

GENDER ROLES WITHIN FILIAL CARE IN FAMILIALISTIC REGIMES: INCOME AND EDUCATION MATTER

Andrej Srakar¹, Institute for Economic Research (IER) and Faculty of Economics, University of Ljubljana

Maša Filipovič Hrast, Faculty of Social Sciences, University of Ljubljana

Stefania Ilinca, European Centre for Social Welfare Policy and Research

Ricardo Rodrigues, European Centre for Social Welfare Policy and Research

Valentina Hlebec, Faculty of Social Sciences, University of Ljubljana

Abstract

Several theories explain gender differences in the provision of long-term care, which is most pronounced in filial care. The gender-role expectations and gender-role specialization framework posits that it is socially desirable for women to provide caregiving, but that they are also subject to more stress in doing so. Several studies have argued that a number of factors affect observed differences in caregivers' gender, such as education, age, sibling network, family, and individual economic condition. Still, the question on the moderating influence of income and education to gender differences remains open with contradicting evidence. Our study analyses this relationship for two contrasting care regimes, supported familialism (Austria) and familialism by default (Slovenia). Although the gender differences between defamilialistic and familialistic regimes are well documented, the differences between countries belonging to varieties of familialism, i.e. familialism by default or supported familialism are under researched. Using novel semiparametric methodology we evidence large differences between the two countries which reflect the measures and general characteristics of the two care regimes and provide a detailed explanation.

Introduction

In the literature gender differences in care for the elderly are well documented (Da Roit et al 2015). Across the EU, 80% of care is provided by informal carers, and majority of them are women (EIGE, 2011). Across OECD countries, more than one in ten adults aged over 50 provides informal help with personal care to an elderly, sick or disabled person. Close to two-thirds of such carers are women, typically caring for close relatives such as their parents or spouse (OECD, 2011). These gender differences in care exist in all age groups, but are especially pronounced when we observe children providing care to their ageing parents. Gender differences are smaller in older age groups, i.e. among care between partners, where men are much more likely to become carers. In the oldest groups of carers it was found that

¹ Corresponding author, PhD (Economics), PhD candidate (Mathematical Statistics), Scientific Associate, Institute for Economic Research, Ljubljana, Assistant Professor, Faculty of Economics, University of Ljubljana, Slovenia, T: +386 (0)1 5303 860, GSM: +386 (0)70 749 447, F: +386 (0)1 5303 874, Mailto: srakara@ier.si, URL: www.ier.si

man were more often carers and had a greater time commitment to care than women (Rodrigues et al 2012, Dahlberg et al 2007). Gender differences are therefore largest among adult children, where sons are much less likely to provide care to older parents than daughters (Eurocarers 2015, Bettio and Verashiagina 2012, Bonsang 2009, Haberkern et al 2015).

These gender differences among children carers can be found in all European countries (Haberkern et al 2015, Schmid et al 2012, EIGE, 2011, Eurocarers 2017). However, the degree to which gender differences are pronounced varies among countries and links to the care policies that are implemented. These differences are framed as care regimes or varieties of familialism. In defamilialistic countries where the state is an important provider of various care services, the goal is also to increase gender equality, enable women choice and greater work-life balance with reduction of caring roles and therefore differences are smaller. On the other hand, in familialistic care regimes, most of the caring is provided by families and here most likely women within the family (see Saraceno & Keck, 2010; Haberkern and Szydlik 2010, Motel-Klingebiel, Tesch-Roemer, & Von Kondratowitz, 2005; Bettio & Plantenga, 2004; Leitner, 2003, Haberkern et al 2015). The familialism and defamilialism dichotomy therefore has a particular relevance for gender issues as defamilialism is usually perceived as model where families and therefore specifically daughters caregivers are liberated from care work and enabled better work and care balance.. However, also familialistic policies are not uniformly supporting traditional gendered division of care roles, as supported familialism with high levels of generosity can reduce gender inequality in care, e.g. in comparison with familialism by default (Leitner 2003, Saraceno 2016).

Although the gender differences between defamilialistic and familialistic regimes are well documented, the differences between countries belonging to varieties of familialism, i.e. familialism by default or supported familialism are under researched. What is also less researched is the interconnection of socioeconomic factors when looking at the gender differences in providing care to older parents. “The within-gender gap in socioeconomic status (SES) has been poorly studied in relation to informal caregiving (Tokunaga and Hashimoto 2016,48). As provision of formal care is important in reducing care burden for women carers, especially when they are still active in the labour market, this is also linked to the (financial) accessibility of the formal care and socioeconomic situation of the household of the elderly as well as the filial carer. Relatively little attention has been paid in the care literature to the process of socioeconomic stratification of access to LTC services (Rodrigues et al 2018, Albertini and Pavolini 2015). However, growing importance of cash-for-care programs and marketization of care may have exacerbated inequalities in the use of formal services, which in turn affects gender differences in provision of informal filial care.

We hypothesize that supported familialism, by providing financial and systemic incentives for care, supports greater choice in how this care is delivered and therefore function as an instrument that reduces gendered divisions in care. This would be especially true under conditions of supported familialism with high levels of generosity and high accessibility of formal care services (see Leitner 2003, Saraceno 2016). This we can test when comparing two countries belonging to familialistic care regimes, such as Austria and Slovenia. In Slovenia little support is provided to carers (familialism by default), while support for care is provided in Austria in the form of Pflegegeld or cash for care, as well as accessible formal care services. Furthermore, gender specific allocation of family work varies across Europe and is strongly linked to female working sphere in Eastern Europe (Haberkern et al 2015). We would therefore expect to see more pronounced gender differences in filial caregiving in Slovenia in comparison to Austria (Hypothesis 1).

