LWS
Working Paper Series

No. 40

Grandparents "on Board": How They Translate into the Number of Their Young Grandchildren

Filip Chybalski, Edyta Marcinkiewicz

February 2023

Luxembourg Income Study (LIS), asbl

Grandparents “on board”:
How they translate into the number of their young grandchildren

Filip Chybalski*
Lodz University of Technology, Wólczańska 221, 93-005 Lodz, Poland,
email: filip.chybalski@p.lodz.pl, ORCID ID: 0000-0001-9555-8741

Edyta Marcinkiewicz
Lodz University of Technology, Wólczańska 221, 93-005 Lodz, Poland,
email: edyta.marcinkiewicz@p.lodz.pl, ORCID ID: 0000-0002-2229-4084

*Corresponding author

Funding: This study was funded by the National Science Centre, Poland (Grant No. 2016/23/B/HS4/01772)

Key words:
- family policy
- fertility,
- children, kids
- old, elderly, aged.

JEL codes: J13, J12, H31

Abstract

We test whether the co-residence of older parents with their adult children at the reproductive age increases the chance of forming a multi-child family. Using data from Wave X of the Luxembourg Wealth Study (LWS) and multinomial logistic regression, we model the number of children using the binomial variable informing if there is an older household member (or not) as the main predictor and controlling for other socio-economic household attributes. Our data set covers 11 European countries. The results do not support the view that intergenerational households in which an elderly person lives include more children. Thus, the co-residence of two adult generations of parents-pensioners and their working-age children does not stimulate growth in the number of multi-child families. The results suggest that what matters for it is the gender equality policy facilitating solving of the motherhood-work conflict for families and women.

1. Introduction

Both Europe and the United States have experienced a very serious problem of population ageing deteriorating growth and welfare perspectives for decades. People live longer and simultaneously fewer children are born. The total fertility per woman ensuring generation replacement (i.e. 2.1) is now unachievable for developed countries. In Europe, only Georgia is quite close to this level, reporting a fertility rate over 2.0 in last few years; however, this is with a decreasing trend. In 2020, it was 1.98 according to Eurostat data. Across the most developed European countries, France dominates in these terms with a fertility rate exceeding 1.8 in 2020. Spain and Malta experience low fertility, mostly with rates below 1.2. Data show that the problem is vague and its solution or at least mitigation is receiving special attention and concern from demographers and other social researchers. This finds confirmation in plenty of empirical analyses focused on various fertility factors. At the general institutional level, the development of a welfare state over recent decades is said to be one of factors hampering fertility. The state as a generous caregiver decreases the role of children being perceived as their parents' investment. Relatively high public pension benefits have undermined the necessity to have offspring providing benefits in cash or in kind (Billari & Galasso, 2009). This is reinforced by difficulties that women experience trying to combine work and motherhood; that is why formal childcare and, according to evolutionary theory, kin ease this dilemma (Kaptijn et al., 2010). Therefore, grandparental support is mentioned as one of the crucial factors affecting household or extended family fertility decisions depending on the more selfish or altruistic behaviour of individuals (Altonji et al., 1992). Grandparents are considered to be a supportive power in childcare, affecting fertility positively in this way (Hoem, 2008; Kaptijn et al., 2010). However, it may depend on the wealth level of a country – in cases of wealthier countries (France, Norway), grandparents not only through offering childcare, but also through their emotional support, drive fertility. This, in contrast, is not observed in poorer countries (e.g. Lithuania) (Tanskanen & Rotkirch, 2014). Although research suggests that positive multigenerational relations support fertility (Hoem, 2008; Tanskanen & Rotkirch, 2014), US data show that an increasing number of people living in multigenerational households (today it is about four times greater than it was in the 1970s by a significantly lower increase in the number of other types of household, see: Kochhar & Cohn, 2011) does not translate into increasing fertility.

Although a lot of research addresses the impact of grandparents supporting their adult children with childcare, the impact of the multigenerational character of a household has received less attention. We address this gap and hypothesise that where grandparents live can matter, i.e. whether they live in the same household with their adult children or not. We investigate whether a household is multigenerational or not through the inclusion of a binomial variable explaining whether a household includes or does not include any older members (i.e. aged 65 years or older) in models describing the number of young people (children or youths) living in the same home. Consequently, we account for two possible circumstances that may affect fertility in a negative way: the number of household members and potential overcrowding problems, as well as co-residence with parents as a socio-economic barrier (not a favourable condition) to having children (or more children).

In testing the mentioned nexus we use data from the Luxembourg Wealth Study (LWS). Our data set covers the following countries: Austria, Germany, Estonia, Spain, Finland, Greece, Italy, Luxembourg, Norway, Slovenia and Slovakia. The findings do not support the view that intergenerational households, in which grandparents live, include more children aged 13 or under, or 17 or under. Thus, co-residence of two adult generations of parents-pensioners and their working-age children does not stimulate growth in the number of multi-child families. The results deliver some arguments that what can matter is gender equality policy facilitating solving of the motherhood-work conflict for families and women.

The paper contributes to the strand of literature addressing the driving forces of fertility, particularly centring on the family constellation and referring to multigenerational families. Although the majority of models used in previous studies explain the fertility decision as such (to have or not have

a child), we focus on the number of children, particularly interpreting the results with reference to multi-child families. What distinguishes our investigation is the use of the co-residence of two adult generations in the same home as the main predictor, whereas other research focuses on grandparents' support and rather disregards the co-residence issue. Using microdata from LWS for 11 countries, we conduct a cross-national study while single-country analyses dominate in the literature. Additionally, we account for family and gender-equality components of public policy, which allows for the development of some policy implications of our research.

The remainder of the paper is structured as follows. In the literature review section, we discuss theoretical concepts of children as consumption and investment goods, refer to the theoretical grounds of family policies and summarise the vast body of empirical studies on the driving forces of fertility with special attention focused on grandparents' support. Subsequently, we characterise data used and present and justify our methodological approach. The two last sections include presentation and discussion of the results, ending with final conclusions.

