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Solidarity between generations in extended families.

Direction, size and intensity

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Abstract

We analyse intergenerational solidarity within multigenerational (MG) households, and assess how the formation of these households is related to poverty across European countries. Using data from EU-SILC 2013, we first assess to what extent financial gains of the formation of the MG households are pro-child, pro-elderly or to the benefit of all. Next, we determine how the prevalence of MG households relates to poverty risks, and especially how (the sharing of) elderly income impacts child poverty. We analyse (1) the direct relationship between living in a MG household and child poverty using a logistic regression and (2) the contribution of elderly income to lowering child poverty risks, under different scenarios of cost-sharing and resource-sharing using a pre-post analysis. The results indicate that the formation of MG households operates mainly as solidarity from older to younger generations. Although not designed for this purpose, pensions thereby also serve as a function to alleviate child poverty in these countries where MG households are most prevalent.

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1 Introduction

Intergenerational solidarity is an often-used concept that encompasses many possible meanings and interpretations (see e.g. Piachaud et al., 2009 for an overview). It is often shortly defined as social cohesion between generations (see e.g. Katz et al., 2005). Intergenerational solidarity is frequently discussed on the backdrop of a presumed 'clash between generations', especially in light of the challenges of pension sustainability in the future (see, e.g., Preston, 1984). In this perspective, public expenditures for families with children are deemed to come under pressure because of (increasing) public expenditures for old age. Esping-Andersen & Sarasa (2002: p.11) find, however, "very little evidence that families with children are poor because the welfare state devotes too much to the elderly". They argue that minimizing child poverty through public efforts can be a win-win policy that also benefits the elderly, as the pensions of the old also depend on the future productivity of the young. As such, the portrayal of a zero-sum generational clash is a narrow one.

There is also a more direct way in which children can benefit from benefits directed towards the elderly and vice versa, namely within the context of extended (or multigenerational)[1] households. When three generations cohabit within the same household, pension benefits can reduce child poverty, and child benefits and working income can reduce elderly poverty. Such extended families are commonly observed in Southern and Eastern Europe. The prevalence of such families in some countries and their virtual absence in other countries is driven to a large extent by cultural factors. Nonetheless, the decision to form a multigenerational household or not, is likely to depend on need and financial circumstances as well.

In this paper, we analyze intergenerational solidarity within multigenerational (MG) households, and assess how the formation of these households is related to poverty. MG households combine different income sources; typically child benefits and working income from the side of the child and its parents, and pension income from the side of the elderly. Previous research on extended families has generally focused on implications for labour supply and time spent on informal and formal care (e.g. Pezzin and Schone (1999); Bertrand, Mullainnathan and Miller (2003); Dimova and Wolff (2011)). However, the direct impact of the formation of MG families on financial means and poverty risks has been largely neglected.

In a first analysis, we assess to what extent financial gains of the formation of the MG households are pro-child (when the elderly bring in proportionally more income) or pro-elderly (when child and parents bring

[1] Both terms will be used interchangeably in this paper.

in proportionally more income). Additionally, the MG household can be to the benefit of all, as it involves economies of scale. This is reflected in the equivalence scales for household income, which increase less than proportionally with the number of household members. Given the nature of the equivalence scales, MG households either benefit the children, or the elderly, or both, as we show in this paper. Using data from the EU-SILC 2013, we analyse the prevalence of each of the three scenarios (pro-child, pro-elderly and pro-all) in MG households across European countries. We find that the formation of MG households is predominantly pro-child, especially in those countries where they are most prevalent. Hence, MG households typically have high pension income and relatively low work income, which implies a flow of solidarity of old to young.

We furthermore determine how the prevalence of MG households relates to poverty risks, and especially how (the sharing of) elderly income impacts child poverty. We analyze (1) the direct relationship between living in a MG household and child poverty (using a logistic regression) and (2) the contribution of elderly income to lowering child poverty risks, under different scenarios of cost-sharing and resource-sharing (using a pre-post analysis). Standard practice in distribution analysis is to assume that resources are fully shared within the household. The literature, however, is becoming increasingly critical of this assumption; such criticism may hold *a fortiori* for extended families. Under a more plausible scenario of partial resource-sharing we find that child poverty in MG households would be on average almost 10 percentage points higher than under the traditional assumption of full resource sharing. There are considerable differences across countries. The reductions in child poverty through the formation of MG households are particularly large in Eastern and Southern-Eastern welfare states, and comparatively small in Southern Europe.

The results indicate that the formation of MG households operates mainly as solidarity from older to younger generations. This is likely related to the fact that the prevalence of MG households is mainly high in welfare states characterized by relatively generous pensions and by relatively meagre child benefits, as well as larger inequality in working income. Although not designed for this purpose, the pensions in these countries thereby also serve as a function to alleviate child poverty.

This paper is organized as follows. In Section 2 we position this paper in the scientific literature. In Section 3 we discuss data and methodology of our empirical analysis. Section 4 describes the prevalence of multi-generational households in Europe, while Section 5 investigates child poverty among these households, looking at both prevalence and drivers. Section 6 is devoted to a pre-post analysis of the impact of elderly incomes on child poverty. The last section concludes.

2 Framework for analysis on intergenerational solidarity within extended families

Extended families, where three or more generations cohabit within the same household, are a relatively common household form in Southern Europe and, especially, Eastern Europe. There can be different reasons or motivations behind the formation of such families, ranging from individual preferences to the external socio-economic or cultural context imposing this form of cohabitation. In previous work, researchers have generally focused on the impact of extended families on labour supply and time spent on informal and formal care (e.g. Bertrand, Mullainnathan and Miller, 2003). However, one important implication of the formation of extended families is often left out. Elderly typically bring pensions and other income into the household, which may be of substantial size. This is particularly relevant given that extended families especially form in poor countries where social protection from cash transfers is generally low, but pensions are relatively high. Moreover, extended families are especially common among poor families that cannot rely on market income alone. As such, financial distress or poverty risks can be a main driver behind the formation of extended families. In any case, they are a relevant aspect of cohabiting because they automatically change the income position of the household, and often substantially so.

Studies that look at the poverty alleviating effect of co-residing have so far ignored its impact on child poverty. Rendall and Speare (1993), for instance, examine the poverty alleviation effect of co-residing with a focus on elderly poverty (in the US in 1984). In this paper we focus on the complex relationship between child and elderly poverty and MG households. We look at two specific channels, notably the impact of the income that the elderly bring into the household and the impact of the presence of the elderly on the equivalence scale and the underlying resource-sharing assumption.

Diris et al. (2017) estimate the direct impact of social spending on child poverty. They thereby distinguish between spending on pensions and spending on all other cash transfers. The study uncovers an ambiguous role for increases in pension spending size: more pension spending worsens the relative income position of children and thereby increases child poverty, but also alleviates child poverty in MG households. The study of Diris et al. (2017) is performed at an aggregate level, i.e. it aims to explain the impact of aggregate pension spending on aggregate child poverty rates at the country level. The current study analyses the issue at the micro-level. We aim to explain the at-risk-of-poverty of the individual children and elderly and to identify the impact of elderly incomes on poverty in MG households. We investigate who are the winners of the formation of MG households: does such formation offer more income protection to the elderly or to the children in these households? In addition, we apply logistic regressions

that directly estimate the impact of MG households on poverty risks at the micro-level, and we assess heterogeneity in all these effects across European welfare states.

In distributive analyses, it is common to apply an equivalence scale on household income, thus deriving a needs-adjusted or equivalized income, used for the measurement of inequality and poverty. As each individual in the household is assigned the same equivalized income, this means that one assumes equal sharing of resources in the household[2]. If this assumption is violated, this approach can be highly problematic (Atkinson, 1975; Decancq et al., 2014). A number of studies have rejected this 'classical' model of resource-sharing, as different individuals have different levels of bargaining power in the family (see e.g. Thomas, 1990; Schultz, 1990; Fortin and Lacroix, 1997; Bennett, 2013). Typically, such analyses are exclusively focused on working age adults with or without children, but it is likely that differences in bargaining power also apply to extended families. Albertini and Kohli (2012) look at MG households in Southern-Europe and find a low prevalence of effective cash transfers. We emphasize, however, that direct cash transfers are not necessary for eldery income to benefit children in extended families. Elderly can improve the living conditions of children by contributing to the household budget, i.e. by (co-)financing goods and services that are to the benefit of all household members, or of children in particular. The number of studies that look at the impact of within-household resource-sharing on child poverty is very limited, and studies conducted on developed countries (see e.g. Cantillon and Nolan, 2001 on Ireland; Burton et al., 2007 on Canada) do not consider extended families. Research on South-Africa indicates that increased contribution from pensions to the household budget has a positive impact not only on food, health care and clothes consumption shares of the children (Hamoudi and Thomas, 2005), but also on their cognitive and physical development (Duflo, 2000). It appears that these pensions shift bargaining power from the male household head to the grandparent (which is generally a grandmother), which might actually benefit children, even controlled for income changes. In other words, judging the effects of increased pension income on child well-being through income poverty alone might even understate the true benefits from a total child welfare perspective. In any case, the empirical evidence indicates that at least a significant share of the extra pension income brought into the household is used to the benefit of children.

[2] Burton et al. (2007) provide a conceptual overview of inequality within the household, and bring together the theoretical and empirical literature, drawing on several disciplines

3 Data and methodology

The empirical analysis is performed on the data of EU-SILC 2013. EU-SILC is a yearly survey on the income and living conditions of private households. The 2013 sample contains 32 countries (the EU member states at the time, plus Croatia, Iceland, Norway, the Serb Republic and Switzerland). In order to see if the crisis had an impact on the prevalence of children in MG households, we compare these rates with the data of 2008 (which does not include Croatia, Malta, the Serb Republic and Switzerland). The main analysis, however, is performed on the 2013 data only.

A child is defined as any person in the survey younger than 18, while an old age individual is any person older than 64 and a working age individual is aged between 18 and 64[3]. A multigenerational household is defined here as a household where at least one child, one old age individual and one working-age individual is present.