Our second hypothesis relates to the interaction between socioeconomic characteristics and gender. Here literature seems divided, as some research points to higher gender equality in groups with higher socioeconomic status, as women in these circumstances are able to delegate and outsource care more (Tokunaga and Hashimoto 2016, Grigoryeva 2014). However, other research points to larger gender differences in groups with higher income and with higher education. Men in these groups are able to outsource while men in the lower socioeconomic groups are unable to and therefore more often take over the caring roles, reducing the gender gap (Šadl and Hlebec 2018). Women in higher educational and income group tend to care more (Brandt et al 2009, Eurocarers 2017). Following the second line of reasoning, we form a hypothesis that gender differences are larger in higher income and higher educational groups in both supported familialism as well as familialism by default (Hypothesis 2). Concerning the differences between countries and familialistic regimes, we form an additional hypothesis. Since we hypothesize that supported familialism has a positive effect on gender equality and reduces gender inequality within filial care related to income and education (hypothesis 3).

Background

Gender differences in filial care

Many studies have confirmed that female family members are more involved in long-term care for elderly parents (Gupta, 2009; Bookman & Kimbrel, 2011; Kadoya, 2011; Koh & MacDonald, 2006; Wolff & Kasper, 2006). Care is also provided in gendered ways. More women than men provide more demanding and intensive forms of daily caring, and with relatively complex tasks, while men's contribution, is more likely to be concentrated in care management or household maintenance, shopping or transportation (Eurocarers 2017, Laditka and Laditka 2001). Several theories explain gender differences in the provision of long-term care (Kadoy and Rahim Khan, 2017). These theories can be summarized as follows: (1) household labour (Ross, 1987), the stress and coping framework (Pearlin, Mullan, Semple, & Skaff, 1990), (2) the gender-role expectations framework (Barusch & Spaid, 1989), and (3) the gender-role specialization framework (Gilligan, 1982). According to the theory of household labour, providing long-term care to older parents is primarily a type of family labour. Generally, women spend more time on family labour. The stress and coping framework posits that the amount of stress involved in caregiving is conditioned by gender. As a result, male and female caregivers bring to caregiving their different demographic, occupational, and role socialization backgrounds (Miller & Cafasso, 1992). The gender-role expectations and gender-role specialization framework posits that it is socially desirable for women to provide caregiving, but that they are also subject to more stress in doing so.

These gendered division in amount of care as well as care tasks provided is highly pronounced in filial care. "Caregiving research has shown that daughters and sons take different roles, reflecting both need and availability" (Laditka and Laditka 2001: 432). Sons were involved in long-term care in the absence of eligible female siblings, and relied on their spouses if they were married (see Grigoryeva, 2014, 2017; Silverstein & Giarrusso, 2010). Prevalence of daughters caring for elderly parents in comparison to sons is also linked to the identity of being a good child, which has stronger influence on women, to stronger emotional bonds and higher expertise and lower trust of women for others to provide high quality care (see Grigoryeva 2017). The study by Campbell and Martin-Mathews (2003) found that the gender of the parent requiring care partially determines the gender of the child providing it.

Thus, daughters were found to provide more care because more care is required by elderly mothers due to their longevity (see also Grigoryeva 2017). Haberkern et al (2015) have not confirmed this in their study and link the gender inequality in filial care to different response to the needs and resources, such as willingness of daughters to reduce working hours.

However, some authors point that there is potentially underestimation of care provided by sons due to research bias and underrepresentation of men in research and the focus of research on more intensive caring roles (Laditka and Laditka 2001). Other studies on the provision of long-term care and sibling status have revealed that although daughters appear to care more for their parents than sons do, sons devoted the same amount of time per day to parental care when they did not have siblings or other eligible family members (Campbell & Martin-Matthews, 2003). Despite the theoretical foundations and empirical evidence that women are the primary long-term caregivers, other studies did not find any gender differences (Kramer, 2004; Pinquart & Sörensen, 2006; Yee & Schulz, 2000). Kramer (2004) argued that male caregivers were found to devote more time in caregiving than they once did. Pinquart and Sörensen (2006) also conducted a meta-analysis of 229 studies on the gender issues surrounding elder care and argued that gender differences in this field were very small. The observed differences could be caused by the social context, the capacity of male and female providers, family structure, or the relationship of caregivers with their elderly parents as well as expectations of parents (Datta, Poortinga, & Marcoen, 2003, Pillemer and Suitor 2013).

Several studies have argued that a number of other factors affect observed differences in caregivers' gender, such as education, age, sibling network, family, and individual economic condition (Kadoya, & Yin, 2012, 2014; Silverstein, Gans, & Yang, 2006; Zhan, 2005; Tolkacheva, Groenou, & Tilburg, 2010, Grigoryeva 2017). Furthermore, institutional design affects gender differences. In defamilialistic countries, such as Scandinavian countries, the emphasis is on reducing the burden of care within the family, and with it also reducing gender inequalities in care. In familialistic care regimes family is the main provider of care, most often relying on women within the family (Saraceno & Keck, 2010; Haberkern and Szydlik 2010, Motel-Klingebiel, Tesch-Roemer, & Von Kondratowitz, 2005; Bettio & Plantenga, 2004; Leitner, 2003). However, as Leitner (2003) and Saraceno (2016) emphasize, familialistic regimes differ greatly in how they affect gender equality and supported familialism with high levels of generosity can reduce gender inequality in care. However, when level of generosity is low, it can even reinforce the gendered division of care. Da Roit et al (2015) show that the availability of public care services is crucial to understanding the gender informal care gap, while women's labour market position, the presence or absence of gendered care attitudes and the level of care needs play only a minor role. "The generous provision of care services relieves daughters of having to provide care to their parents and therefore reduces gender inequality in intergenerational care" (Haberkern et al 2015, 316).