2. Literature review

In 1997, Robinson, referring to the vast body of demographic literature and noticing an "intellectual triumph" of "economic model" as "the most widely used framework" for studying fertility, argued that there is much to explain in fertility around the world. There are two main theoretical approaches to fertility mentioned in the literature. One approach is based on the assumption that a child is a consumption good; the other assumes a child to be an investment good. According to the consumption theory of fertility developed by Leibenstein (1957), a couple weighs up utilities and disutilities when making a decision about having (or not having) the first or subsequent child, obviously maximising their lifetime utility. Then, Becker (1965) completed this model with neoclassical assumptions (including fixed preferences and maximising behaviour) and placed fertility in the broad context of household economics. An important development in the fertility model included an altruistic motive. Becker's (1974) "altruistic model" or collective choice assumes an altruistic parent and egoistic but rational children. An altruist is eager to reduce their own consumption to increase the children's consumption as altruist's utility is a function of both their own and their children's consumption. An increase in each of these consumption levels results in an increase in an altruist's utility function. In the "consumption" motive of fertility, parents call for demand on services that children are able to provide. Consumption of these services generates pleasure for parents, i.e. increases their lifetime utility. The altruistic model adds an additional source of utility, which is altruism. This factor matters for a household head who takes pleasure in their own altruistic behaviour towards children.

In another theory, a child is perceived as an investment good and a tool for smoothing consumption over the life cycle. Having children causes many types of expenditure, among which education receives special attention. Expenditure on children's education requires earlier saving and saving is perceived as delayed consumption. For this reason, this theory of fertility is linked to the retirement income motive as parents want to have children to ensure their own income (from children) when they retire and will not work. Parents, to combine a present and future income in an optimal way, use an appropriate number of children. The theory of children as an investment good has a long tradition and dates back at least to Mill; however, it was also later mentioned e.g. by Friedman or Neher (Cochrane, 1975).

The vast body of empirical research attempts to verify whether parents perceive children more as consumption or investment goods. Fenge and Scheubel (2014) conduct an interesting simulation study based on an overlapping generations methodological framework for Imperial Germany between the late 1890s and early 1900s, i.e. directly after the launch of Bismarckian pension system. They show a negative impact of the generosity of public social security on fertility. Favourable conditions to test the consumption versus investment theory of fertility were found by Billari and

Galasso (2009), who use Italian pension reform from the 1990s as a natural experiment.[1] They test if the retrenchment of pensions affects fertility positively which would suggest that children are an investment good in the perception of Italian couples. The lower expected pension benefits as the outcome of the reform should then motivate young adults to have children to secure their future retirement income. The results of the comparison of data before and after the reform show an increase in fertility, which confirms the hypothesis that children play the role of an investment good in this case. Some other studies also prove this hypothesis to be true (for review: Danzer & Zyska, 2020; Rossi & Godard, 2019; Shen et al., 2020).

The mentioned strand of literature focusing on microeconomic factors of a household's fertility decisions is accompanied by another one referring to macroeconomic determinants, including governmental family policy. The fundamental premise behind this is the conflict between female-mother and female-worker, which potential parents face when making a fertility decision. The will or need of labour participation acts as a fertility constraint. On theoretical grounds, Rindfuss and Brewster (1996) expect that any easing of this conflict should result in a fertility rise, providing that other factors remain unchanged (*ceteris paribus* rule). This hypothesis is based on rational expectations of parents who are assumed to make their fertility decisions aiming at maximisation of their lifetime utility. Thereby, parents account for both possible costs and benefits of childbearing and behave in line with the microeconomic theories mentioned above, i.e. perceiving children as consumption or investment goods. As Gauthier (2007) notices, referring to Becker (1981) and Cigno (1991), a neoclassical theory of economics predicts that any support from the government resulting in the reduction of childbearing costs or an income growth, should cause a fertility increase. State family policy may be more familistic or defamilistic in its nature. The former is based on the idea of the family members' involvement in caring for children, which is identified with the "freedom of the family". The latter eases this involvement and supports the idea of "freedom from the family" (see for review: Leitner, 2003; Lohmann & Zagel, 2016). As women usually deliver care services within a family, the notion of defamilisation is sometimes narrowed to the notion of degenderisation. Some scholars even postulate the replacement of defamilisation with the notion of degenderisation (Saxonberg, 2013), but some others convincingly argue that they are irreplaceable (Kurowska, 2018). Nevertheless, in the context of family policy aimed at fertility stimulation, women should be placed at the central point as they personally face the motherhood-labour participation conflict. However, this conflict regards the male partners as well, since its solution determines the distribution of childbearing duties across parents. Familising (or genderising) family policy embraces means to encourage parents to organise the childcare within the family, usually involving mothers as caregivers which results in a labour supply decline. Defamilising (or degenderising) policy engages the state to offer public services that reduce family dependencies and facilitate the parents' (mainly mothers') return to the labour market. Familising or defamilising policies may also refer to grandparents' involvement in taking care of their grandchildren, which is important in the context of our study. Familising policy supports this involvement whereas defamilising policy does not. As a result, the former may act in a degenderising manner towards young mothers (replaced by grandparents in their childcare responsibilities), whereas the later, contrarily, may enhance genderising trends within a family.

Fertility is an outcome of both micro- and macroeconomic factors that affect couples' decisions on whether to have, and if yes, when to have children. A multigenerational context can be also very important as the support from grandparents with childcare may affect these decisions. Both intrafamily relations as well as macroeconomic policy may moderate this nexus. Nevertheless, in light of neoclassical economic theory, if any reduction in the cost of children or any increase in income

[1] The methodological approach to economic analysis recognised in 2021 by a Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, awarded to David Card (University of California), Joshua D. Angrist (Massachusetts Institute of Technology) and Guido W. Imbens (Stanford University) for their empirical research based on this approach.

due to possessing children increases fertility *ceteris paribus*, living in a multigenerational household with one or more older people acting as grandparents should result in a fertility increase. The reason is that grandparents can provide a household with free care services, which, if bought in the market, are costly. Even if the state provides families with such public services, which are free or cheaper, or subsidises such services delivered by the private sector, not all families are covered by this state support. Thus, intuition suggests that the grandparents' support facilitates parents in making fertility decisions. However, on the other hand, the multigenerational nature of a household may be the effect of some budget constraints of adult children, who cannot afford to rent or buy a house. Then, living with their aged parents is not a question of choice but necessity, caused by their economic situation. The question is whether such circumstances encourage or discourage couples to have children. The scenario in which the economic dependence or overcrowding problem may reduce the positive effect of living with aged parents, or even reverse it, should not be rejected *a priori*.