3.1 Measuring the direction of financial solidarity

From a financial perspective, the formation of a MG household can be beneficial for the children involved, for the elderly involved, or for both the children and the elderly; throughout this paper, we use 'beneficial' as a short-cut for 'financially beneficial'. We use 'pro-child' to describe MG households which formation is solely beneficial for the children; 'pro-elderly' for MG households which formation is solely beneficial for the elderly, and 'mutual' as a short-cut for MG households which formation is beneficial for both the children and the elderly. In this section, we present a simple formal framework that allows to classify MG households in these three distinct categories, and to calculate the share of children and the share of elderly living within each of these three categories, which is empirically applied in section 4.1.

From the perspective of the children, the formation of the MG household is financially beneficial, if their equivalized household income in the MG household is higher than their equivalized income in a counterfactual household without the elderly persons. Formally, the MG household is financially beneficial for the children if

$$\frac{P+NP}{ESMG} > \frac{NP}{ESCF_C} \qquad (1)$$

[3] As a robustness check we have also performed the analyses using 60 years and older to define old age individuals. The general pattern of outcomes is very similar to those using the younger age demarcation. While using a later age reduces the number of cases, it captures pensioners in a more adequate way. Hence, we present only outcomes for the age definition that uses 65 years and older.

with:

P = the sum of non-equivalized incomes of the household member older than 64 (we use 'P' because most of these incomes will be pension incomes, but one should note that all incomes of the elderly household members are included in P)

NP = the sum of non-equivalized incomes of household members younger than 65;

$ESMG$ = the parameter applied to equivalize the income of the MG household (i.e. the equivalence scale)

$ESCF_C$= the parameter applied to equivalize the income of a counterfactual household, from which we exclude the elderly (persons older than 64);

One can also write expression (1) as follows:

$$\frac{P+NP}{NP} > \frac{ESMG}{ESCF_C} \quad (2)$$

or:

$$\frac{P}{NP} > \frac{ESMG-ESCF_C}{ESCF_C} \quad (3)$$

These expressions formalize a simple insight: the formation of the MG household is beneficial for the children if the ratio of the (non-equivalized) incomes of the elderly divided by the (non-equivalized) incomes of the non-elderly is *larger* than the relative increase in the equivalence scale generated by the formation of the MG household (i.e. larger than the difference between the equivalence scale of the MG household and the equivalence scale of the counterfactual household without the elderly, divided by the latter counterfactual equivalence scale). In other words, if the elderly add more income than spending needs, the children gain.

We can apply a similar reasoning from the perspective of the elderly: the formation of the MG household is financially beneficial for the elderly involved, if (with a similar expression as in equation 3):

$$\frac{NP}{P} > \frac{ESMG-ESCF_E}{ESCF_E} \quad (4)$$

with

> $ESCF_E$= the parameter applied to equivalize the income of a counterfactual household, from which we would now exclude the non-elderly (persons younger than 64).

Equation (4) tells us that the formation of the MG household is financially beneficial for the elderly if the ratio of the (non-equivalized) incomes of the non-elderly divided by the (non-equivalized) incomes of the elderly is *larger* than the relative increase in the equivalence scale generated by the formation of the MG household. If the incomes of the non-elderly are larger, relative to the incomes of the elderly, than the extra need for spending (taking into account economies of scale of forming such a larger household), then the elderly will benefit.

The formation of the MG household will benefit both the children and the elderly, if both equations (3) and (4) hold. Equations (3) and (4) can only hold simultaneously if the following condition is satisfied:

$$\frac{ESMG-ESCF_C}{ESCF_C} < \frac{ESCF_E}{ESMG-ESCF_E} \quad (5)$$

There is no *a priori* reason why this condition cannot be satisfied in a significant number of cases; this becomes apparent in Section 4.1. In short, we label MG households 'pro-child' if equation (3) holds but equation (4) does not hold; we label MG households 'pro-elderly' if equation (3) does not hold but equation (4) holds; and we label MG households as 'mutual' if both equations (3) and (4) hold. It is not possible that MG households are neither 'pro-child', nor 'pro-elderly', as this would require that $ESMG \geq ESCF_C + ESCF_E$ which is in contradiction with the economies of scale incorporated in standard equivalence scales.

Within the group of *children* living in MG households, we can count the share of children living in 'pro-child' households, the share of children living in 'pro-elderly' households, and the share of children living in households which benefits are 'mutual'; we can do the same for the group of *elderly* living in MG households: we can count their share in 'pro-child' MG households, in 'pro-elderly' MG households, and in 'mutual' MG households.

The relationship between poverty risks and the benefits of MG household formation is indirect: if the formation of a MG household is beneficial for the children, this means that their equivalized household income (in the MG household) improves relative to the poverty threshold (compared with the counterfactual, whereby the elderly would be excluded from the household). Hence, if their counterfactual income is below the poverty threshold, the formation of the MG household makes it possible to surpass the threshold, but it need not do so. If a large share of children live in MG households that are either 'mutual' or 'pro-child', we can therefore presume a beneficial impact of MG household formation on child poverty, but the importance of that impact is an empirical question.

3.2 Measuring the impact of the elderly on child poverty

The results from the analysis on the direction of financial solidarity, presented in Section 4.1, show that MG households are predominantly 'pro-child'. Hence, the poverty-alleviating effect of co-residing is potentially largest with respect to child poverty. Therefore, our empirical poverty analysis will focus on child poverty, and its specific relation to elderly income in MG households. As indicated in the previous

section, we look at the contribution of total income of the elderly; pensions, nevertheless, make up the large majority of elderly incomes, so these are the main drivers of the results.

We measure child poverty on the basis of the headcount rate. The poverty headcount measures the share of individuals with an equivalized household income below the poverty line. The poverty line is set at 60 percent of median equivalized household income, following common practice in the European Union. Household income is equivalized for household composition by applying the modified OECD scale; this scale attributes a weight 1 to the first adult in the household, a weight of 0.5 to other individuals aged 14 or more and a weight of 0.3 to children younger than 14.

As explained above, a first step in our analysis is to establish that MG households are predominantly 'pro-child'. However, to investigate the exact impact of MG household formation on child poverty we need additional analyses. After establishing the direction of financial solidarity, we follow two tracks to quantify the impact of elderly incomes on child poverty in MG households. Firstly, we estimate a logistic regression on all children with child poverty as the dependent variable (i.e. is the child poor (1) or not (0)). Our main independent variables of interest are whether the child lives in a multigenerational household and whether income from an elderly person is present (for more details see section 4.2).

Secondly, we perform a pre-post analysis, i.e. we assess what child poverty would be if there were no income from the elderly in the household. In this analysis, it is important to take a closer look at the standard assumption in poverty analysis that resources are fully shared within the household. Especially for MG households, this may not correspond to reality. We therefore perform a selection of simulations to test the sensitivity of our outcomes to changes in the resources sharing assumption. Two extreme assumptions would be: full-sharing on the one hand and no sharing on the other. Neither is very realistic, but such simulation exercises are valuable to provide an indication of the possible weight of inequality within the household (Burton et al., 2007). Simulation studies of this kind are still very rare (see e.g. Jenkins, 1991; Sutherland, 1997; Phipps and Burton, 1995). Using self-reported data from EU SILC on the degree of sharing in households, we can approximate the true degree of sharing in MG households, constructing a much more plausible 'third scenario'. As far as we know, no such study has analysed sharing among MG households.

Our simulations will test the impact of the two factors that are relevant for child poverty in MG households, (1) income from the elderly increases the income that can be shared in the household and (2) living costs increase due to the additional household members, but less than proportional because of economies of scale. We calculate the following selection of pre-post scenarios, changing these two factors: on the one hand we remove income from the elderly (partially) from household income, while on

the other hand we change the equivalence scale. We present the following four alternative scenarios to the full sharing assumption, which serves as our baseline scenario:

1) *'No sharing, equivalence scale unchanged': elderly incomes are removed from household income; household composition is not changed; equivalence scale is not changed*. This scenario corresponds to the situation where the old-age person in the household would not share its income with the other persons in the household. The cost of living of the old-age person is still taken into account as the equivalence scale is not altered. It provides a rough indication of what child poverty would be in the absence of the elderly income in the household.
2) *'No sharing, no elderly in equivalence scale': elderly incomes are not included in household income; elderly are excluded from the household; equivalence scale is changed correspondingly*. This scenario corresponds to the situation where there would be no MG household; i.e. the elderly effectively form(s) a separate household. Hence, neither elderly incomes nor living costs are shared. The impact on child poverty might go in two directions. On the one hand, the removal of elderly incomes will lead to an increase in child poverty due to reduced household income; on the other hand, child poverty might reduce as the equivalence scale is reduced, which might lead to an increase in equivalent incomes (this will especially be the case for MG households without an income from elderly).
3) *No sharing, split equivalence scale': Multigenerational households are divided into two sub-households under the same roof*, notably one consisting of the old age person(s) and one consisting of the children and working age individuals, but *the equivalence scale is adapted*, in the sense that the first adult in both households gets a value 0.75. This corresponds to the situation where the different generations live under the same roof (and thus benefit from some economies of scale, and therefore we divide the value of 1 over both households), but resources are not shared.
4) *'Part of elderly income shared': Incomes from the elderly are partially removed from household income; household composition is not changed; equivalence scale is not changed*. This scenario corresponds to the situation where the old-age person in the household shares only part of his/her income in the household; the cost of the old-age person is taken into account as the equivalence scale is not altered. It provides an indication of what child poverty would be when only part of incomes are shared in the household.

For scenarios 1) and 4) child poverty rates will increase by construction, compared to the baseline of full sharing, and this increase will be especially strong in the scenario where elderly income is not shared at

all. In the case of scenarios 2) and 3) child poverty can move either way (as compared to the baseline) depending on whether the effect of changing incomes or of changing equivalence scales dominates.