Socioeconomic differences

Several studies indicated that income is an important determinant of the use of formal or informal care (e.g. Jimenez Martin and Prieto 201, Paraponaris et al 2012, Litwin and Attias-Donfut 2009). In literature higher socioeconomic position of household is linked with higher likelihood of using formal care provision (either public or private), and relying less on informal care. Higher income as well as wealth is seen as a resource that enables purchase of the services and decrease family care (e.g. Albertini and Pavolini 2015, Rodriguez et al 2017

Jimenez Martin and Prieto 2012, Ballesta and Minguela Recover 2017 Motel-Klingebiel et al. 2005 Bonsang 2009). Women of low SES may face a greater care burden, because they lack resources to buy formal care as well as their lack of labour force skills is inductive to leaving the labour market and providing informal care (Tokunaga and Hashimoto 2016).

On the other hand, wealth of the care receivers could also present an incentive for provision of family care, as a bequest motivation (e.g. Costa - Font, 2008; Norton, 2000, Rodriguez et al 2017). As Bonsang (2007) indicated in his research household income and education increases the probability of providing time assistance to parents. According to the report of Eurocarers (2017) the gender gap in provision of care is 10% in low educational group, increasing to 14 % in medium and to 16% in higher education group. The number of men providing care seems relatively constant, with 24% providing care among the lower educated, and 27% among those with higher education. On the other hand the share of women among the lower educated providing care is 34%, while among the higher educated it is 43%. Children with higher education and sufficient means are therefore more likely to help their parents, which can be linked to the reciprocity norm – children who received financial transfers or expect inheritance are more likely to help their parents (see Brandt et al 2009). Other research also points to larger gender differences in groups with higher income and with higher education and link this to the ability of those with higher income to outsource care while men in the lower socioeconomic groups are unable to and therefore more often take on the caring roles (see Šadl and Hlebec 2018). Tokunaga and Hashimoto (2016) found no differences in care burden among high and low SES women when the level of need was not extensive, and only when there was high level of care needs women with lower SES were more likely to be primary care givers.

Institutional setting is and additional an important mitigating factor. The institutional design affects socioeconomic inequalities as well as gender inequalities. Studies show that the reliance on informal care only is more likely in countries with less developed formal care systems, including both social home care services provided in community settings and residential care, such as Mediterranean and Central and Eastern European countries in comparison to Scandinavian countries (e.g. Suanet et al 2012, Haberkern and Szydlik 2009, Litwin and Attais Donfut 2009; Saraceno, 2010; Albertini and Kohli, 2012; Broese van Groenou et al., 2006; Künemund, 2008;). Albertini and Pavolini (2015) show that the main cleavage in the institutional design of European LTC systems is that between systems those that are mainly based on care services provision (Denmark and France) and those based on cash-for-care programs (Italy and Germany), where the former ensure more equal access to formal care along the income distribution compared to the latter.

The long term care system in Slovenia is highly fragmented, with poorly developed home care services, as these cover only 1,7 % of the population aged 65+ (Nagode et al 2018), which is far below the goal set in the national programme on social protection (i.e. 3,5% of population aged 65+). The services are partly subsidized, and those in need also receive additional transfer for care. Family is the main provider of care, which is additionally reinforced by a legal obligation to contribute to the costs of care (Hlebec, Nagode and Filipovič Hrast, 2014). As legal obligations stimulate support in a gender-specific way (Schmid et al 2012), this further supports expectations of higher gender inequality in filial care in Slovenia.

In Austria PLEASE ADD DESCRIPTION OF AUSTRIA

Based on the above described theoretical ground and characteristics of the two systems we have formed the following hypotheses:

H1: Supported familialism reduces gender-specific filial informal care in comparison to familialism by default.

H2: Gender differences in filial care are larger in higher income and higher educational groups.

H3: Supported familialism reduces gender inequalities within filial care related to income and education.

Data and methods

Sample

This study uses data from the sixth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE)², collected in 2015 (Börsch-Supan, 2018). The sample is restricted to children of individuals aged 60 and above who reported either ADL or IADL limitations³ and who are living outside the household of the parent. In this manner, we get a sample of potential care providers on which we provide our analysis. The final sample consists of 2335 children, 1140 residing in Austria and 1195 in Slovenia.

Dependent variable

As dependent variable we take informal care provision by the child. The variable is based on the responses on the question sp027 "From which child respondent received help".

Main independent variable

Main independent variable is gender of a child, coded as 1 for women and 0 for men.

Moderators

We moderate for the interactive effects of three variables:

Tertiary education of the child: binary variable, having value of 1 if child has education at tertiary level and 0 if not.

Three-level education of the child: ordinal variable, having value of 1 if the child has only primary education; 2 if the child has also some secondary education; and 3 if the child has some tertiary education.

Household income of the parent: logarithm of total household income (variable thinc raised by 1 to avoid the problems of logarithms of zero values) of the parent (i.e. original respondent).

² This paper uses data from SHARE Wave 6 (10.6103/SHARE.w6.611), see Börsch-Supan et al. (2013) for methodological details. The SHARE data collection has been primarily funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812) and FP7 (SHARE-PREP: N°211909, SHARE-LEAP: N°227822, SHARE M4: N°261982). Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

³ The original SHARE dataset where the units are respondents has been transformed into complementary dataset where the units are children – the data represent the answers for the parent respondents.

Unfortunately, the data do not allow to construct a special variable for the income of the child.

Control variables

Table 1 presents the control variables we used in our analysis.