Who makes fertility decisions? Couples alone or maybe an extended family? Altonji et al. (1992) consider the issue of a basic economic decision-making unit and ask if it is a household or extended family. The life-cycle model and Keynesian models indicate that it is a household whose members act selfishly and do not include extended family members in the resource-sharing process. Contrarily, in the case of an altruistic motive, an extended family is the main decision-making unit. Their findings deliver arguments against the altruism model and additionally show that extended family members' resources affect household consumption modestly, at most. Thus, as a household is the main decision-making unit, the question is whether its extended form, i.e. multigenerational household, supports fertility. Do grandparents matter when their adult children make fertility decisions? The vast body of empirical literature delivers a positive answer to this question. Multigenerational co-residence, i.e. the generation of adult parents, their parents and their children living in one home, decreases childcare spending and increases spending on education (as compared to two-generational households). However, these differences vary across types of households and are moderated by parents' income and relationship status (Amorim, 2019). Kaptijn et al. (2010) refer to "the cooperative breeding hypothesis" which predicts that a wider set of kin stimulates females reproduction, which is strongly embedded in our evolutionary history. In line with this view, they argue that grandparents increase the chance for having children. Based on data gathered among Dutch grandparents, they ask about the frequency of taking care of their grandchildren and find that grandparents delivering childcare services enhance fertility; however, this is alongside accessibility to formal childcare. They finally state that fertility needs the compatibility between motherhood and work. This conflict, mentioned above, requires more gender equity at the institutional level, which seems to be obvious (e.g. access to work, equal salaries), but also, which is less obvious, within a family (McDonald, 2000). The grandparents' engagement in childcare supports this equity, acting as a degenderising factor (with reference to young mothers) enabling them to make a faster return to the labour market. This confirms some other pieces of research which demonstrate a positive impact of grandparents acting as caregivers for their grandchildren directly (Rutigliano & Lozano, 2022; Tanskanen & Rotkirch, 2014) or indirectly (Okun & Stecklov, 2021).

Although in the minority, there are also some studies suggesting more caution about the positive impact of co-residence with older parents on their adult children's fertility. Using Bulgarian data, Ghodsee and Bernardi (2012) demonstrate that in the case of some countries – especially post-communist ones – the nexus under investigation can be more complex and moderated by circumstances not observed in Western Europe, but particular for post-soviet regions. What causes Bulgarian factors behind low fertility to be different is the socio-economic side effect of the collapse of communism around 1990 as experienced by Central and Eastern European countries. The public childcare system then experienced a deep deterioration and families were, and very often still are, forced to buy such services in the market, from the private institutions or private persons. Many young couples cannot afford it due to income constraints. Therefore, they have to cohabit with their parents after the birth of their first child. For the same economic reason, they often refrain from having the second child as they treat moving out and buying or renting their own home as a priority.

This finding justifies our question of whether a multigenerational household always supports having more children. If one assumes that housing conditions matter for fertility decisions, young couples may weigh up the advantages of the grandparents' support in childcare on the one hand, and disadvantages of co-residence and sharing the limited living area on the other.

3. Data and method

We test the nexus between the multigenerational character of a household and the number of children living there, controlling for other socio-economic household attributes. We employ data from Wave X of the Luxembourg Wealth Study (LWS, 2022) comprising the years 2016–2017. Our data set covers the following countries: Austria (data for 2017), Germany (2017), Estonia (2017), Spain (2017), Finland (2017), Italy (2016), Norway (2016), Slovenia (2017), Slovakia (2017), Luxembourg and Greece (2018 – Wave XI, as data for the Wave X for these countries is not available in accordance with LIS Cross-National Data Center terminology, see at: https://www.lisdatacenter.org/our-data/lws-database/).

Our sample consists of 117,140 households with a head aged 20–45 years old, reflecting approximately the women's reproductive years. Naturally, this is a kind of a simplification since a household head may be and usually is a man. Nevertheless, it does not affect or bias the results significantly as multigenerational households in our sample are classified those in cases where: 1) a household head (the person with the highest income) is aged 20–45 years old, and 2) at least one household member is aged 65 years or older and is being paid pension benefit.

To test the impact of the multigenerational character of a household on fertility, we employ a multinomial logistic regression. Using such a model, one can estimate the probability a household with given characteristic counts a given number of children expressed as one of the category of dependent variable (Y=1, 2 or 3) as compared to the referential category (Y=0). If a dependent variable has *K* categories (j=1, 2, …, *K*), *K*-1 binomial logistic regressions are estimated with the *r* category as a referential one for each model:

$$\ln \frac{P(Y=j)}{P(y=r)} = \beta_{j0} + \sum_{i=1}^{m} \beta_{ji} \cdot x_i$$

Models are estimated independently for two variables: Mem13- and Mem17-, which reflect the number of household members aged 13 years or under and 17 years or under, respectively. However, we transform these two variables from a ratio scale into ordinal one: 0 for no children, 1 for one child, 2 for two children and 3 for three or more children. The tested factor reflecting the multigenerational character of a household is the residence of at least one person aged 65+ who is not a household head (binomial variable: 0 for no members aged 65+, 1 for one or more such members). The set of control variables includes the demographic and socio-economic characteristics of a household or its head: age, gender, marital and labour force status, homeownership, income and public or private transfers, country of residence and education. The predictors and control variables are characterised in table 1.

Table 1: Explanatory variable specifications

Explanatory variable	Description	Character
Mem65+	Household members aged 65 or older.	Binomial: 1 – yes, 0 – no
Pension	Household pension income from any pillar and of any type (not only old-age but also disability and survivor pensions).	Binomial: 1 – yes, 0 – no
Age	Age of a household head.	Continuous (years)
Sex	Gender of a household head.	Binomial: 1 – female, 0 – male
Partner	Household head living with a partner (refers only to co-residing partner only).	Binomial: 1 – yes, 0 – no
Marital_stat	Classification of a household head according to their marital status.	Binomial: 1 – married (married/in union, married, in consensual union, formerly married/formerly in union, separated, divorced, widowed); 0 – unmarried (not married/not in union, never married/never in union);
Emp	Employment as the main household head activity status.	Binomial: 1 – employed, 0 – not employed,
Home_own	Distinguishes between owned and not owned living quarters.	Binomial: 1 – homeowner, 0 – non-homeowner,
Income	Equivalised (i.e. divided by the square root of the number of household members) gross household income embracing the sum of cash and non-cash income from labour, capital, pensions (including both public and private pensions) and non-pension public social benefits stemming from insurance, universal or assistance schemes (including in-kind social assistance transfers), as well as cash and non-cash private transfers.	Continuous, adjusted by PPP to ensure cross-country comparability (thous. PPP)
Worth	Disposable net worth of the household is the sum of non-financial and financial assets as well as life insurance and voluntary individual pension accounts, excluding pension assets and other long-term savings, minus total liabilities.	Continuous, adjusted by PPP to ensure cross-country comparability (mil. PPP)
Publ_transfers	Public social benefits embracing cash social security transfers (excl. public pensions) stemming from insurance, universal or assistance schemes, and in-kind social assistance transfers.	Binomial: 1 – received, 0 – not received
Priv_transfers	Private transfers embracing cash transfers and value of in-kind goods and services of a private nature that do not involve any institutional arrangement between the individual and the government or the employer. Includes transfers provided by non-profit institutions, other private persons/households, and other bodies in the case of merit-based education transfers.	Binomial: 1 – received, 0 – not received.
Country	2-letter country identifier	Set of binary variables (ref.=Slovakia).
Edu	The highest completed level of a household head education classified into three categories: low (less than upper secondary education completed - at the ISCED 2011 levels 0, 1 or 2); medium (upper secondary education completed or post-secondary non-tertiary education – levels 3 or 4); high (tertiary education completed (levels 5 to 8).	Set of binary variables (ref.=high).

