. Based on these results, I can conclude that due to their stronger familism, most religious grandparents try to establish a positive family relationship with adult children and grandchildren, promoting fertility intentions.

The research questions concerning the link between the socioeconomic characteristics of the couple and the use of parental leave by the father in Germany are answered in chapter four of the thesis. This chapter focuses on the main determinants of the use of parental leave by the father in Germany and on the impact of the 2007 reform on the use of parental leave by men. In this chapter, another point of interest is whether the determinants of the use of parental leave have changed with the reform of 2007. The database used is the G-SOEP (German Socio-Economic Panel) which provides information on current living conditions, values, social changes, as well as the relationships and interdependencies between these areas. The analysis is based on data from 2001 to 2016 and the final sample includes couples in which adult men are under the age of 55 and have at least one child under the age of 8. The results show first of all that the reform doubled the percentage of use of parental leave by fathers. The effect of the reform was stronger among well-educated homogamous couples. From these results it can be concluded that the reduction in the opportunity costs associated with the benefits of the reform further increased the use of parental leave among men who already had egalitarian gender attitudes (such as highly educated men). Finally, the results show that men with a partner with a higher education or higher income are more inclined to use parental leave than other men. These results confirm the theory of relative resources: more than the characteristics of the father himself, the comparison of the opportunity costs between the two partners more decisively determines his decision to obtain parental leave.

Finally, in the fifth chapter, I present the main results of the analysis, the limits of this thesis and I propose future research.

Resumé en français (summary in French)

Afin de répondre aux questions de recherche de cette thèse, trois chapitres sont produits. Le premier est consacré à l'association entre l'incertitude économique et la transition vers la première naissance en Grèce. Le deuxième chapitre essaie de voir si la pratique religieuse est-elle corrélée aux intentions de fécondité dans onze pays européens (Bulgarie, Russie, Géorgie, Allemagne, Roumanie, Autriche, Lituanie, Pologne, République tchèque et Suède). Enfin, le troisième chapitre est consacré au lien entre les caractéristiques socioéconomiques du couple et l'utilisation du congé parental par le père en Allemagne.

Dans le deuxième chapitre, je réponds aux questions de recherche concernant l'effet de l'incertitude économique des couples sur leur fécondité en Grèce, et comment la Grande Récession de 2008 a affecté la fécondité des couples dans le même pays. Dans ce chapitre, la base des données utilisée est EU- SILC (Statistiques de l'Union Européenne sur le Revenu et les Conditions de Vie), et plus précisément les vagues de 2005 à 2013, afin de couvrir la période antérieure à la crise économique de 2008 et la période de crise. Les résultats montrent une double voie vers la première naissance comme spécificité grecque. Premièrement, les couples où les deux partenaires ont un revenu élevé ont plus de chances d'avoir un premier enfant, tandis que les couples où les deux partenaires ont un contrat à durée indéterminée sont également plus susceptibles d'avoir un premier enfant. Deuxièmement, une homogamie et une hypogamie élevées en termes d'éducation sont associées positivement à la première naissance. Ce résultat pourrait indiquer un avantage pour les femmes instruites dans la négociation de l'implication des partenaires dans le travail familial et / ou dans l'externalisation du travail familial. Enfin, pendant la Grande Récession de 2008, tous les types d'organisation du ménage - même les couples où les deux partenaires travaillent à un contrat de durée indéterminée - ont diminué leur probabilité d'avoir un premier enfant. Ce résultat me permet de conclure qu'une récession économique peut aggraver les attentes quant à l'avenir et réduire la probabilité d'avoir un enfant, même pour les personnes occupant un bon poste de travail. Surtout dans le cas de la Grèce, où le rétrécissement de l'État providence pendant la crise de 2008 a rendu encore plus difficile l'équilibre entre travail et famille.

La question de recherche sur l'association de la pratique religieuse avec les intentions de fécondité est traitée au troisième chapitre. Dans ce chapitre, afin de mesurer le lien entre la

pratique religieuse et les intentions de fécondité, j'ai utilisé des données du GGP (Programme Générations et Genre) pour onze pays européens, et j'ai utilisé la première vague de ces bases de données. Les résultats montrent qu'il existe une corrélation positive entre la pratique religieuse et les intentions de fécondité : les personnes qui fréquentent les services religieux au moins une fois par mois sont plus susceptibles de vouloir un deuxième et un troisième enfant que celles qui fréquentent moins. Ce résultat confirme la littérature antérieure montrant que les enseignements religieux promeuvent les idéaux, les normes et les comportements pronatalistes, et ceux qui fréquentent les services religieux sont davantage attachés à ces enseignements. De plus, les résultats vérifient que l'association entre religiosité et intentions de fécondité est modifiée par l'aide régulière des grands-parents à la garde des enfants dans le cas de la transition au deuxième enfant. Sur la base de ces résultats, je peux conclure qu'en raison de leur familisme plus fort, la plupart des grands-parents religieux s'efforcent d'établir une relation familiale positive avec les enfants adultes et les petits-enfants, favorisant ainsi les intentions de fécondité.

Les questions de recherche concernant le lien entre les caractéristiques socioéconomiques du couple et l'utilisation du congé parental par le père en Allemagne reçoivent une réponse dans le chapitre quatre de la thèse. Ce chapitre porte sur les principaux déterminants de l'utilisation du congé parental par le père en Allemagne et sur l'impact de la réforme de 2007 sur l'utilisation du congé parental par les hommes. Dans ce chapitre, un autre point d'intérêt est de savoir si les déterminants de l'utilisation du congé parental ont changé avec la réforme de 2007. La base de données utilisée est le G-SOEP (le Panel Socio-Economique Allemand) qui fournit des informations sur les conditions de vie, les valeurs, les changements sociaux actuels, ainsi que sur les relations et les interdépendances entre ces domaines. L'analyse est basée sur des données de 2001 à 2016 et l'échantillon final comprend des couples dont les hommes adultes ont au moins un enfant de moins de 8 ans et ont moins de 55 ans. Les résultats montrent tout d'abord que la réforme a doublé le pourcentage de l'utilisation du congé parental par les pères. L'effet de la réforme a été plus marqué chez les couples homogames très scolarisés. De ces résultats on peut conclure que la réduction des coûts d'opportunité liés aux avantages de la réforme a renforcé encore plus le recours au congé parental chez les hommes ayant déjà des attitudes de genre égalitaires (tels que les hommes hautement instruits). Enfin, les résultats montrent que les hommes ayant un partenaire d'une éducation supérieure ou d'un revenu supérieur sont plus enclins à utiliser un congé parental que les autres hommes. Ces résultats confirment la théorie des ressources relatives : plus que les caractéristiques du père lui-même, la comparaison des

coûts d'opportunité entre les deux partenaires détermine de manière plus décisive sa décision d'obtenir un congé parental.

Enfin, dans le cinquième chapitre, je présente les principaux résultats de l'analyse, les limites de cette thèse et je propose des pistes de recherche futures.