Table 1: Control variables used

Variable name	Variable description
ChildAge	Nominal age of the child
ChildProximity	A dichotomous variable for whether the child is living within a 25-kilometer radius from the user
ParentGender	Gender of the parent - 1 if woman and 0 if man
ParentAge	Nominal age of the parent
ParentAgeSq	Square of parent age
ParentMaritStat	A dichotomous variable for whether the parent is living with a spouse (value 1) or not (value 0)
ParentHhSize	Nominal household size of the parent's household
ParentNrChronDis	Number of chronic diseases by the parent
ParentMemoryBad	Score in the memory test, representing values: 1-Excellent; 2-Very good; 3-Good; 4-Fair; 5-Poor
ParentEuroD	Euro Depression Score for the parent

Source: Own elaboration.

Analytical approach

Moderation and mediation analyses are widely used in social research (Baron & Kenny, 1986; Chaplin, 1991; Cole & Maxwell, 2003; Crits-Christoph et al., 2003; Holmbeck, 1997; Kraemer et al., 2001; 2002; Krull & MacKinnon, 2001; Rogosch et al., 1990; Rothman & Greenland, 1998). Although often implemented in correlational studies in social psychology and other fields of inquiry, moderation and mediation analyses have become increasingly popular and an integral part of data analysis in treatment research (Kraemer et al., 2002). In intervention studies, moderation analysis helps determine whether an intervention has a differential effect among subgroups that are defined by baseline characteristics. Thus, moderators provide useful information for treatment decisions and maximizing treatment effect. In contrast to moderation analysis, mediation analysis helps identify mechanisms by which an intervention achieves its effect.

In a seminal paper, Baron and Kenny (1986) proposed a general framework for characterizing a moderation and mediation process. However, as pointed out by Kraemer et al. (2001) and Tang et al. (2015), the limited analytic strategies proposed in their paper have been used and extrapolated to situations to which they often do not apply, leading to confusion in interpreting analysis results and even conflict with the conceptual definition of such processes. Thus, the popular approach of simply looking for non-zero interactions as used in most moderation analyses has limited applications and often leads to dubious and uninterpretable results.

In our article, we model the moderating effects of income and education on the relationship of gender to providing care in the context of different type of care regimes using varying coefficient models, suggested to improve the validity of moderation analysis results by Tang et al. (2015).

In an influential article, Tang and colleagues (2015) suggest varying coefficient models as a solution for the above mentioned problems of moderation analysis. The varying coefficient models were introduced by Cleveland, Grosse and Shyu (1991) and Hastie and Tibshirani (1993) to extend the applications of local regression techniques from one-dimensional to multidimensional setting. The varying-coefficient model assumes the form of multivariate

regression function where z interacts with x to alter the relationship between x and y , and these parameters become a function of z :

$$y_i = \alpha_0(z_i) + \alpha_1(z_i)x_i + \varepsilon_i, \quad \varepsilon_i \sim (0, \sigma^2), \quad 1 \leq n \quad (2)$$

Unlike the general moderation models (e.g. including interaction variables), no specific form is assumed for $\alpha_k(z)$, $k = 0, 1$. This approach to defining the effect of a moderator z on the linear model is to change the definition of the coefficients so that they become a function of z . This principle is readily applied to general models such as the generalized linear and non-linear models (McCullagh and Nelder, 1989; Davidian and Giltinan, 1995).

Results

Results of Table 2 (in all tables, the dependent variable is whether or not child provides care) provide the modelling of the effect of gender in different care regimes. As initial models we use linear mixed (also named as hierarchical or multilevel) regression modelling, which models the effects of the factors on different levels of aggregation. In our case, we have two levels: the level of the basic unit – child who provides care – and the grouping level of parent who receives care, but it is of course possible different children provide care for the same parent.

As can be clearly seen from first model, the effects of the gender variable (for testing H1) are present (and positive) in Austria (i.e. in supported familialism regime), while in Slovenia (familialism by default) the effect is only weakly significant. In both countries women provide more care for their elderly parents, however the gender effect is stronger in size and significance in Austria. This therefore contradicts our hypothesis that supported familialism is linked with higher gender equality. There is also strong influence of child proximity, the closer the child lives, the higher the probability he or she provides care. For parents, living with a spouse, care is provided more often, it is more frequent for parents living in smaller household and for those in more need. There is however no effect of parental income on provision of care by the child in this first model.

Next two models include child education in the model. Interestingly, this changes the influence of gender significantly: when including also the effect of child's education, the effect of gender completely disappears from the model, while child's education is positive and significant predictor of care provision in Slovenia. The higher educated children carers provide more care than lower educated, in line with hypothesis 2. Finally, when including in the model also the interaction between gender and education of the child (Austria 3, Slovenia 3), the only significant predictor is the interaction and only for Slovenia, namely higher education women tend to provide more care in Slovenia. None of the other predictors related to child gender and education is significant anymore.

This interesting finding shows that while gender roles (i.e. gender inequality) are initially more pronounced in supported familialism, characteristic for Austria, this effect is completely absorbed when including education of the child. Furthermore, when including also the interaction of the child gender and education, the effects are almost completely eradicated. It seems, therefore, that child's education tends to eradicate gender inequality in the provision of care. These results indicate therefore that gender differences in filial care are highly linked to education. The lack of significant gender or educational differences in Austria seems in line with H3 that supported familialism reduces gender differences related to income and education.