Source: own elaboration.

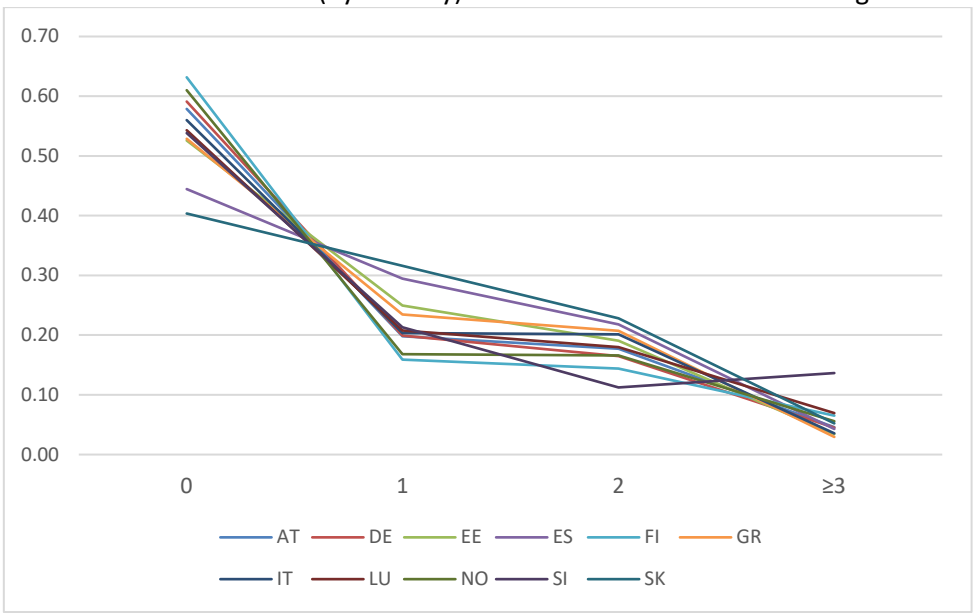
The survey country samples vary noticeably in LWS. Hence, to ensure their applicability to cross-country analyses, two sets of weights are delivered: normalised household weights (*hwgt*) and household weights (*hpopwgt*). *hwgt* weights are household-level, cross-sectional weights that ensure the normalisation to 10,000 by country. As a result, each country's weight is the same in a cross-sectional sample. *hpopwgt* weights are population household cross-sectional weights which are used to reflect in a sample the cross-national variation in population sizes of countries covered by a data set. Models estimated with the use of *hwgt* weights are our main models as we aim to ensure cross-country comparability, not to reflect the cross-national variation in population sizes in our sample. However, we estimate models with *hpopwgt* weights as well to enrich our results by the comparison of two different estimate procedures. If in the case of two types of weights the parameters estimated are similar, one can conclude that the change in the sample structure, i.e. the replacement of samples of similar sizes (10,000 by country) by those reflecting population sizes, does not change the overall picture of the nexus investigated. This would suggest that an increase (decrease) in the role of a given country in the data set does not affect the results since countries are quite similar in terms of the analysed relationship. Consequently, the family or other public policies or some cultural

factors probably do not differentiate households from different countries in terms of the translation of a multigenerational household into the number of children. Different estimates obtained for these two types of weights would suggest that such factors matter differently across countries. Despite both dependent variables measured on an ordinal scale, we refrain from the use of an ordinal logistic regression as the hypothesis of parallel regressions (i.e. similar parameters for the regressions for all the categories of the dependent variable) was rejected by the chi-squared test of parallel lines. Consequently, we finally estimate multinomial regression models.

4. Results

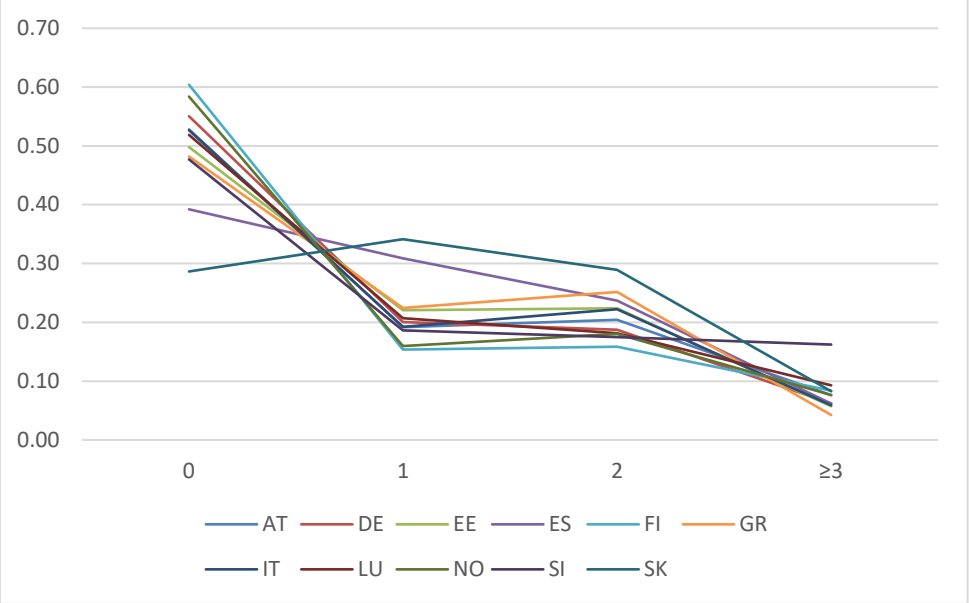
Figure 1 shows that although distributions of the number of children aged 13 or under in households across European countries is similar, some variety can be observed. This variety matters. Spain and Slovakia are countries with a relatively low (44% and 40% respectively) proportion of households without children. Simultaneously, in their cases, the highest proportions of households with one (29% and 32%) and two children (22% and 23%) are reported. Another country slightly outlying from the whole set is Slovenia with the lowest proportion of households with two children (11%) and with the highest share of households with three or more children (14%). In other countries constituting a great majority of those under study, households without children dominate (over 50%, in the cases of Finland and Norway, which even has over 60%), with similar proportions of about 20% of one-child and of two-child households. All countries, with the exception of Slovenia mentioned above, have a proportion of households with three or more children lower than 7%. In the case of the distribution of households in terms of the number of children aged 17 or under (Figure 2), two similar outliers can be identified – Spain and Slovakia. Slovakia, in the case of this distribution, reports more households with one child than without any children (34% to 29%). In the case of Spain, similarly to Slovakia, a significant difference in the ratio of households with one and two children is observed, whereas other countries report quite similar proportions for these two variants. Slovenia, as previously stated, dominates in terms of households with three or more children.