We present our results by country group, as there is considerable divergence in the prevalence of MG households across European countries. Moreover, we expect the impact of elderly incomes on poverty in MG households to be very different, as they are driven by different motivations and likely relate closely to institutional circumstances as well. We distinguish the following six groups:

1) Nordics: Denmark, Finland, Iceland, Norway, Sweden;
2) Continental: Austria, Belgium, France, Germany, Luxembourg, the Netherlands;
3) Anglo-Saxon: Ireland, United Kingdom;
4) Southern: Cyprus, Greece, Italy, Malta, Portugal, Spain;
5) South-Eastern: Bulgaria, Croatia, Romania, Slovenia, Serb Republic;
6) Eastern: Czech Republic, Hungary, Estonia, Latvia, Lithuania, Poland Slovak Republic.

4 Financial solidarity within multigenerational households in Europe

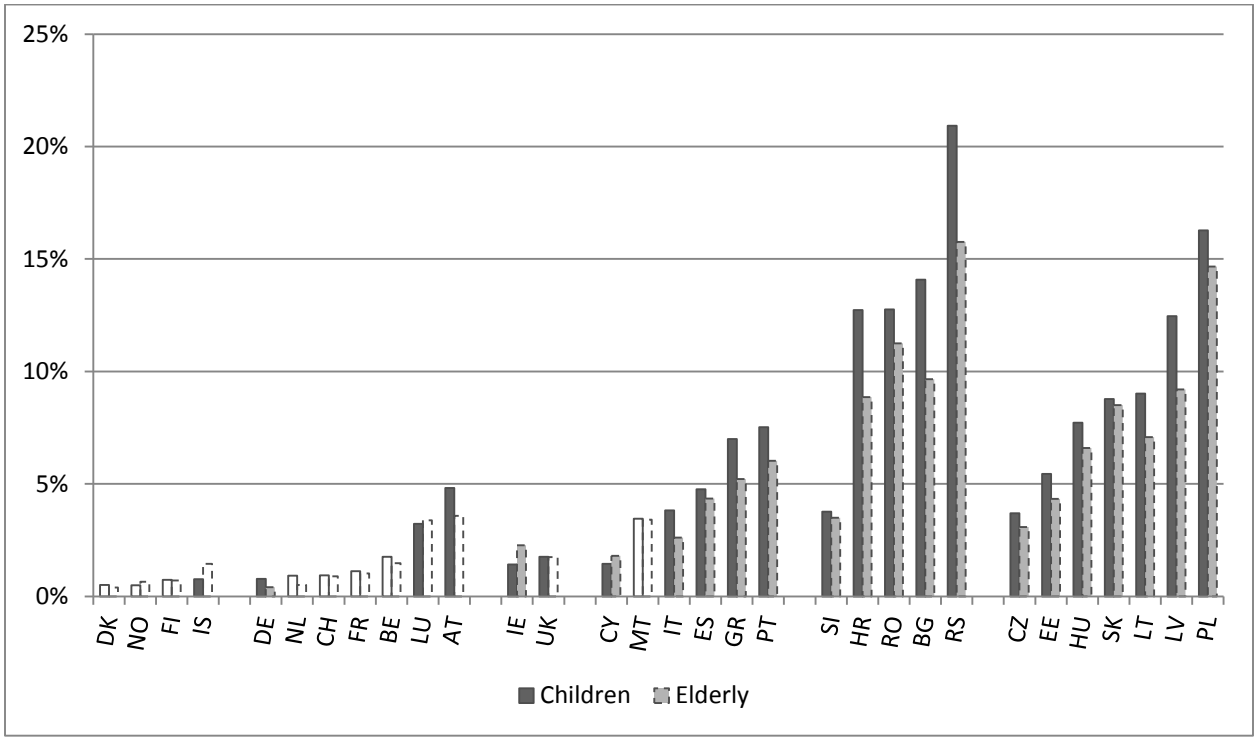
We now look at financial solidarity within MG households in Europe from three different empirical angles, notably the direction of this solidarity, the relevance of MG household membership and the importance of elderly incomes for child poverty. First, we establish in section 4.1 the direction of this solidarity: is this more beneficial for children or for elderly? Since the direction is mostly for the benefit of the children, we focus the remainder of the empirical analysis on child poverty. In section 4.2, we estimate the link between membership of MG households and child poverty by using logistic regression, across European welfare states. Finally, in section 4.3 we look at how important old age incomes are for children's living standards by performing a pre-post poverty analysis. We hereby also look into two base assumptions of poverty analysis, notably the equal sharing assumption and the role of the equivalence scale.

4.1 Children and elderly in multigenerational households in Europe: prevalence and direction of solidarity

Studies have already shown that the socio-economic conditions of children in several Western countries have been deteriorating over the past decades (especially as a consequence of the recent crisis), while pensioners continue to do well (e.g. Esping-Andersen and Sarasa, 2002; Diris et al., 2017). We use the

EU-SILC data to illustrate the relative income position of children and elderly in Europe. We depict child poverty outcomes in Europe in general and for those living in MG households, using EU-SILC data for 2013, but we first compare the prevalence of MG households in Europe. Figure 1 shows the share of children and elderly living in a MG household, with countries grouped according to region in Europe. In most countries the share of children living in MG households is larger than that of the elderly. Moreover, there is considerable cross-country variety: in the Nordic, the Anglo-Saxon and most continental countries, very few children and elderly live in a MG household. Only in Austria we find close to 5% of children living with two other generations, and a somewhat smaller share of elderly. In Southern and Eastern Europe the prevalence of children living in MG households is close to or above 5%, with the exceptions of Cyprus and Malta, where it is less. It is well over 10% in most South-Eastern countries, and in Latvia and Poland.

Figure 1: Share of children and elderly living in a multigenerational household in Europe, 2013.



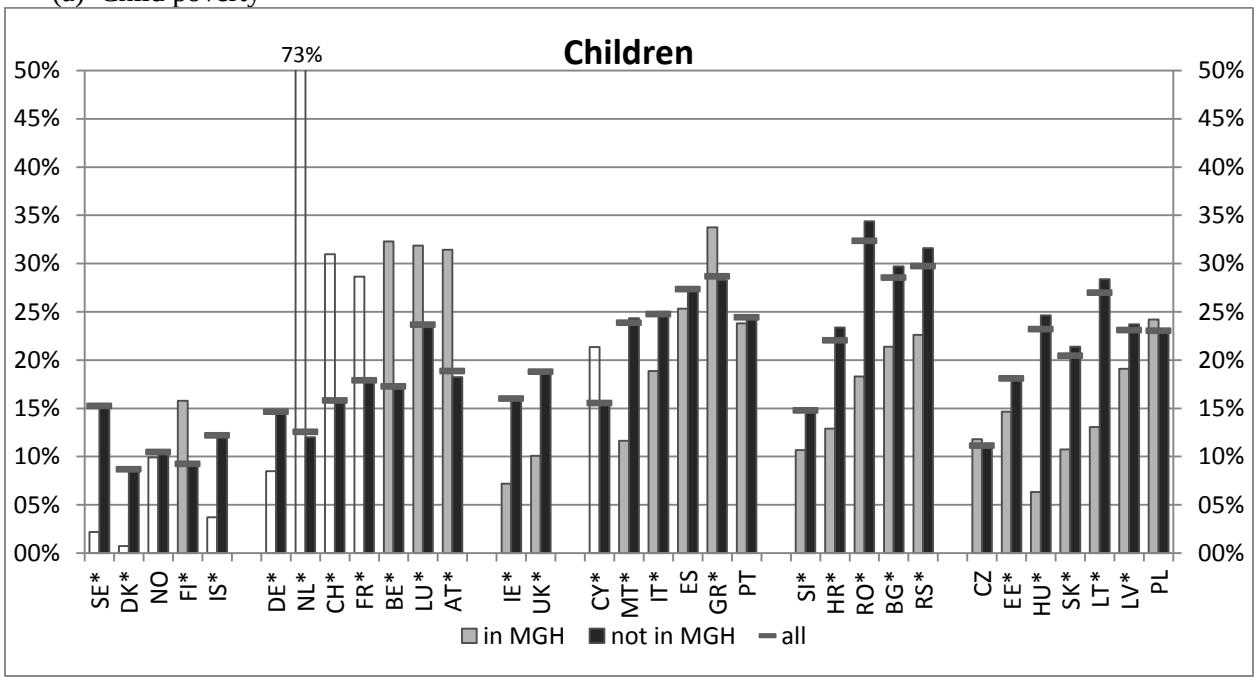
Notes: 1) Within each country group countries are ranked from low to high share of children living in a MG household. 2) countries with in the sample less than 60 children resp. elderly living in a MG household are shown in white colour.
Source: Own calculations on EU-SILC 2013.

Compared to the situation before the crisis, the share of children and elderly living in MG households has remained rather stable over time (see Figure A.1). In countries that have been hit most severely by the

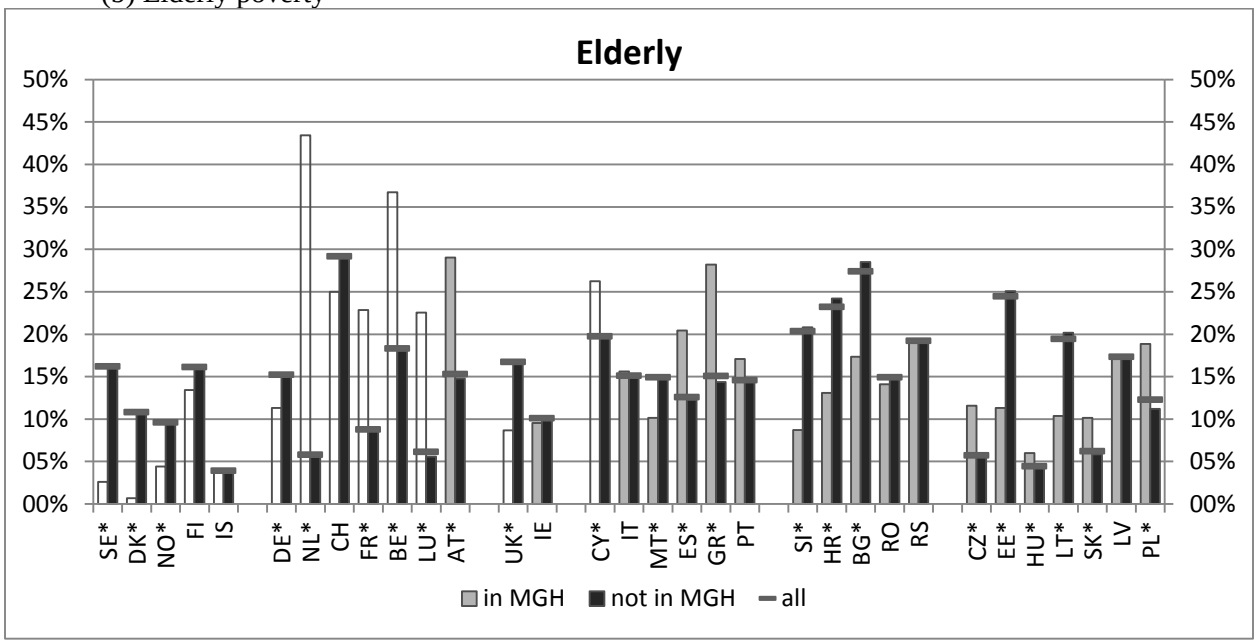
crisis (notably Greece, Poland, Portugal and Spain), we find an increase in the prevalence of MG households. This could be expected, as such households might form as a coping strategy in times of crisis. In countries like Bulgaria, Latvia and Slovakia, however, we notice the opposite evolution, namely a decrease in the share of children and elderly in MG households.