Table 2: Results of linear mixed modelling, three different specifications

	Austria 1			Slovenia 1			Austria 2			Slovenia 2			Austria 3			Slovenia 3		
	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.
Constant	-6.51	-0.48		-15.50	-1.31		-70.68	-1.93	*	4.29	0.34		-69.54	-1.91	*	4.22	0.34	
ChildGender	0.78	2.82	***	0.43	1.67	*	0.50	1.00		0.03	0.12		0.62	1.04		-0.41	-1.20	
ChHighEduc							0.63	1.01		0.88	2.54	**	0.80	1.04		0.00	0.00	
ChGend_ChHighEduc													-0.40	-0.37		1.47	2.29	**
ChildAge	0.01	0.39		-0.02	-0.90		0.10	1.90	*	0.00	0.00		0.10	1.91	*	0.01	0.23	
ChildProximity	-0.27	-3.16	***	-0.34	-3.82	***	-0.41	-2.29	**	-0.31	-3.28	***	-0.41	-2.30	**	-0.29	-3.04	***
ParentGender	-0.24	-0.59		0.17	0.47		-0.65	-0.84		0.22	0.59		-0.64	-0.82		0.19	0.51	
ParentAge	0.04	0.12		0.44	1.41		1.70	1.82	*	-0.04	-0.13		1.66	1.79	*	-0.04	-0.11	
ParentAgeSq	0.00	0.04		0.00	-1.25		-0.01	-1.84	*	0.00	0.24		-0.01	-1.81	*	0.00	0.20	
ParentEduc	-0.03	-0.23		0.05	0.38		0.12	0.43		0.05	0.37		0.13	0.47		0.07	0.48	
ParentIncome	0.16	0.49		-0.17	-0.75		0.07	0.11		-0.43	-1.70	*	0.10	0.15		-0.46	-1.85	*
ParentMaritStat	0.15	1.60		0.16	2.00	**	0.24	1.11		-0.02	-0.25		0.24	1.11		-0.03	-0.30	
ParentHhSize	-0.85	-3.49	***	-1.11	-5.29	***	-1.05	-2.09	**	-1.11	-4.61	***	-1.03	-2.07	**	-1.10	-4.61	***
ParentNrChronDis	0.28	2.72	***	0.00	0.02		0.37	1.73	*	0.08	0.98		0.37	1.74	*	0.08	1.01	
ParentMemoryBad	0.08	0.42		-0.24	-1.39		0.52	1.19		-0.16	-0.89		0.51	1.18		-0.14	-0.77	
ParentEuroD	0.05	0.66		0.15	2.34	**	-0.07	-0.41		0.16	2.42	**	-0.07	-0.39		0.17	2.53	**
Parent_var(const)	3.45			2.98			6.17			1.91			6.03			1.75		
Nr. obs.	711			872			311			714			311			714		
Wald Chi2	42.61	***		51.85	***		14.89	***		40.36	***		15.17	***		44.04	***	
Log Likelihood	-347.12			-366.22			-112.22			-260.77			-112.15			-258.01		
LR test vs. logist. regr.	33.95	***		20.72	***		18.1	***		8.45	***		17.44	***		7.47	***	

Note: Asterisks: ***-1%; **-5%; *-10%. Source: Own calculations.

In Table 3, we test the extent of gender differences in combination with two additional socioeconomic variables. Results in the table present modelling the interaction with parental education (first two models) as well as with parent's income (second models). Interestingly, almost no interaction/moderating effects can be observed, with weakly significant and negative effect of higher parental education for female carers in Austria and weakly significant and positive effect of higher parental income for female carers in Slovenia. One explanation is that those effects are not there while another is that the effects are misspecified – they could be quadratic, polynomial, circular, or nonlinear of any other form.

Table 3: Results of linear mixed modelling, interactions with parental education and income

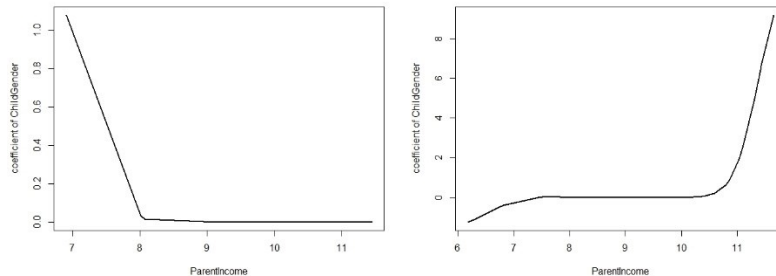
	Austria 1			Slovenia 1			Austria 2			Slovenia 2		
	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.
ChildGender	1.2961	0.54		-2.9454	-2.03	**	9.8881	1.12		-5.0982	-1.61	
ParentHighEduc	0.8970	1.24		0.1267	0.25		0.8514	1.44		0.8825	2.55	**
ChGend_ParentHighEduc	-0.3048	-0.30		1.3166	2.11	**						
ParentIncome	-0.0441	-0.07		-0.5828	-2.41	**	0.4661	0.57		-0.8200	-2.70	***
ChGend_ParentIncome							-0.9211	-1.06		0.5766	1.63	
Nr. obs.	315			721			315			721		
Wald Chi2	15.55			42.62	***		15.44			40.19	***	
Log Likelihood	-115.8364			-263.5612			-115.2506			-264.5095		
LR test vs. log.regr.	16.52	***		8.81	***		17.25	***		9.73	***	

Note: Asterisks: ***-1%; **-5%; *-10%. In all the models we controlled for ChildAge, ChildProximity, ParentGender, ParentAge, ParentAgeSq, ParentMaritStat, ParentHhSize, ParentNrChronDis, ParentMemoryBad and ParentEuroD
Source: Own calculations.

Due to interesting interaction effects of gender to child education and gender and parental income we have analysed these interaction more in detail. In Figure 1 we present the effects of moderated relationship of parental income to gender,. A completely opposite effects for the two countries can be observed. In Austria, the effect of income is negative with gender and women with richer parents tend to provide less help than men with parents of comparative income, This goes fully in line with Hypothesis 3 – its is clear that supported familialism with its supporting financial programs and services causes reduction of gender inequalities. On the other hand, a positive and significant effect can be observed for Slovenia. The effect of income for women is more pronounced in higher income groups. It is, therefore,

with higher income that women tend to provide more care in Slovenia, which is in line with reciprocity arguments (see Brandt et al 2009).