Figure 1. Distribution of households (by country) in terms of number of children aged 13 or under.



Source: LWS database

Figure 2. Distribution of households (by country) in terms of number of children aged 17 or under.



Source: LWS database

Generally, the models estimated (see tables 2 and 3) do not support the view that intergenerational households in which grandparents (members aged 65+) live, include more children aged 13 or under, or 17 or under. In the case of models for the number of children aged 13 or under (Mem13-), in both cases of weights used – normalised household weights (*hwgt*) and household weights (*hpopwgt*) – a household member aged 65 or older decreases the probability of having three or more children as compared to the referential category which is having no children. In the case of the main models, i.e. incorporating *hwgt* weights, for both dependent variables (Mem13- and Mem17-) in households with elderly residents, having a child or two children is not more, or even less likely than not having children at all, except the case of two children aged 13 or under (odds ratio=1.167). In the case of models with *hpopwgt* weights, an older person (or people) living in a household increases the probability of having one (for Mem13-) or two children (Mem13- and Mem17-) as compared to the referential category. The reason behind this is that such countries as Spain or Italy significantly increase their share in an overall sample due to *hpopwgt* weights as compared to *hwgt* weights having a relatively high ratio of households with one or two children. The parameter estimates next to the variable *pension* confirm a negative impact of a multigenerational household on the number of children living in it. Namely, in households with an income from a pension system, having one, two, three or more children is less likely as compared to the referential category, which is having no children.

The differences between models estimated with two types of weights but also the odds ratios for country-specific variables undoubtedly suggest that country-specific conditions, probably including family policy, matter and differentiate fertility. Mediterranean countries like Slovenia or Italy see an enormous increase in the probability of having two, three or more children than other countries. To this set, Luxembourg and Norway should also be added.

The estimates by other variables deliver some interesting findings. All the models clearly indicate that a woman as a head of household increases the probability of having children. Models with *hwgt* weights demonstrate that the probability of having one child or having two children is over 80% (for Mem13-) and almost 130% (for Mem17-) greater as compared to the referential category for households with woman as the head (i.e. reporting the highest income). For the variant of dependent variable “3 or more children”, this probability is over 50% and over 120% greater, respectively. Having a partner increases the chance of having children much more than a marital status. The

positive impact of a partnership increases alongside the number of children in a household. The probability of having three or more children when having a partner is over 13 (15) times greater than not having a child at all in the case of the model for Mem13- (Mem17-). Employment of a household head also increases the chance of having one, two, three or more children. Similarly, homeownership matters. The probability of having more children increases alongside the households' disposable net worth but not with equivalised income. Other important factors increasing the probability of having children are transfers, both public and private. However, the stimulation force of the former is incomparably stronger. Public transfers increase the probability of having three or more children over 17 times in the case of dependent variable Mem13- and over 36 times in the case of Mem17- variables in comparison to the referential category. This implicitly shows the difference in overall public support addressed to households without and with children. As for education, the models report an ambiguous impact on the probability of having children. The main (i.e. *hwgt*) model for Mem17- suggests that low education increases and medium education decreases the chance of having one or more children as compared to high education. These interpretations of the models estimated are generally consistent with crosstabs for combinations of dependent and respective independent variables.