Figure 2: Poverty rates in Europe, according to membership of multigenerational household (MGH), 2013 (see Table A.4 for numbers).

(a) Child poverty



(b) Elderly poverty



Notes: 1) Within each country group countries are ranked from low to high share of children, resp. elderly living in MG household. 2) Countries with less than 60 children, resp. elderly living in a MG household are in white colour. 3) * behind country name indicates significant difference in poverty rate between 'in MGH' and 'not in MGH' (at 95% confidence interval).

Source: own calculations EU-SILC 2013.

On average the EU child poverty rate amounts to 19.7%, and the rate for children in MG households is slightly higher (20.4%). There is, however, wide variation across countries (Figure 2a). For most countries the difference between the poverty rate for children living in MG households and those not living in this type of household is statistically significant (exceptions are Norway, Spain, Portugal, the Czech Republic and Poland). Interestingly, for countries with statistically different poverty rates, poverty rates for children living in MG households are higher than those for children in non-MG households in the group of continental welfare states. For instance, in Belgium children in a MG household are almost twice as much at risk of being poor (32%) compared to children in non-MG households (17%). The reverse applies for the Anglo-Saxon, Eastern and South-Eastern European countries, where we find much lower poverty rates for children in MG households. The difference in at-risk-of poverty rate between both groups of children amounts to more than 10 percentage points in e.g. Hungary (18 percentage point difference), Romania (16 percentage points) and Lithuania (15 percentage points). For the Southern European countries, outcomes are mixed; in Italy and Malta children in non-MG households are relatively more at risk of being poor (and are in this respect similar to the Eastern and South-Eastern countries), while in Cyprus and Greece children in MG household have a higher poverty risk.

We find marked differences across countries for elderly poverty rates as well. In e.g. Belgium, Spain and Greece elderly poverty rates in MG households are well above the poverty rates for elderly living in non-MG households. However, in the Eastern and South-Eastern European countries, the reverse applies. Especially in Bulgaria, Croatia, Estonia, Lithuania and Slovenia, we find that elderly in MG households have a much lower poverty risk than their counterparts in non-MG households. When comparing poverty rates between children and elderly in MG households, children face a higher poverty risk than elderly in most countries; this is due to a composition effect, i.e. there are relatively more children in poor MG households than elderly.

These poverty outcomes are already an indication of the fact that the financial benefit of MG household formation likely differs across countries, or across generations. Table 1 uses the formulae presented in Section 3.1 to calculate the direction of solidarity of MG household formation. Most children appear to benefit from living in a household with three generations: in all countries more than half of the children live in a household where the direction of solidarity is 'pro-child' or 'mutual'. In countries with higher shares of children living in MG households, these figures are often much higher. The share of children living in a 'pro-elderly' household is relatively small, especially in the South-Eastern and Eastern countries. For instance, in Croatia and Slovenia, the direction of solidarity is pro-child (i.e. beneficial for the children and not for the elderly) for 90% of the children living in an MG household. In Bulgaria, Estonia, Lithuania, Poland and Slovakia, this is the case for more than 80% of the MG children. MG households tend to be relatively more pro-elderly in Southern Europe. For around 40% of elderly living in these households, there is a (direct) benefit from their formation, compared to around 15-20% in Eastern and South-Eastern countries. Hence, although the general direction is consistently pro-child, there are still strong differences in the degree across countries.

This pro-child direction is confirmed when we look from the perspective of the elderly: the formation of MG households is mainly beneficial for the children (under the assumption of equal sharing of resources, see further), though the effect is somewhat less pronounced than in the case of the child perspective.

Hence, we can conclude that financial solidarity among MG households predominantly goes into the direction of the children. Given this result, we focus in the remainder of the empirical analyses on children and the impact of the resources that the elderly bring into the household on child poverty.

Table 1: Direction of solidarity of intergenerational household formation in Europe, represented by share of children, resp. elderly, for which the direction of solidarity is either pro-child, pro-elderly or mutual, 2013.

	Share of children in …			Share of elderly in…		
Direction solidarity	Pro elderly	Mutual	Pro child	Pro elderly	Mutual	Pro child
SE	29.0%	20.0%	51.0%	31.7%	17.1%	51.2%
DK	34.8%	9.0%	56.2%	20.3%	9.8%	69.9%
NO	13.6%	23.3%	63.1%	18.4%	26.0%	55.6%
FI	6.7%	25.3%	68.0%	9.7%	23.8%	66.5%
IS	16.6%	39.5%	43.9%	26.1%	35.6%	38.3%
Avg	***20.2%***	***23.4%***	***56.4%***	***21.2%***	***22.5%***	***56.3%***
DE	6.4%	10.5%	83.1%	8.4%	15.5%	76.1%
NL	6.7%	12.3%	81.0%	17.1%	27.0%	55.9%
CH	24.8%	19.2%	55.9%	28.0%	23.6%	48.4%
FR	26.4%	11.0%	62.6%	28.2%	14.1%	57.7%
BE	40.2%	12.4%	47.4%	35.5%	25.9%	38.6%
LU	38.8%	0.4%	60.8%	29.5%	0.4%	70.1%
AT	25.2%	13.0%	61.8%	19.6%	18.4%	62.0%
Avg	***24.1%***	***11.2%***	***64.7%***	***23.7%***	***17.8%***	***58.4%***
IE	25.2%	4.4%	70.3%	34.3%	3.3%	62.4%
UK	29.4%	4.0%	66.5%	30.7%	7.4%	61.8%
Avg	***27.3%***	***4.2%***	***68.4%***	***32.5%***	***5.4%***	***62.1%***
CY	38.8%	8.8%	52.4%	46.0%	5.1%	48.9%
MT	39.7%	6.2%	54.1%	41.0%	7.0%	52.0%
IT	24.1%	15.0%	60.9%	23.0%	18.1%	58.9%
ES	25.1%	13.3%	61.6%	28.1%	17.7%	54.2%
GR	23.5%	15.4%	61.1%	26.1%	14.6%	59.3%
PT	18.4%	11.3%	70.3%	19.3%	12.9%	67.8%
Avg	***28.3%***	***11.7%***	***60.1%***	***30.6%***	***12.6%***	***56.9%***
SI	3.5%	5.7%	90.8%	5.8%	3.8%	90.4%
HR	7.3%	3.5%	89.2%	10.3%	5.8%	83.9%
RO	8.0%	8.8%	83.1%	10.7%	12.8%	76.4%
BG	11.2%	5.8%	83.0%	9.6%	7.0%	83.4%
RS	19.9%	8.2%	72.0%	19.2%	11.2%	69.6%
Avg	***10.0%***	***6.4%***	***83.6%***	***11.1%***	***8.1%***	***80.7%***
CZ	21.2%	10.9%	67.9%	28.8%	11.2%	60.0%
EE	8.9%	9.4%	81.6%	12.3%	12.6%	75.1%
HU	10.8%	15.2%	73.9%	14.0%	20.3%	65.7%
SK	12.7%	4.5%	82.7%	15.6%	8.1%	76.3%
LT	12.6%	6.0%	81.5%	20.1%	7.1%	72.8%
LV	13.7%	12.4%	73.9%	18.5%	15.7%	65.8%
PL	8.1%	6.7%	85.1%	9.0%	11.2%	79.7%
Avg	***12.6%***	***9.3%***	***78.1%***	***16.9%***	***12.3%***	***70.8%***

Source: own calculations EU-SILC 2013.

4.2 Membership of a multigeneration household as a driver of child poverty

As discussed in Section 2, ignoring possible behavioural responses, there are two main direct channels that can explain the potential difference between poverty among children in MG and those in non-MG households: on the one hand the presence of the elderly can add income to household resources (thus increasing the living standard *ceteris paribus*), but on the other hand their presence also affects the equivalence scale by adding additional household members (thereby decreasing living standards). Thus, the impact of the presence of the elderly on child poverty in MG households can go in both directions. We now enrich the outcomes of Figure 2(a) by applying a logistic regression for child poverty, controlling for other household characteristics.

The SILC data reveal several specific characteristics of extended families (See Table A.1 in Annex). First of all, elderly in extended families are much more likely to be grandmothers than grandfathers especially in those countries where MG households are more prevalent; on the contrary, in the Northern countries grandfathers are more frequent in MG households. The large majority of the elderly in extended families do not report to suffer from poor health; this suggests that the need to care for a grandparent with health concerns is not a major factor behind the formation of extended families. Another key characteristic is that it is more likely that there is only one working age adult in extended families. As such, the grandparent can be seen as a substitute for a second parent figure in many MG households. Extended families are also more likely to have a non-EU migrant background, though this differs across Europe: this is the case in Nordic, Continental, Anglo-Saxon and Eastern-European countries, while it is not the case in the other geographic groups. MG households also have lower levels of human capital. Household work intensity in these families is lower than in other families, but not by a large margin. This likely reflects that the impact of the formation of MG households on the propensity to work can operate in opposite directions. Elderly could require more care and take time away from labour market activity, but they can also serve as facilitators to labour market participation by acting as caregivers to the grandchild.