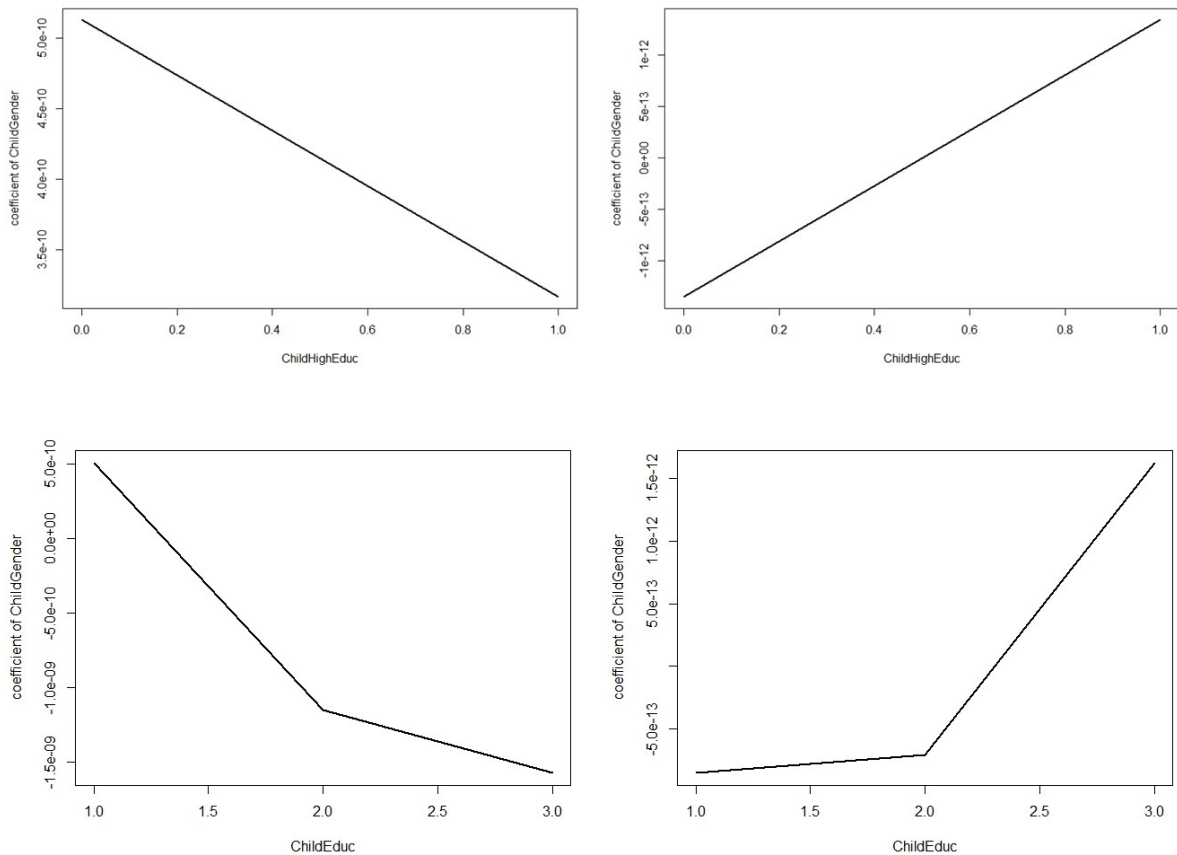
Figure 1: Varying-coefficient plots; effects of interactions of gender to parental income in Austria (left) and Slovenia (right).



Source: Own calculations.

When modelling moderating effects of gender and education, we find that the same opposite effect of parental education and child education with gender in Austria and Slovenia, as was the case with the income variable. This effect is slightly different for the variables we use to account for education (see detailed graphs and explanations in appendix). When using child's high education (binary variable) as the moderator for the effect of gender to probability of providing filial care, the effects are linear by definition and of completely opposite direction, where the sign concurs with the signs of the effect of parental income (negative for Austria and positive for Slovenia). Almost the same holds for child's three level education which is even more similar to parental income' effects, with the most pronounced differences found in the extremes: for primary (Austria) and tertiary (Slovenia) education. This shows that gender inequality in Austria is mitigated by education which acts in the opposite direction. This points in the line of Hypothesis 3 – clearly the moderating effects of education are different in Austria and Slovenia, with the latter following the more broad line of Hypothesis 2 while the former follows Hypothesis 3, supported familialism weakens the general moderating effects of education to the extent they become insignificant and of opposite direction.

Figure 2: Varying-coefficient plots; from top to bottom: effects of moderating effects of gender to, respectively, child's high education and child's three-level education; from left to right: Austria, Slovenia.



Source: Own calculations.

Discussion and Conclusion

In our article, we tested a set of hypotheses related to differences between two contrasting care regimes, supported familialism in Austria and familialism by default in Slovenia, by gender differences and differences in gender-based income and education inequalities. We found large differences between the two countries and provided a detailed explanation. Also, a novel methodology, capable of taking into account the moderating effects of income and education, so-called varying coefficient model, has been used and provided interesting results, pointing to nonlinearities in the effects of both income and education, being significantly more present in extremes of the distribution.

The article is an important step in exploration of the moderating effects of socioeconomic variables to gender differences and provides important new evidence to support and stimulate the existing debate. It also provides a novel methodology to stir the further research in this area.