Table 2. Multinomial logistic regression results for Mem13-

	hwgt									hpopwgt								
	1			2			≥3			1			2			≥3		
	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)
Intercept	-4.737	0.000		-6.296	0.000		-7.984	0.000		-5.108	0.000		-6.182	0.000		-7.713	0.000	
Mem65+	-0.012	0.914	0.988	0.155	0.226	1.167	-0.709	0.001	0.492	0.186	0.000	1.204	0.048	0.000	1.049	-1.106	0.000	0.331
Pension	-0.149	0.015	0.861	-0.315	0.000	0.730	-0.171	0.085	0.843	-0.295	0.000	0.744	-0.747	0.000	0.474	-0.397	0.000	0.672
Age	0.012	0.000	1.012	0.009	0.007	1.009	0.004	0.393	1.004	0.025	0.000	1.025	0.022	0.000	1.022	0.020	0.000	1.021
Sex	0.595	0.000	1.813	0.589	0.000	1.803	0.420	0.000	1.522	0.593	0.000	1.810	0.474	0.000	1.607	0.105	0.000	1.110
Partner	1.775	0.000	5.898	2.479	0.000	11.924	2.654	0.000	14.210	1.952	0.000	7.046	2.483	0.000	11.975	2.707	0.000	14.981
Marital_status	1.005	0.000	2.733	1.627	0.000	5.087	2.184	0.000	8.880	0.999	0.000	2.716	1.831	0.000	6.237	1.914	0.000	6.778
Emp	0.436	0.000	1.547	0.511	0.000	1.667	0.134	0.057	1.144	0.279	0.000	1.322	0.183	0.000	1.201	-0.409	0.000	0.665
Home_own	0.326	0.000	1.385	0.682	0.000	1.977	0.421	0.000	1.524	0.345	0.000	1.412	0.554	0.000	1.741	0.251	0.000	1.285
Income	-0.010	0.000	0.990	-0.019	0.000	0.981	-0.031	0.000	0.970	-0.017	0.000	0.983	-0.030	0.000	0.971	-0.037	0.000	0.964
Worth	0.082	0.033	1.085	0.147	0.000	1.159	0.403	0.000	1.496	0.557	0.000	1.746	0.834	0.000	2.301	0.969	0.000	2.636
Publ_ transfers	2.208	0.000	9.102	2.327	0.000	10.247	2.921	0.000	18.569	1.945	0.000	6.991	1.932	0.000	6.902	2.534	0.000	12.610
Priv_transfers	0.453	0.000	1.573	0.324	0.000	1.382	0.468	0.000	1.596	0.776	0.000	2.173	0.557	0.000	1.745	0.647	0.000	1.909
Country: AT	-0.275	0.001	0.760	0.268	0.002	1.307	0.504	0.000	1.656	-0.154	0.000	0.857	0.396	0.000	1.486	0.560	0.000	1.751
Country: DE	-0.187	0.029	0.830	0.304	0.001	1.356	0.513	0.000	1.671	0.014	0.001	1.014	0.513	0.000	1.671	0.711	0.000	2.037
Country: EE	0.107	0.156	1.113	0.490	0.000	1.633	0.374	0.007	1.453	0.320	0.000	1.377	0.842	0.000	2.320	0.689	0.000	1.992
Country: ES	0.732	0.000	2.080	0.930	0.000	2.535	0.951	0.000	2.588	0.659	0.000	1.932	0.882	0.000	2.416	0.930	0.000	2.534
Country: FI	-0.871	0.000	0.419	-0.310	0.000	0.734	0.458	0.000	1.581	-0.693	0.000	0.500	-0.031	0.000	0.969	0.680	0.000	1.975
Country: GR	0.531	0.000	1.700	0.884	0.000	2.421	0.474	0.001	1.606	0.471	0.000	1.602	0.740	0.000	2.097	0.383	0.000	1.466
Country: IT	1.110	0.000	3.036	1.713	0.000	5.547	1.822	0.000	6.186	1.006	0.000	2.736	1.502	0.000	4.492	1.620	0.000	5.051
Country: LU	0.179	0.027	1.196	0.659	0.000	1.932	1.322	0.000	3.751	0.332	0.000	1.394	0.839	0.000	2.314	1.564	0.000	4.778
Country: NO	-0.257	0.001	0.773	0.578	0.000	1.782	1.167	0.000	3.213	0.072	0.000	1.075	1.069	0.000	2.913	1.486	0.000	4.420
Country: SI	0.226	0.004	1.253	0.026	0.779	1.026	1.791	0.000	5.998	0.207	0.000	1.230	0.012	0.174	1.012	1.930	0.000	6.890
Country: SK (ref)																		
EDU: low	0.032	0.560	1.032	-0.185	0.002	0.831	-0.105	0.227	0.900	0.120	0.000	1.127	-0.329	0.000	0.720	0.033	0.000	1.034
EDU: medium	-0.186	0.000	0.830	-0.426	0.000	0.653	-0.564	0.000	0.569	-0.139	0.000	0.871	-0.390	0.000	0.677	-0.135	0.000	0.874
EDU: high (ref)																		

Source: Own estimation on the basis of LIS/LWS database

Table 3. Multinomial logistic regression results for Mem17-

	hwgt									hpopwgt								
	1			2			≥3			1			2			≥3		
	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)	B	p-value	exp(B)
Intercept	-5.659	0.000		-8.327	0.000		-10.312	0.000		-6.205	0.000		-8.384	0.000		-10.143	0.000	
Mem65+	-0.365	0.002	0.694	-0.082	0.528	0.922	-0.499	0.005	0.607	-0.191	0.000	0.826	0.224	0.000	1.252	-0.688	0.000	0.503
Pension	-0.234	0.000	0.791	-0.305	0.000	0.737	-0.341	0.000	0.711	-0.353	0.000	0.703	-0.779	0.000	0.459	-0.649	0.000	0.523
Age	0.040	0.000	1.041	0.065	0.000	1.067	0.071	0.000	1.073	0.057	0.000	1.058	0.081	0.000	1.085	0.090	0.000	1.094
Sex	0.829	0.000	2.291	0.813	0.000	2.254	0.794	0.000	2.213	0.838	0.000	2.312	0.867	0.000	2.380	0.639	0.000	1.894
Partner	1.762	0.000	5.825	2.481	0.000	11.949	2.795	0.000	16.361	1.922	0.000	6.836	2.615	0.000	13.665	2.730	0.000	15.337
Marital_status	1.174	0.000	3.236	1.762	0.000	5.823	2.266	0.000	9.641	1.208	0.000	3.345	1.967	0.000	7.152	2.135	0.000	8.461
Emp	0.583	0.000	1.791	0.732	0.000	2.080	0.288	0.000	1.334	0.505	0.000	1.657	0.472	0.000	1.603	-0.061	0.000	0.941
Home_own	0.433	0.000	1.542	0.750	0.000	2.118	0.732	0.000	2.079	0.396	0.000	1.486	0.585	0.000	1.795	0.496	0.000	1.642
Income	-0.010	0.000	0.990	-0.021	0.000	0.980	-0.038	0.000	0.962	-0.020	0.000	0.980	-0.036	0.000	0.965	-0.049	0.000	0.952
Worth	0.122	0.006	1.129	0.312	0.000	1.366	0.500	0.000	1.649	0.667	0.000	1.948	1.114	0.000	3.046	1.281	0.000	3.601
Publ_ transfers	2.745	0.000	15.567	3.023	0.000	20.558	3.626	0.000	37.573	2.498	0.000	12.160	2.502	0.000	12.207	3.116	0.000	22.555
Priv_transfers	0.774	0.000	2.169	0.766	0.000	2.152	0.820	0.000	2.271	0.881	0.000	2.413	0.826	0.000	2.283	0.952	0.000	2.591
Country: AT	-0.906	0.000	0.404	-0.295	0.002	0.744	0.173	0.171	1.189	-0.709	0.000	0.492	-0.126	0.000	0.882	0.280	0.000	1.323
Country: DE	-0.830	0.000	0.436	-0.335	0.001	0.716	-0.082	0.549	0.921	-0.537	0.000	0.584	-0.036	0.000	0.965	0.179	0.000	1.196
Country: EE	-0.702	0.000	0.496	-0.141	0.127	0.869	-0.095	0.447	0.909	-0.368	0.000	0.692	0.325	0.000	1.384	0.328	0.000	1.388
Country: ES	0.296	0.000	1.345	0.446	0.000	1.562	0.391	0.002	1.479	0.296	0.000	1.345	0.361	0.000	1.435	0.311	0.000	1.365
Country: FI	-1.701	0.000	0.182	-1.095	0.000	0.335	-0.328	0.006	0.720	-1.369	0.000	0.254	-0.673	0.000	0.510	0.045	0.000	1.047
Country: GR	0.064	0.442	1.066	0.551	0.000	1.734	0.039	0.767	1.040	0.030	0.000	1.031	0.331	0.000	1.393	-0.112	0.000	0.894
Country: IT	0.578	0.000	1.783	1.278	0.000	3.588	1.528	0.000	4.609	0.541	0.000	1.718	0.981	0.000	2.667	1.216	0.000	3.374
Country: LU	-0.464	0.000	0.629	-0.088	0.369	0.916	0.744	0.000	2.105	-0.188	0.000	0.829	0.220	0.000	1.246	1.023	0.000	2.783
Country: NO	-1.056	0.000	0.348	-0.193	0.043	0.824	0.535	0.000	1.707	-0.606	0.000	0.546	0.483	0.000	1.620	1.036	0.000	2.818
Country: SI	-0.155	0.079	0.857	0.132	0.164	1.142	1.421	0.000	4.142	-0.109	0.000	0.897	0.065	0.000	1.067	1.482	0.000	4.400
Country: SK (ref)																		
EDU: low	0.228	0.000	1.256	0.062	0.331	1.064	0.278	0.001	1.320	0.293	0.000	1.340	-0.015	0.000	0.985	0.496	0.000	1.642
EDU: medium	-0.043	0.314	0.958	-0.212	0.000	0.809	-0.372	0.000	0.689	0.001	0.547	1.001	-0.185	0.000	0.831	-0.042	0.000	0.959
EDU: high (ref)																		