In order to identify whether being part of a MG household is related to child poverty risks, we present a set of logistic regressions for the countries under examination. Whether a child is poor or not is the dependent variable ($Poor_i$). Our independent variables of interest are whether the child lives in a MG household ($MGHH_i$; yes/no) and whether income from an old age person is present (yes/no); for this last variable we make a distinction between whether there is only income from an old age man (YOAM), or only from an old age woman (YOAF) or that both old age man and woman (YOAFM) provide an income. We thus estimate the following two logistic regressions for each country: Model 1: $Poor_i = \alpha + \beta\, MGHH_i + \gamma X_i + \epsilon_i$

Model 2: $$Poor_i = \alpha + \beta_1 YOAF_i + \beta_2 YOAM_i + \beta_3 YOAFM_i + \gamma X_i + \epsilon_i$$

We also use the following control variables (X): (1) whether there is only one working age adult in the household (yes) or more; (2) whether the old age person suffers from bad health (yes if PH010 is 4 (bad) or 5 (very bad)) with a separate variable for old age man and old age woman; (3) whether the head of household has a migrant background (yes if non-EU born); (4) whether the head of household has attained a higher education degree; (5) age of the head of the household and (6) work intensity of the household (coefficients of control variables are not reported, but are available from the authors upon request).

Table 2 presents the coefficients for the independent variables of interest, notably whether the child lives in a MG household (Model 1) and whether income from an old age person is present, (Model 2). In more than half of the countries, Model 1 yields a statistically significant negative coefficient for the MG variable. This means that children in a MG household are less likely to be poor (as compared to those in other living arrangements, given the same background characteristics). This is especially the case in all South-Eastern and Eastern European countries. In Denmark and Austria, we find a statistically significant positive relationship, meaning that membership of a MG household is linked to a higher likelihood of being poor. Note however, that the prevalence of MG households is very low in this group, and likely constitutes a highly selective and particular subgroup. In the other Nordic and continental countries, statistically significant coefficients for MG household membership are not common, indicating that the control variables explain the difference we observed in Figure 2(a).

Model 2 looks at the impact of income brought into the household by old age persons. In the countries where the elderly income indicators are statistically significant, they generally have negative signs, both for income coming from men only, from women only and from men and women jointly. Hence, the presence of old age incomes in the household reduces the risk of poverty for these children. As such, the income from the elderly overcomes their addition to the equivalence scale, also for elderly women which typically bring in less pension income. Exceptions are provided by Austria, Denmark and Norway, where old age income from women (Austria), or from men and women jointly (Denmark and Norway) exhibits a positive (conditional) correlation with child poverty. When there is an income from both an old age man and an old age women present (and the coefficient is statistically significant), the poverty reducing effects is stronger than in the case where there is only income from either an old age man or an old age women. This relates to the fact that, when two old age persons contribute, they bring more resources. In most countries, the size of the effect is roughly similar to the sum of the separate effects of men and women. In a few cases, most particularly Portugal, Croatia and Bulgaria, the joint effect exceeds the sum of the separate effects. This indicates that when an elderly couple is included in the household in these countries,

they typically bring in more pension income than when an individual elderly man or women is part of the MG household (conditional on the background characteristics).

In the South-Eastern and Eastern countries, we find that the effect of incomes coming from elderly men is stronger than the effect of incomes from elderly women; this is probably linked to the higher pensions that men on average receive and thus can contribute to household income. Interestingly, in some countries the effect of a woman-only income is larger than that of a man-only: this is the case in Malta, Spain and Greece.

These outcomes suggest that extended family formation has different underlying reasons depending on the group of countries. We already mentioned that several factors can play a role, such as preferences, cultural patterns, the care need of the elderly, the lack of adequate social protection and the socio-economic context. The relative importance of these different factors as drivers of three generation household formation has hardly been studied, especially from an international comparative perspective. Our outcomes indicate that for the Nordic, Continental and Anglo-Saxon countries, other factors are at play than for the other three country groups. For the Southern and especially the South-Eastern and Eastern European countries it is very likely that an anti-poverty strategy is part of the considerations in the formation of extended families. Pensions are relatively high in these countries, which implies that the elderly can bring in a substantial income share (which generally outweighs the additional costs their presence in the household entails). For the Nordic, Continental and Anglo-Saxon countries, we largely identify statistically insignificant coefficients, but this is largely driven by the low prevalence of MG households. Other possible drivers may include care needs of the elderly or specific individual choices, but our data do not allow us to provide more insights in these other determinants.

When controlling for a set of background characteristics, the at-risk-of-poverty rates of children in MG households is significantly lower than for other children in the Eastern, the South-Eastern and the Southern European countries, as well as in France, Ireland and Sweden. Only in Austria, Denmark and the Netherlands is the reverse the case, i.e. children in MG households have a higher at-risk-of-poverty. For the other countries, we find no statistically significant effect for either the MG variable or one of the old age income variables. This means that, for a set of countries, the difference between children in MG and non-MG households that we observed in Figure 2(a) is explained by differences in the background indicators between MG and non-MG households. This is the case for Finland, Iceland, Germany, Switzerland, Belgium, Luxembourg and the UK. For five countries (Norway, Spain, Portugal, the Czech Republic and Poland), we observe the opposite: we did not observe a significant difference in at-risk-of-poverty between the two groups of children in Figure 2(a), but the coefficients of the MG variable and/or

the old age income variables are significantly positive (Norway) or negative (the other four countries). In the latter case, this means that the less favourable background characteristics of MG households obscured the lower (conditional) poverty risk for children in these households.

In France, Cyprus and Greece we find that the presence of old age income reduces the poverty risk (while Figure 2(a) shows higher poverty rates for children in MG than in non-MG households). These different outcomes show that these MG children actually have lower poverty risks when controlling for background characteristics.

For most of the Eastern and South-Eastern countries, the regression analysis confirms the outcomes of Figure 2(a): children in MG households have a lower poverty risk than other children, also conditional on observable background characteristics, but these differences typically become larger when these factors are controlled for. Given the higher prevalence of MG households in these countries, the outcomes of these countries are more relevant. We aim to provide more insight in this anti-poverty strategy in the next section by performing a pre-post analysis.

Table 2: Coefficients of logistic regression on child poverty, 2013.

	Model 1				Model 2: income present of old age person								
	Member of MG hh				Only old age female			Only old age male			Both female and male old age		
	Coeff.	Std err	sign		Coeff.	Std err	signif	Coeff.	Std err	sign	Coeff.	Std err	sign
SE	*-3.52*	*1.149*	*		*0*	*(omitted)*		*-3.41*	*1.17*	*	*0*	*(omitted)*	
DK	*1.84*	*0.394*	*		*1.34*	*1.48*		*0.76*	*0.5*		*2.95*	*1.05*	*
NO	*0.84*	*0.556*			*0*	*(omitted)*		*0*	*(omitted)*		*3.46*	*1.1*	*
FI	-0.9	0.544			-0.41	0.8		-0.88	0.7		0	(omitted)	
IS	*0*	*(omitted)*			*0*	*(omitted)*		*0*	*(omitted)*		*0*	*(omitted)*	
DE	*-0.917*	*0.868*			*-13.38*	*685.7*		*-0.23*	*1.03*		*0*	*(omitted)*	
NL	*0.979*	*0.62*			*1.93*	*0.8*	*	*-0.22*	*1.19*		*0*	*(omitted)*	
CH	*0.239*	*0.508*			*0.79*	*1.06*		*0.32*	*0.6*		*0*	*(omitted)*	
FR	*-1.714*	*0.459*	*		*-0.47*	*0.82*		*-2.04*	*0.53*	*	*0*	*(omitted)*	
BE	-0.697	0.536			0	(omitted)		-13.85	523.41		0	(omitted)	
LU	0.247	0.382			-1.44	0.98		-1.76	1.13		0	(omitted)	
AT	1.423	0.276	*		2.24	0.44	*	0.69	0.42		0.44	1.28	
IE	-1.519	0.552	*		-2.26	1.07	*	-1.45	0.84		-0.33	1.17	
UK	-0.63	0.385			-0.38	0.52		-0.67	0.69		-1.1	0.81	
CY	*-0.869*	*0.509*			*0.18*	*0.59*		*-2.31*	*1.05*	*	*-0.41*	*0.94*	
MT	-1.356	0.373	*		-2.26	0.62	*	-1.31	0.5	*	0	(omitted)	
IT	-0.648	0.234	*		-0.56	0.31		-0.89	0.38	*	-1.32	0.52	*
ES	-0.326	0.183			-1.1	0.28	*	0.17	0.26		-1.44	0.4	*
GR	-0.389	0.255			-0.96	0.38	*	0.09	0.37		-0.33	0.48	
PT	-0.292	0.297			0.09	0.35		-0.78	0.63		-1.94	0.71	*
SI	-1.003	0.261	*		-0.43	0.29		-1.64	0.51	*	-2.7	0.65	*
HR	-0.526	0.242	*		-0.43	0.29		-1.04	0.45	*	-2.47	0.86	*
RO	-1.319	0.25	*		-1	0.29	*	-1.77	0.41	*	-2.78	0.8	*
BG	-1.156	0.277	*		-0.54	0.35		-1.52	0.41	*	-2.76	0.68	*
RS	-0.446	0.138	*		-0.6	0.18	*	-0.74	0.19	*	-1.77	0.33	*
CZ	-1.125	0.447	*		0	0.5		-1.95	0.89	*	0	(omitted)	
EE	-0.798	0.258	*		-0.64	0.31	*	-1.58	0.56	*	-0.87	0.48	
HU	-1.852	0.364	*		-1.58	0.4	*	-2.26	0.7	*	-3.48	1.01	*
SK	-1.348	0.457	*		-0.94	0.5		0	(omitted)		-1.07	0.84	
LT	-1.508	0.34	*		-1.28	0.41	*	-1.76	0.55	*	-3.16	1.64	*
LV	-0.748	0.225	*		-0.54	0.26	*	-1.31	0.47	*	-0.93	0.44	*
PL	-0.267	0.11	*		-0.19	0.13		-0.53	0.2	*	-0.07	0.21	

Notes: 1) * significant at 95% confidence interval. 2) Countries with less than 60 children living in MG households are put in italics.