Literature

- Albertini, M., & Pavolini, E. (2017). Unequal inequalities: The stratification of the use of formal care among older Europeans. *Journals of Gerontology Series B: Psychological Sciences & Social Sciences*, 72(3), 510–521. DOI: 10.1093/geronb/gbv038.
- Allin, S., Masseria, C., & Mossialos, E. (2009). Measuring Socioeconomic Differences in Use of Health Care Services by Wealth Versus by Income. *American Journal of Public Health*, 99(10), 1849–1855. DOI: 10.2105/AJPH.2008.141499.
- Allin, S., Masseria, C., & Mossialos, E. (2011). Equity in health care use among older people in the UK: an analysis of panel data. *Applied Economics*, 43(18), 2229–2239. DOI: 10.1080/00036840903196621.
- Bettio, F., & Plantenga, J. (2004). Comparing Care Regimes in Europe. *Feminist Economics*, 10(1), 85–113. DOI: 10.1080/1354570042000198245.
- BMASK – Bundesministerium für Arbeit, Soziales und Konsumentenschutz (2017). Sozialbericht. Sozialpolitische Entwicklungen und Maßnahmen 2015-2016 Sozialpolitische Analysen. Januar 2017.
- Bonsang, E. (2009). Does Informal Care from Children to their Elderly Parents Substitute for Formal Care in Europe? *Journal of Health Economics*, 28, 143–154. DOI: 10.1016/j.jhealeco.2008.09.002.
- Börsch-Supan, A. (2018). Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 6. Release version: 6.1.0. SHARE-ERIC. Data set. DOI: 10.6103/SHARE.w6.611.
- Brandt, M., Haberkern, K., & Szydlik, M. (2009). Intergenerational Help and Care in Europe. *European Sociological Review*, 25(5), 585–601, DOI:10.1093/esr/jcn076.
- Cantor, M. H. (1975). Life space and the social support system of the inner city elderly of New York. *The Gerontologist*, 15, 23–27. DOI: 10.1093/geront/15.1_Part_1.23.
- Carmichael, F., Charles, S., & Hulme, C. (2010). Who will care? Employment participation and willingness to supply informal care. *Journal of Health Economics*, 29(1), 182–190. DOI: 10.1016/j.jhealeco.2009.11.003.
- Cubbin, C., Pollack, C., Flaherty, B., Hayward, M., Sania, A., Vallone, D., & Braveman, P. (2011). Assessing Alternative Measures of Wealth in Health Research. *American Journal of Public Health*, 101(5), 939–947. DOI: 10.2105/AJPH.2010.194175.
- Černič, I. (2017). Celotni izdatki za dolgotrajno oskrbo v 2015 (489 milijonov EUR) višji kot v 2014. Ljubljana: Statistical Office of Republic of Slovenia. Retrieved from: <https://www.stat.si/StatWeb/News/Index/7116> (Access: 03 February 2019).
- Dahlberg, L., Demack, S., Bambra, C. (2007). Age and gender of informal carers: a population-based study in the UK. *Health Soc Care Community* 15(5):439–45.
- Da Roit, M. H., Weicht, B. (2015). The Gender Informal Care Gap, *European Societies*, 17, 2, (199).
- De Jong Gierveld, J., Dykstra, P. A., & Schenk, N. (2012). Living arrangements, intergenerational support types and older adult loneliness in Eastern and Western Europe. *Demographic Research*, 27, 167–200. DOI: 10.4054/DemRes.2012.27.7.

- Durand, M., & Murtin, F. (2015). The Relationship Between Income and Wealth Inequality: Evidence from the New OECD Wealth Distribution Database. Paper prepared for the IARIW Sessions at the 2015 World Statistics Conference Sponsored by the International Statistical Institute, OECD.
- Edelman, P. (1986). The impact of community care to the home-bound elderly on provision of informal care. *The Gerontologist*, 26, 263. DOI: 10.1093/geronj/45.2.S74.
- Eurobarometer. (2007). Health and long-term care in the European Union (Special Eurobarometer 283, 1–247). Brussels: European Commission.
- Green, V. L. (1983). Substitution between formally and informally provided care for the impaired elderly in the community. *Medical Care*, 21(6), 609–619. DOI: 10.1097/00005650198306000-00003.
- Haberkern, K., & Szydlik, M. (2010). State Care Provision, Societal Opinion and Children's Care of Older Parents in 11 European Countries. *Ageing and Society*, 30(2), 299–323. DOI: 10.1017/S0144686X09990316.
- Hlebec, V. & Filipovič Hrast, M. (2016). Influence of Contextual and Organisational Factors on Combining Informal and Formal Care for Older People: Slovenian Case. *Research on Ageing and Social Policy*, 4(2), 30–54. DOI: 10.17583/rasp.2016.1835.
- Hlebec, V., Nagode, M., & Filipovič Hrast, M. (2014). Care for older people between state and family: care patterns among social home care users. *Teorija in praksa*, 51(5), 886–903.
- Hlebec, V., Srakar, A., & Majcen, B. (2016). Care for the elderly in Slovenia: a combination of informal and formal care. *Revija za socialnu politiku*, 23(2), 159–179. DOI: 10.3935/rsp.v23i2.1317.
- Jacobs, T. M., Broese van Groenou, M. I., de Boer, A. H., & Deeg, D. J. H. (2014). Individual determinants of task division in older adults' mixed care networks. *Health and Social Care in the Community*, 22(1), 57–66. DOI: 10.1111/hsc.12061.
- Johnson, R. W., 2013. Income and Wealth of Older Adults Needing Long-Term Services and Supports. Testimony to the Commission on Long-Term Care, August, 1.
- Katz, S. J., Kabeto, M., & Langa, K. M. (2000). Gender Disparities in the Receipt of Home Care for Elderly People with Disability in the United States. *Journal of the American Medical Association*, 284(23), 3022–3027. DOI:10.1001/jama.284.23.3022.
- Kemper, P. (1992). The use of formal and informal home care by the disabled elderly. *Health Services Research*, 27(4), 421–451.
- Leitner, S. (2003). Varieties of Familialism. *European Societies*, 5, 353–375. DOI: 10.1080/1461669032000127642.
- Litwak, E. (1985). *Helping the elderly: The complimentary roles of informal networks and formal systems*. New York: Guilford Press.
- Litwin, H., & Attias-Donfut, C. (2009). The inter-relationship between formal and informal care: A study in France and Israel. *Ageing and Society*, 29(1), 71–91. DOI: 10.1017/S0144686X08007666.