Source: Own estimation on the basis of LIS/LWS database

5. Discussion and conclusions

Focusing on the households with three or more children, our models show that co-residence with a grandparent(s) does not support the formation on multi-child families. None of the four models estimated delivers arguments that grandparents living in the same home increase the probability of having at least three children. In the case of models estimated with *hwgt* weights, a multigenerational family does not support fertility at all. When we change the sample structure and reflect the cross-country diversity in terms of population sizes (*hpopwgt* weights), a multigenerational family facilitates having one or two children as compared to childless households, but not having three or more children. Simultaneously, the estimates demonstrate that the country of a household's residence matters, which may suggest that cultural factors or fertility or family policy play a role. In our models, Slovenia reports the highest odds ratios for the highest category of the dependent variable. In the case of this country, the probability of having three or more children is from over 3 to almost 6 times greater (depending on the model) than in the case of the referential category which is Slovakia. Figures 1 and 2 confirm the highest share of households with the number of children being three or more in the case of this country. When comparing these findings with the results obtained by Chybalski and Marcinkiewicz (2021) when studying European welfare regimes with the incorporation of pro-family and pro-female components, one can discover an interesting coincidence. Namely, Slovenia is the country with the highest value of a synthetic measure of a pro-female component among the countries investigated in the present paper (with a medium level of pro-family component). A pro-female component includes such characteristics as for instance, gender pay gap or employment rate, whereas a pro-family component accounts among other things for the length of various leave allowances dedicated to parents after their child's birth or children's enrolment in early childhood education. The correlation analysis of country-level data used by Chybalski and Marcinkiewicz (2021) with the estimates obtained in this paper allows us to associate our results to both family policy and gender equality in the labour market across the countries studied. This comparison shows the following. Firstly, the case of Slovenia suggests that the number of children equal to three or more is the most frequently observed in the country with the highest level of gender equality in the labour market. Thus, the country that supports women in solving the motherhood-work dilemma benefits from it as it reports more multi-child families, which is crucial for generation replacement. Greece is on the other end of the spectrum and reports households with three or more children the least frequently, having the lowest value of pro-family synthetic indicator (and a medium level of pro-female component) in the study by Chybalski and Marcinkiewicz (2021). Further, more in-depth analysis of the results obtained in the two papers mentioned indicates that countries with the higher ratio of households counting no fewer than three children also have higher participation rates of children aged 6–11 years in centre-based out-of-school-hours care services, a lower employment rate gap and higher maternal employment rates (the Pearson correlation coefficient is statistically significant for *p*-value=0.10). Moreover, they report greater pro-female component synthetic indicator values.

The mentioned coexistence implies that what matters for stimulating growth in the number of multi-child families is not encouraging older people to exit the labour market to stay in multigenerational homes and take care of grandchildren. It also does not mean that grandparents' support is not important for fertility stimulation. Hence, we do not undermine the vast portion of research that demonstrates that grandparents' assistance works as a driving force for fertility (Okun & Stecklov, 2021; Rutigliano & Lozano, 2022; Tanskanen & Rotkirch, 2014). Our study suggests only that co-residence in a multigenerational household can be a barrier to having more than two children as it may cause, for example, a problem of overcrowding. Co-residence may also not be a question of choice but necessity caused by economic constraints (young couples unable to afford buying or renting a home). Therefore, a multigenerational household is not a panacea for the shortage of multi-child families. The results strongly support the view mentioned in the literature that for fertility stimulation, assisting families and women in coping with the motherhood-work conflict is substantial (Kaptijn et al., 2010; McDonald, 2000; Rindfuss & Brewster, 1996). The observation according to

which a woman with a higher income than a man in a household increases the probability for having children only strengthens the view that women's situation in the labour market matters to fertility. Thus, the policy implication is obvious. Among various actions taken in order to increase fertility, any support for women to facilitate the combination of both motherhood and labour market participation is useful.

In our models we focus on the number of children aged 13 or under and 17 or under and we do not know whether grandparents were living in the same household when a child or children were born. We know that they share the same home at the moment of data collection. This can be perceived as a limitation of our study as we do not link co-residence directly with the fertility decision. On the other hand, however, grandparents' support may be useful for the young parents not only directly after a child is born but also later, in the pre-school or school period when grandparents may provide transport, meals, educational support or other caring services. Thus, our view is wider as we generally account for grandparents' support, no matter at which stage of childhood and for what number of children. One of the results we have obtained, i.e. the positive impact of higher incomes for women as compared to men on the probability of having more children, highlights the need for further studies on the issue of degenderising policies and their impact on fertility.