Source: own calculations on EU-SILC 2013.

4.3 The impact of elderly income on child poverty: a pre-post analysis

Little attention has been paid in the literature to the role played by pensions or income from the elderly in general in reducing child poverty, but the results in Figure 1 and Table 2 show that this lack of attention is undeserved. Our logistic regressions indicate that income from the elderly is relevant for reducing child poverty in several European countries. Household income consists in principle of different components (income from work, social insurance benefits, family benefits etc.). A standard way to investigate how each of these components help to reduce poverty is a pre-post analysis: what would poverty be before and after inclusion of the component in household income (see e.g. Levy et al., 2007; Salanauskaite and Verbist, 2013). This is a static analysis and thus does not take account of possible behavioural reactions. This limitation of the method is well-known (see e.g. Bergh, 2005; Jesuit and Mahler, 2010, Marx et al., 2016). Nevertheless, a pre-post analysis is relevant for our research question as it provides an indication of how important the pension income is in lifting the household above the poverty line. We apply this method here by measuring the impact of removing old age income from household income on child poverty. We take this standard pre-post analysis a step further by also investigating the role of the equal-sharing assumption of household income that is standardly used in distributive analyses. As discussed in section 2, there is a growing body of literature indicating that this equal sharing assumption lacks both a theoretical foundation and empirical support (see e.g. Behrman, 2003; Orsini & Spadaro 2005; Burton et al. 2007). This literature is mainly concerned with the situation of nuclear households. The sharing assumption can hence also be questioned when one goes beyond the nuclear household and looks at resources sharing of members of different generations in MG households. A few studies have investigated sharing within households using survey data in which the question is explicitly put to the respondents about how much is shared within the household (see e.g. Wooley and Marshall, 1994). The ad hoc module of EU-SILC 2010 on 'Intra-household sharing of resources', gives an indication of the extent to which the full-sharing assumption applies among MG households as compared to other households. We find indeed that full sharing of incomes occurs less in three generation households than in two generation ones (See Table A.2 in Annex). In those countries where full sharing is relatively limited, there is still substantial partial sharing of resources. These data also show that old age members of the household share a substantial part of their income in the common household budget (see Table A.3). In the countries with at least a moderate share of MG households, the degree of sharing in these households centers around 70%. We also present a scenario in which part of elderly income is shared within the household budget. This part is determined as the weighted average of the degree in sharing separately by country (see Note Table A.3).

Removing the elderly income entirely or partly from household income gives an indication of the first-order impact of elderly incomes on child poverty. This is only part of the story as it ignores the impact of old-age individuals on the equivalence scale: even if these elderly do not or only partially share income with the rest of the household, one can suppose that they will contribute to covering (at least a part of) their own costs; thus including them in the equivalence scale of household income biases us towards higher child poverty rates, even when their incomes are not shared with other younger generations in the household. We add two scenarios that change the equivalence scale, as variations of the no-sharing scenario. In the one scenario, we assume that the old age person(s) is (are) not part of the household while in the other scenario, we apply an equivalence scale that splits the economy of scale advantage in two equal parts, i.e. the first adult in both newly constructed households gets a value 0.75. As indicated earlier, in these scenarios poverty outcomes can move in two opposite directions. Which direction prevails can only be judged on an empirical basis.

The income security of children in MG households is to a very large extent due to the presence of incomes from the elderly, as is shown by a simulation in which we remove the elderly income from the household income (Column (2) 'No sharing' in Table 3). In almost all countries, poverty among this specific group of children would be more than twice as high if these incomes would not be there: on average poverty would increase from less than 20% (with elderly incomes) to around 50% (without these incomes). While the 'no sharing' scenario is not a realistic one, it illustrates the very high importance of elderly income for MG households, as a very large share cannot pass the poverty threshold based on market income and other transfers. The impact of removing the old age person(s) from the equivalence scale is shown in Column (3). By construction, this leads to a drop in poverty rates compared to the simulation that only removes elderly incomes (compare columns (2) and (3)). In most countries, and especially those where there is a high prevalence of MG households, poverty rates still remain at a much higher level than in the current situation where the old age incomes and their recipients are included in the household (income). Child poverty rates remain particularly high in all countries in Southern Europe, and in Estonia, Hungary, Latvia, Poland, Romania and Serbia. In the simulation where resources are not shared, but both households continue living under the same roof (thus benefiting from economies of scale, hence the split of the equivalence scale) (column (3)), we find lower overall child poverty rates than under the previous scenario. In many countries (e.g. the Baltics, or the South-Eastern European countries), child poverty rates come close to those in the current situation, indicating that not only elderly income, but also the economies of scale play an important role in poverty outcomes of MG households. In several Eastern European countries, however, poverty rates under this scenario are still higher than in the current situation, pointing to the importance of the elderly income itself as part of an instrument to avoid poverty.

Finally, Column (5) of Table 3 gives the outcomes for the case where part of elderly income would be shared (based on the reported degrees of sharing from Table A.3). Though not as extreme as in the 'No sharing' scenario, this more plausible scenario shows that there are important consequences for child poverty in MG households: e.g. in Greece 57% of children in MG households would be poor when the old-age person contributes only part of its pension in household budget, as compared to 28.7% in the current situation (Column (1)). In the group of Southern countries as a whole, we see an increase in poverty risks of around 13 percentage points as compared to the baseline. In Eastern and South-Eastern countries, this is around 6 to 7 percentage points. This largely (but not fully) reflects the higher degrees of sharing in the latter group of countries, as reported in Table A.3.

We can conclude from these numbers that for a sizeable share of children, the presence of elderly in the household is an important element in preventing poverty. The benefits largely accrue by the addition of substantial income streams from pensions, but also partly through the economies of scale that MG households bring. Especially in Eastern and South-Eastern countries, children living in MG households benefit. This is further confirmed by a longitudinal analysis that shows that multigenerational families are often formed in the year after substantial reductions in income from work[4]. However, our analysis also strongly suggests that traditional poverty indicators may underestimate the reality of child poverty, since they overestimate the degree of income-sharing in households.

[4] Given the small number of cases that make such a transition in the EU-SILC we do not present this here as a separate analysis.

Table 3: Poverty rate of children living in a multigenerational household, current situation and different scenarios, 2013.

Sharing:	Full sharing	No sharing			Part of old-age income shared
Equivalence scale:	Unchanged (1)	Unchanged (2)	No old age person (3)	Split (4)	Unchanged (5)
SE	2.2%	71.0%	52.7%	33.7%	22.9%
DK	0.7%	34.3%	24.9%	14.3%	0.7%
NO	9.9%	54.8%	34.9%	19.4%	26.3%
FI	15.8%	26.7%	18.8%	15.9%	20.8%
IS	3.7%	36.0%	17.8%	14.1%	3.7%
Nordic	***6.5%***	***44.6%***	***29.8%***	***19.5%***	***14.9%***
DE	8.5%	38.7%	17.9%	17.1%	10.6%
NL	72.8%	87.6%	86.9%	81.9%	81.1%
CH	31.0%	59.9%	44.6%	43.1%	40.3%
FR	28.7%	81.7%	59.3%	45.5%	33.7%
BE	32.3%	54.4%	38.6%	28.8%	34.9%
LU	31.8%	51.5%	24.9%	14.0%	49.6%
AT	31.4%	51.6%	32.7%	29.2%	38.6%
Continental	***33.8%***	***60.8%***	***43.6%***	***37.1%***	***41.3%***
IE	7.2%	38.7%	32.4%	18.3%	32.1%
UK	10.1%	49.2%	21.6%	14.8%	12.3%
Anglo-Saxon	***8.6%***	***43.9%***	***27.0%***	***16.5%***	***22.2%***
CY	21.4%	50.3%	37.7%	31.8%	32.1%
MT	11.6%	63.0%	42.3%	26.8%	33.4%
IT	18.9%	54.7%	37.4%	32.6%	31.0%
ES	25.3%	61.4%	46.6%	39.1%	32.5%
GR	33.7%	71.6%	62.6%	56.0%	56.8%
PT	23.8%	55.8%	42.9%	38.5%	29.7%
Southern	***22.5%***	***59.5%***	***44.9%***	***37.5%***	***35.9%***
SI	10.7%	34.2%	20.1%	14.5%	17.6%
HR	12.9%	35.3%	18.0%	13.4%	19.0%
RO	18.3%	52.6%	39.5%	29.0%	26.7%
BG	21.4%	37.2%	28.1%	27.2%	23.7%
RS	22.6%	48.8%	35.5%	32.8%	29.6%
South-Eastern	***17.2%***	***41.6%***	***28.3%***	***23.4%***	***23.3%***
CZ	11.8%	45.0%	25.3%	20.6%	21.2%
EE	14.7%	48.2%	32.7%	23.5%	25.0%
HU	6.3%	43.7%	31.0%	24.2%	13.5%
SK	10.7%	34.6%	20.0%	18.1%	16.2%
LT	13.0%	40.9%	27.4%	20.8%	15.8%
LV	19.1%	43.7%	32.6%	25.1%	24.9%
PL	24.2%	52.0%	38.3%	32.5%	32.6%
Eastern	***14.3%***	***44.0%***	***29.6%***	***23.5%***	***21.3%***
Total	**19.0%**	**50.3%**	**35.2%**	**28.0%**	**27.8%**

Notes: 1) * significant at 95% confidence interval. 2) Countries with less than 60 children living in MG households are put in italics and lighter font. Source: own calculations on EU-SILC 2013.