Mood, C., 2010. Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It. *European sociological Review*, 26(1), 67-82. DOI: 10.1093/esr/jcp006.

Muir, T. (2017). *Measuring social protection for long-term care*. OECD Health Working Papers, No. 93. Paris: OECD Publishing.

Mutsumi T., Hashimoto, H. (2017). The socioeconomic within-gender gap in informal caregiving among middle-aged women: Evidence from a Japanese nationwide survey, *Social Science & Medicine*, 173, 48.

Nagode, M., Zver, E., Marn, S., Jacović, A., & Dominkuš, D. (2014). Dolgotrajna oskrba - uporaba mednarodne definicije v Sloveniji (engl. Long-term care – usage of international definition in Slovenia). Working Paper No. 2/2014, XXIII, Ljubljana: UMAR/IMAD.

Noelker, L. S., & Bass, D. M. (1989). Home care for elderly persons: Linkages between formal and informal caregivers. *Journal of Gerontology: Social Sciences*, 44(2), S63–S70. DOI: 10.1093/geronj/44.2.S63.

Norton, E. (2000). Long-term Care. In: Culyer, A. J., & Newhouse, J. P. (Eds.), *Handbook of Health Economics*, vol. 1B. New York, NY: Elsevier Science BV (pp. 956–995).

OECD, 2013. *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*, Paris: OECD.

Österle, A., & Bauer, G. (2011). Home care in Austria. In: Rostgaard, T. et al, *LIVINDHOME: Living independently at home, Reforms in home care in 9 European countries*. Copenhagen: SFI - Danish National Centre for Social Research (pp. 117–138).

Paraponaris, A., Bérengère, D., & Verger, P. (2012). Formal and informal care for disabled elderly living in the community: an appraisal of French care composition and costs. *European Journal of Health Economics*, 13, 327–336. DOI: 10.1007/s10198-011-0305-3.

Portrait, F., Lindeboom, M., & Deeg, D. (2000). The use of long-term care services by the Dutch elderly. *Health Economics*, 9(6), 513–531. DOI: 10.1002/1099-1050(200009)9.

Prieto, C. V., Jiménez-Martín, S. & García-Gómez, P. (2011). Trade-off entre cuidados formales e informales en Europa. *Gaceta Sanitaria*, 25(2), 115-124. DOI: 10.1016/j.gaceta.2011.07.004.

Rodríguez, M. (2014). Use of informal and formal care among community dwelling dependent elderly in Spain. *European Journal of Public Health*, 24(4), 668–673. DOI: 10.1093/eurpub/ckt088.

Rodrigues, R., Huber, M., Lamura, G. (2012). *Facts and figures on healthy ageing and long-term care – Europe and North America*. Vienna: European Centre for Social Welfare Policy and Research

Rodrigues, R., Ilinca, S. & Schmidt, A. (2018). Income-rich and wealth-poor? The impact of measures of socio-economic status in the analysis of the distribution of long-term care use among older people. *Health Economics*, 27(3), 637-646. DOI: 10.1002/hec.3607.

Samuelsson, G., Sundström, G., Dehlin, O., & Hagberg, B. (2003). Formal support, mental disorders and personal characteristics: a 25-year follow-up study of a total cohort of older people. *Health & Social Care in the Community*, 11(2), 95–102. DOI: 10.1046/j.1365-2524.2003.00416.

- Saraceno, C., & Keck W. (2010). Can We Identify Intergenerational Policy Regimes in Europe? *European Societies*, 12(5), 675–696. DOI: 10.1080/14616696.2010.483006.
- Saraceno, C. (2016). Varieties of familialism: Comparing Four Southern European and East Asian Welfare Regimes. *Journal of European Social Policy*, 26(4), 314–326. DOI: 10.1177/0958928716657275.
- Schmid, T., Brandt, M., & Haberkern, K. (2012). Gendered support to older parents: do welfare states matter? *European Journal of Ageing*, 9, 39–50. DOI: 10.1007/s10433-011-0197-1.
- Schmidt, A. E. (2017). Older Persons' Views on Using Cash-for-Care Allowances at the Crossroads of Gender, Socio-economic Status and Care Needs in Vienna. *Social Policy & Administration*, 52(3), 710–730. DOI: 10.1111/spol.12334.
- Schulz, R., & Sherwood, P. R. (2008). Physical and Mental Health Effects of Family Caregiving. *Journal of Social Work Education*, 44(3), 105–113. DOI: 10.1097/01.NAJ.0000336406.45248.4c.
- Scott, J. P., & Roberto, K. A. (1985). Use of informal and formal support networks by rural elderly poor. *The Gerontologist*, 25, 624–630. DOI: 10.1093/geront/25.6.624.
- StataCorp. 2017. *Stata Statistical Software: Release 15*. College Station, TX: StataCorp LLC
- Suitor, J. J., & Pillemer, K. (2006). Choosing daughters: Exploring why mothers favor adult daughters over sons. *Sociological Perspectives*, 49, 139–161. DOI:10.1515/sop.2006.49.2.139.
- van Ourti, T. (2003). Socio-economic inequality in ill-health amongst the elderly. Should one use current income or permanent income? *Journal of Health Economics*, 22, 187–217. DOI: 10.1016/S0167-6296(02)00100-5.