References

Altonji, J. G., Hayashi, F., & Kotlikoff, L. J. (1992). Is the Extended Family Altruistically Linked? Direct Tests Using Micro Data. *American Economic Review*, *82*(5), 1177–1198.

Amorim, M. (2019). Are grandparents a blessing or a burden? Multigenerational coresidence and child-related spending. *Social Science Research*, *80*, 132–144. https://doi.org/10.1016/j.ssresearch.2019.02.002

Becker, G. S. (1965). A Theory of the Allocation of Time. *The Economic Journal*, *75*(299), 493. https://doi.org/10.2307/2228949

Becker, G. S. (1974). A Theory of Social Interactions. *Journal of Political Economy*, *82*(6), 1063–1093. https://doi.org/10.1086/260265

Becker, G. S. (1981). *A Treatise on the family*. Harvard University Press.

Billari, F. C., & Galasso, V. (2009). What Explains Fertility? Evidence from Italian Pension Reforms. In *CESifo Working Paper Series* (No. 2646; Https://Dx.Doi.Org/10.2139/Ssrn.1406946). https://doi.org/https://dx.doi.org/10.2139/ssrn.1406946

Chybalski, F., & Marcinkiewicz, E. (2021). Incorporating pro-family and pro-female components into empirical welfare state classification: some new evidence for European countries. *Innovation: The European Journal of Social Science Research*, *34*(3), 399–421. https://doi.org/10.1080/13511610.2021.1909461

Cigno, A. (1991). *Economics of the family*. Clarendon Press.

Cochrane, S. H. (1975). Children as by-products, investment goods and consumer goods: A review of some micro-economic models of fertility. *Population Studies*, *29*(3), 373–390. https://doi.org/10.1080/00324728.1975.10412706

Danzer, A., & Zyska, L. (2020). Pensions and Fertility: Micro-Economic Evidence. *AMERICAN ECONOMIC JOURNAL: ECONOMIC POLICY (FORTHCOMING)*. https://doi.org/10.2139/ssrn.3564878

Fenge, R., & Scheubel, B. (2014). *PENSIONS AND FERTILITY BACK TO THE ROOTS* (No. 1734; WORKING PAPER SERIES). https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1734.pdf

Gauthier, A. H. (2007). The impact of family policies on fertility in industrialized countries: A review of the literature. In *Population Research and Policy Review* (Vol. 26, Issue 3, pp. 323–346). https://doi.org/10.1007/s11113-007-9033-x

Ghodsee, K., & Bernardi, L. (2012). Starting a Family at Your Parents' House: Multigenerational Households and Below Replacement Fertility in Urban Bulgaria. *Journal of Comparative Family Studies*, *43*(3), 439–459. https://doi.org/10.3138/jcfs.43.3.439

Hoem, J. M. (2008). Overview chapter 8: The impact of public policies on European fertility. *Demographic Research*, *19*, 249–260. https://doi.org/10.4054/DemRes.2008.19.10

Kaptijn, R., Thomese, F., van Tilburg, T. G., & Liefbroer, A. C. (2010). How Grandparents Matter: Support for the Cooperative Breeding Hypothesis in a Contemporary Dutch Population. *Human Nature*, *21*(4), 393–405. https://doi.org/10.1007/s12110-010-9098-9

Kochhar, R., & Cohn, D. (2011). *Fighting Poverty in a Tough Economy, Americans Move in with Their Relatives*. https://search.issuelab.org/resource/fighting-poverty-in-a-bad-economy-americans-move-in-with-

relatives.html
Kurowska, A. (2018). (De)familialization and (De)genderization – Competing or Complementary Perspectives in Comparative Policy Analysis? *Social Policy and Administration*, *52*(1), 29–49. https://doi.org/10.1111/spol.12272
Leibenstein, H. (1957). *Economic Backwardness and Economic Growth*. Wiley.
Leitner, S. (2003). Varieties of familialism: The caring function of the family in comparative perspective. *European Societies*, *5*(4), 353–375. https://doi.org/10.1080/1461669032000127642
Lohmann, H., & Zagel, H. (2016). Family policy in comparative perspective: The concepts and measurement of familization and defamilization. *Journal of European Social Policy*, *26*(1), 48–65.
Luxembourg Wealth Study (LWS) Database, http://www.lisdatacenter.org (multiple countries; June 2022). Luxembourg: LIS.
McDonald, P. (2000). Gender equity, social institutions and the future of fertility. *Journal of Population Research*, *17*(1), 1–16. https://doi.org/10.1007/bf03029445
Okun, B. S., & Stecklov, G. (2021). The impact of grandparental death on the fertility of adult children. *Demography*, *58*(3), 847–870. https://doi.org/10.1215/00703370-9015536
Rindfuss, R. R., & Brewster, K. L. (1996). Childrearing and Fertility. *Population and Development Review*, *22*, 258–289. https://doi.org/doi.org/10.2307/2808014
Robinson, W. C. (1997). The Economic Theory of Fertility Over Three Decades. *Population Studies*, *51*(1), 63–74. https://doi.org/10.1080/0032472031000149736
Rossi, P., & Godard, M. (2019). The Old-Age Security Motive for Fertility: Evidence from the Extension of Social Pensions in Namibia. In *Tinbergen Institute Discussion Papers* (No. 19-069/V). https://doi.org/10.2139/ssrn.3492985
Rutigliano, R., & Lozano, M. (2022). Do I want more if you help me? The impact of grandparental involvement on men's and women's fertility intentions. *Genus*. https://doi.org/10.1186/s41118-022-00161-x
Saxonberg, S. (2013). From Defamilialization to Degenderization: Toward a New Welfare Typology. *Social Policy and Administration*, *47*(1), 26–49. https://doi.org/10.1111/j.1467-9515.2012.00836.x
Shen, Z., Zheng, X., & Yang, H. (2020). The fertility effects of public pension: Evidence from the new rural pension scheme in China. *PLoS ONE*, *15*(6). https://doi.org/10.1371/journal.pone.0234657
Tanskanen, A. O., & Rotkirch, A. (2014). The impact of grandparental investment on mothers' fertility intentions in four European countries. *Demographic Research*, *31*(1), 1–26. https://doi.org/10.4054/DemRes.2014.31.1