5 Conclusion

In this paper, we have studied intergenerational solidarity within multigenerational (MG) households and its impact on poverty risks in Europe, with an emphasis on child poverty. Obviously, there is no uniform European pattern of intergenerational solidarity. On the contrary: we observe significant differences between subgroups of European welfare states. Unsurprisingly, MG households are most prevalent in Southern, South-Eastern and Eastern European countries. In most countries, especially those with high prevalence of MG, children in MG households have lower poverty risks than other children.

To assess the direction of financial solidarity in MG households, we partitioned these households in 'pro-child', 'pro-elderly' and 'mutually beneficial'. Results show that the financial solidarity between generations in extended families is in most cases (and especially in South-Eastern and Eastern European countries, where the prevalence of MG households is high) very strongly in favour of the children, and far less beneficial for the elderly. Consequently, MG formation and old-age incomes in MG households reduce child poverty. Our regressions, which control for various background conditions, show that this reduction of child poverty is significant in South-Eastern and Eastern countries, but not in Southern European countries. The presence of old-age incomes has the strongest impact when both an elderly man and an elderly woman have a pension income, but we also see that a pension income for a man has a stronger effect than a pension income for an elderly woman, as men in general still obtain higher pensions than women.

Our pre-post analysis illustrates the relevance of the formation of MG households as a strategy to cope with poverty. Children are better off in MG household than in a counterfactual household without the elderly. However, the traditional assumption that all incomes are shared across all household members matters: the full-sharing hypothesis probably yields a picture that is too rosy. The less sharing of resources, the more child poverty: on average 19% of children in MG are counted as at-risk-of-poverty under the full-sharing assumption, rising to 28% and even 50% under a (plausible) partial, respectively zero sharing assumption. Finally, equivalence scales matter; therefore, the hypotheses on the basis of which this scales are constructed are of crucial importance.

Although we establish a beneficial effect of MG household formation with regard to child poverty in a number of EU welfare states, the conclusion cannot be that policy should stimulate MG household formation. MG household formation is a short-term 'coping strategy', which is in several countries directly related to inadequate social protection safety nets. This coping strategy may have negative consequences for children in important non-financial dimensions of their personal development (e.g. they are less likely to have an own room for study in an extended household). Moreover, in modernizing

societies, extended families are presumably rather a strategy of the past than a strategy of the future. However, policy-makers should consider the short-term beneficiary impact of pensions on child poverty when implementing pension reform; even if we drop the assumption of 'full sharing of resources', pension incomes provide tangible support for children in extended families. Hence, when pension spending is – for good reasons – rationalized in pension-heavy welfare states, there must be a parallel development of adequate family-support systems, both in terms of cash benefits and social services. The fact that 'full sharing' is too optimistic *qua* hypothesis does not diminish the urgency of that conclusion: to the extent that 'full sharing' is too optimistic, we underestimate how severe child poverty is in countries with a significant share of MG households.

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Annex:

Table A.1: Characteristics of multigeneration households, EU-SILC 2013.

(a) Characteristics old age person

	Share of children living in MG household where old age person is					
	present			in bad health		
	1 woman	1 man	1 woman + 1 man	Woman	Man	Both
Nordic	23.0%	61.6%	15.2%	0.7%	2.8%	0.0%
Continental	44.3%	39.9%	15.6%	8.4%	6.9%	0.2%
Anglo-Saxon	48.6%	31.9%	19.6%	7.2%	8.2%	1.3%
Southern	47.4%	27.8%	23.8%	16.7%	10.8%	4.1%
South-Eastern	50.4%	28.4%	20.3%	17.0%	8.1%	2.6%
Eastern	60.2%	23.3%	15.9%	24.2%	8.5%	2.8%
Total	46.2%	35.1%	18.1%	13.5%	7.6%	1.9%

(b) Characteristics of household, comparison of two-generation (2 gen) and three-generation household (3 gen)

	Share of children living in household where							
	one working age adult		head of hh non-EU origin		head of hh non-higher education		household work intensity	
	2 gen	3 gen	2 gen	3 gen	2 gen	3 gen	2 gen	3 gen
Nordic	7.4%	42.0%	6.8%	15.2%	45.0%	30.6%	83.8%	72.0%
Continental	11.7%	31.4%	12.0%	24.4%	39.9%	28.9%	78.6%	67.7%
Anglo-Saxon	20.0%	31.0%	10.5%	14.0%	42.5%	22.0%	65.0%	54.5%
Southern	7.7%	18.0%	9.0%	6.8%	25.0%	10.3%	70.0%	55.3%
South-Eastern	4.8%	8.8%	24.4%	23.0%	18.8%	10.6%	68.2%	70.2%
Eastern	9.7%	17.6%	2.6%	3.7%	26.6%	17.9%	71.9%	70.0%
Total	9.3%	24.0%	10.4%	14.3%	31.8%	20.0%	73.8%	66.1%

Source: own calculations on EU-SILC 2013.

Table A.2: Share children according to the intra-household income sharing arrangements, 2010

	all income is common			some income is common			all income is private		
	all	2gen	3gen	all	2gen	3gen	all	2gen	3gen
DK	75.5%	75.5%	90.5%	18.3%	18.4%	6.2%	6.1%	6.2%	3.3%
NO	64.4%	64.4%	61.7%	22.0%	22.0%	25.5%	13.5%	13.5%	12.8%
SE	75.5%	75.5%	74.1%	21.2%	21.2%	17.5%	3.3%	3.3%	8.4%
FI	59.2%	59.5%	33.4%	32.6%	32.3%	57.7%	8.1%	8.1%	8.9%
IS	65.0%	65.4%	16.3%	31.1%	30.8%	74.9%	3.8%	3.8%	8.8%
Avg	*67.9%*	*68.1%*	*55.2%*	*25.0%*	*24.9%*	*36.4%*	*7.0%*	*7.0%*	*8.4%*
DE	78.1%	78.3%	65.0%	16.9%	16.8%	21.8%	4.7%	4.6%	13.2%
NL	75.0%	74.9%	80.9%	19.1%	19.2%	2.3%	5.9%	5.8%	16.8%
FR	75.0%	74.9%	77.5%	14.7%	14.9%	7.1%	9.8%	9.7%	15.4%
BE	84.3%	84.5%	76.5%	10.2%	10.0%	22.1%	5.4%	5.4%	1.5%
LU	76.9%	77.0%	74.8%	15.1%	15.1%	16.3%	7.9%	7.9%	8.9%
AT	62.8%	64.7%	20.4%	21.7%	20.4%	51.2%	15.5%	14.9%	28.5%
Avg	*75.3%*	*75.7%*	*65.8%*	*16.3%*	*16.1%*	*20.1%*	*8.2%*	*8.1%*	*14.0%*
IE	75.8%	76.1%	61.8%	7.0%	6.9%	11.3%	16.1%	15.8%	27.0%
UK	72.1%	72.3%	60.4%	19.7%	19.6%	27.6%	7.8%	7.7%	12.0%
Avg	*74.0%*	*74.2%*	*61.1%*	*13.4%*	*13.3%*	*19.4%*	*12.0%*	*11.8%*	*19.5%*
CY	61.2%	61.3%	52.6%	38.2%	38.0%	47.4%	0.6%	0.6%	0.0%
IT	85.2%	85.9%	68.0%	8.0%	7.5%	19.0%	5.1%	4.7%	13.0%
ES	88.5%	89.6%	66.8%	8.9%	7.9%	29.4%	2.4%	2.4%	3.7%
MT	91.6%	91.7%	90.5%	7.0%	7.0%	6.5%	1.0%	0.9%	3.0%
GR	92.3%	92.9%	79.9%	6.5%	6.1%	15.9%	1.2%	1.0%	4.2%
PT	81.7%	83.4%	55.1%	14.7%	12.9%	42.7%	2.9%	3.1%	1.3%
Avg	*83.4%*	*84.2%*	*68.8%*	*13.9%*	*13.2%*	*26.8%*	*2.2%*	*2.1%*	*4.2%*
SI	71.2%	73.2%	33.5%	19.4%	17.9%	49.1%	9.4%	9.0%	17.5%
RO	88.2%	91.1%	73.0%	10.7%	8.4%	22.8%	1.1%	0.6%	4.1%
BG	76.0%	79.6%	59.3%	22.4%	18.9%	38.9%	1.4%	1.3%	1.8%
Avg	*78.5%*	*81.3%*	*55.3%*	*17.5%*	*15.1%*	*36.9%*	*4.0%*	*3.6%*	*7.8%*
CZ	78.2%	79.7%	38.1%	20.7%	19.2%	58.4%	1.1%	1.0%	3.4%
EE	63.5%	65.1%	35.7%	32.9%	31.3%	59.7%	3.6%	3.5%	4.7%
HU	87.3%	89.2%	64.9%	11.4%	9.7%	32.1%	1.2%	1.1%	3.1%
LT	79.5%	81.6%	58.4%	17.7%	15.6%	38.8%	2.8%	2.8%	2.8%
SK	72.7%	75.8%	37.9%	25.6%	22.7%	59.0%	1.6%	1.5%	3.1%
LV	70.5%	75.0%	46.8%	23.4%	20.6%	38.1%	6.0%	4.2%	15.1%
PL	76.5%	80.7%	48.5%	21.0%	16.9%	48.8%	2.4%	2.4%	2.7%
Avg	*75.5%*	*78.2%*	*47.2%*	*21.8%*	*19.4%*	*47.8%*	*2.7%*	*2.4%*	*5.0%*

Source: own calculations on EU-SILC 2010, ad hoc module "Intra-household sharing of resources".

Table A.3: Share of old age persons in multigeneration households that share part of their personal income in the common household budget, 2010.

	None	Less than 50%	Around 50%	More than 50%	All	Average of income shared (*)
DK	*0.0%*	*0.0%*	*0.3%*	*0.0%*	*99.7%*	99.8%
NO	*0.0%*	*35.1%*	*7.9%*	*57.1%*	*0.0%*	55.5%
SE	*24.0%*	*0.0%*	*24.0%*	*16.0%*	*36.0%*	60.0%
FI	*29.4%*	*34.9%*	*2.2%*	*19.8%*	*13.7%*	38.4%
IS	*0.0%*	*18.6%*	*35.2%*	*0.0%*	*46.2%*	68.4%
Avg	*10.7%*	*17.7%*	*13.9%*	*18.6%*	*39.1%*	*64.4%*
DE	*18.4%*	*17.6%*	*13.1%*	*3.8%*	*47.1%*	60.9%
NL	*44.7%*	*0.0%*	*0.0%*	*7.8%*	*47.5%*	53.4%
FR	*0.0%*	*2.0%*	*0.0%*	*59.7%*	*38.3%*	83.6%
BE	*34.0%*	*7.3%*	*5.7%*	*6.6%*	*46.5%*	56.1%
LU	36.1%	9.3%	9.0%	13.9%	31.7%	48.9%
AT	*25.7%*	*39.3%*	*4.7%*	*12.8%*	*17.5%*	39.3%
Avg	*26.5%*	*12.6%*	*5.4%*	*17.4%*	*38.1%*	*57.0%*
IE	*36.8%*	*14.9%*	*10.1%*	*7.0%*	*31.2%*	*45.2%*
UK	*8.6%*	*1.5%*	*11.8%*	*47.3%*	*30.9%*	*72.6%*
Avg	*22.7%*	*8.2%*	*11.0%*	*27.1%*	*31.0%*	*58.9%*
CY	*15.3%*	*4.5%*	*5.3%*	*34.2%*	*40.7%*	*70.2%*
IT	14.1%	4.7%	1.6%	20.1%	59.5%	*76.6%*
ES	13.2%	4.3%	6.5%	5.7%	70.3%	*78.9%*
MT	*15.8%*	*2.0%*	*3.7%*	*52.5%*	*26.0%*	*67.7%*
GR	18.7%	12.3%	11.1%	19.4%	38.5%	*61.7%*
PT	20.4%	6.3%	5.5%	15.2%	52.6%	*68.3%*
Avg	*16.2%*	*5.7%*	*5.6%*	*24.5%*	*47.9%*	*70.6%*
SI	12.8%	8.4%	16.9%	56.1%	5.8%	*58.4%*
RO	7.9%	9.2%	4.0%	48.1%	30.8%	*71.1%*
BG	6.0%	4.1%	5.9%	19.9%	64.1%	*83.0%*
Avg	*8.9%*	*7.2%*	*8.9%*	*41.4%*	*33.5%*	*70.8%*
CZ	10.2%	24.2%	20.4%	13.4%	31.7%	58.0%
EE	11.6%	7.8%	26.1%	27.1%	27.4%	62.8%
HU	1.9%	10.4%	9.8%	27.5%	50.4%	78.6%
LT	2.8%	7.1%	13.6%	20.5%	55.9%	79.9%
SK	6.7%	17.4%	10.2%	40.6%	25.0%	65.0%
LV	4.5%	11.9%	11.7%	40.3%	31.6%	70.7%
PL	12.0%	13.0%	14.3%	23.3%	37.4%	65.3%
Avg	*7.1%*	*13.1%*	*15.2%*	*27.5%*	*37.1%*	*68.6%*

Note: 1) Countries with less than 60 cases answering this question are put in italics and light grey font; 2) * calculated as the weighted average of shares, where 'less than 50%' is counted as 25% sharing and 'More than 50%' as 75% sharing.

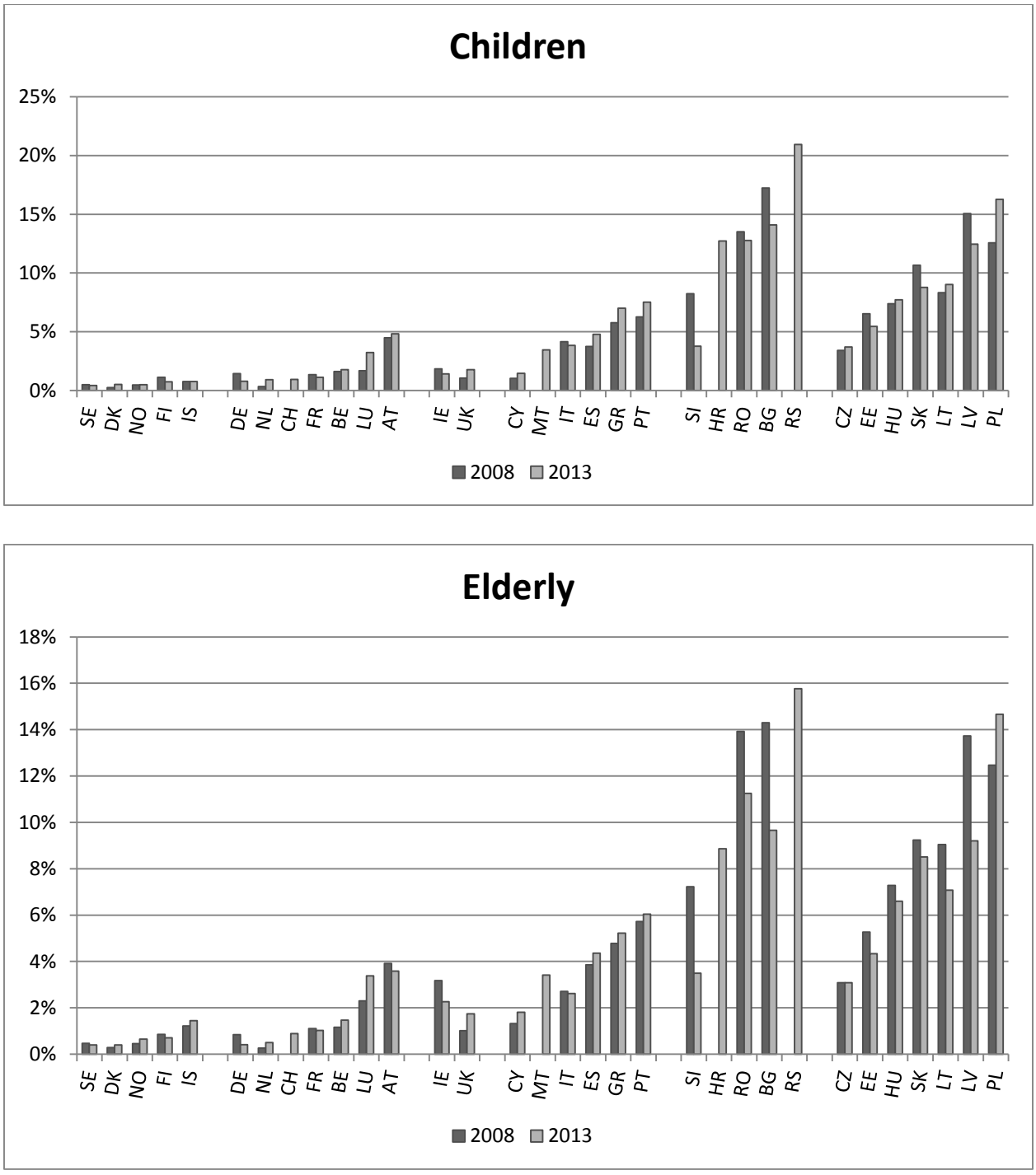
Source: own calculations on EU-SILC 2010, ad hoc module "Intra-household sharing of resources".

Table A.4: Poverty rates in Europe, according to membership of multigenerational household (MGH), 2013

	Children			Elderly		
	all	In MGH	Not in MGH	all	In MGH	Not in MGH
DK	15.3%	2.2%	15.3%	16.2%	2.6%	16.2%
NO	8.7%	0.7%	8.7%	10.8%	0.7%	10.9%
SE	10.5%	9.9%	10.5%	9.6%	4.4%	9.6%
FI	9.3%	15.8%	9.2%	16.1%	13.4%	16.2%
IS	12.2%	3.7%	12.3%	3.9%	3.9%	3.9%
DE	14.7%	8.5%	14.7%	15.2%	11.3%	15.2%
NL	12.6%	72.8%	12.0%	5.8%	43.4%	5.6%
CH	15.8%	31.0%	15.7%	29.2%	25.0%	29.2%
FR	17.9%	28.7%	17.8%	8.8%	22.8%	8.6%
BE	17.3%	32.3%	17.0%	18.3%	36.7%	18.1%
LU	23.7%	31.8%	23.4%	6.2%	22.5%	5.6%
AT	18.9%	31.4%	18.2%	15.3%	29.0%	14.8%
IE	16.0%	7.2%	16.2%	10.1%	9.5%	10.1%
UK	18.8%	10.1%	19.0%	16.7%	8.7%	16.9%
CY	15.6%	21.4%	15.5%	19.8%	26.2%	19.6%
MT	23.9%	11.6%	24.3%	14.9%	10.1%	15.1%
IT	24.8%	18.9%	25.0%	15.1%	15.6%	15.1%
ES	27.4%	25.3%	27.5%	12.6%	20.4%	12.2%
GR	28.7%	33.7%	28.3%	15.1%	28.2%	14.4%
PT	24.4%	23.8%	24.5%	14.6%	17.1%	14.4%
SI	14.8%	10.7%	15.0%	20.4%	8.7%	20.8%
HR	22.0%	12.9%	23.4%	23.2%	13.1%	24.2%
RO	32.3%	18.3%	34.4%	14.9%	14.1%	15.0%
BG	28.5%	21.4%	29.7%	27.4%	17.4%	28.5%
RS	29.7%	22.6%	31.6%	19.2%	19.0%	19.3%
CZ	11.1%	11.8%	11.1%	5.7%	11.6%	5.6%
EE	18.1%	14.7%	18.3%	24.5%	11.3%	25.1%
HU	23.2%	6.3%	24.6%	4.4%	6.0%	4.3%
SK	20.5%	10.7%	21.4%	6.2%	10.1%	5.9%
LT	27.0%	13.0%	28.4%	19.5%	10.4%	20.2%
LV	23.1%	19.1%	23.7%	17.3%	17.3%	17.3%
PL	23.0%	24.2%	22.8%	12.3%	18.9%	11.2%

Source: own calculations on EU-SILC 2013.

Figure A.1: Share of children and elderly living in multigenerational household in Europe, 2008-2013.



Note: no data for 2008 for CH, MT, HR, RS.