

**The relationship
between incomes and
living arrangements:
variation between
countries, over the life
course, and over time**

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ABSTRACT

This paper uses data from the EU Survey of Income and Living Conditions 2005-2010 to examine the relationship between incomes and people's living arrangements, both at the aggregate level (that is, how living arrangements vary with GDP) and at the level of individual behaviour, within countries. We know from previous studies that there are substantial variations in living arrangements between countries in the EU; this study is the first to examine systematically the way in which the relationship between income and living arrangements varies over the life course, and how these variations differ between countries. We find marked variation over the life course, with distinct differences in this life-course variation between countries. However, when we extend this analysis to examine changes over a period which includes the recent recession, we find very little evidence to suggest that living arrangements have changed in response to the recession.

Key Words: Household structures, families, incomes, Europe, EU-SILC.

1 INTRODUCTION

This paper examines the link between household composition on the one hand, and poverty and hardship on the other, in a cross-national comparative context. In particular, we are interested in four questions. First, what is the relationship between living arrangements and incomes? Second, are there certain groups of people whose living arrangements are particularly closely related to incomes, and other groups for whom the relationship is less? Third, are living arrangements more closely related to income in some countries than in others? And finally, have living arrangements across Europe changed as a response to the recent recession?

Several studies have examined the relationship between living arrangements and various measures of income sufficiency, poverty or hardship. These studies tend to focus on vulnerable groups (Bane and Ellwood, 1986); particularly on families with children (Bradbury and Jantti, 1999); lone mothers (Robson and Berthoud, 2003); young adults (Aassve et al, 2007); and older people (Rendall and Speare, 1995), and the focus is on income sufficiency as an outcome measure, arising from people's ability to pool resources and to benefit from intra-household economies of scale in larger households.

The current paper is interested in the other side of this question; that is, in income as a determinant of living arrangements. We know from an expanding literature in this area, that living arrangements vary greatly across Europe (Iacovou, 2004; Tomassini et al, 2004; Andersson, 2004; Iacovou and Skew, 2011, Hantrais et al, 2006; Hoem et al, 2009; Gerber, 2009; Mandic (2008); Liefbroer and Fokkema (2008); Saraceno (2008) and others). This literature reveals that household sizes are relatively small in Western Europe and particularly in Northern Europe, and that they tend to be larger in Southern Europe, and particularly large in parts of Eastern Europe. Certain household types (particularly those involving the extended family or other forms of intergenerational cohabitation) are more common in countries where incomes are generally lower, and we may hypothesise that this relates to the fact that economies of scale are likely to be greater in such households. However, there does not, as yet, exist any study which systematically examines how living arrangements are affected by incomes, and how this relationship varies between different groups of people and between countries. This paper is a first attempt at answering some of these questions.

1.1 THE RELATIONSHIP BETWEEN INCOME, POVERTY AND LIVING ARRANGEMENTS

It is clear that the relationship between income and living arrangements is complex, with causality running in both directions – that is, incomes may affect living arrangements, and living arrangements may also affect income, or the sufficiency of incomes.

Let us first consider the ways in which living arrangements and household structures may affect people's incomes (or their risk of poverty, or the perceived sufficiency of their incomes). This is not the primary focus of this paper, but it will feature in some of the later discussion. The most important aspect of this relationship arises because of the reduction in per-capita living expenses which comes about when people live together rather than separately. These efficiencies in the pooling of resources are well researched in the academic literature (Forster, 1994; Atkinson et al, 2005), and are factored into income and poverty calculations in the form of equivalence scales, which adjust household income by a factor relating to the needs of household members, and which typically assess the needs of second and subsequent adults living in a household as some fraction of the needs of the first adult in a household. Contemporary poverty analysis most commonly uses the modified OECD equivalence scale, which assumes that the second and subsequent adults in a household have needs equal to 0.5 of the needs of the first adult, while children have needs of 0.3 times the needs of the first adult (OECD 1982). Different equivalence scales may lead to different estimates of poverty

rates, and often to different poverty rankings between countries, regions and groups of people (Burniaux et al 1998).

However, it is clear that as well as the *adequacy* of people's incomes being affected by living arrangements, the *levels* of people's incomes may also be affected by the composition of their households. The most obvious manifestation of this is in welfare benefits. Some benefits, for example rent subsidies in some countries, and social assistance in others, are payable to households rather than to individuals; typically, the total amount of these benefits is lower where households live together rather than separately (e.g. Van Mechelen et al., 2011; Marx and Nelson, 2013). This may also be the case with other benefits which are paid not to a whole household, but to combinations of individuals living within the household: typically, an equivalence scale is applied to these benefits, so that two adults living in the same household would receive a lower level of support than two adults living separately, to account for the fact that two adults can live more cheaply as a single unit than as two separate units. The amount of tax paid in some countries is also responsive to household composition; this is the case particularly where couples pool their incomes for tax purposes.

Although benefit income is the source of income most obviously affected by living arrangements, it is at least possible that labour incomes may also be affected; to the extent that such an effect occurred, this would most likely be via effects on effort or hours worked. For example, a man with a partner and four children may feel the need for a higher income than a single man, and may adjust his hours of overtime accordingly; conversely, a young man living with his parents may feel less of an imperative to find a well-paid job than a young man living on his own. Particularly for women, the number of children may also determine the number of hours worked and the choice of professional career, both of which may impact on earnings.

The routes via which incomes may affect individuals' choices of living arrangements (and therefore the composition of the entire household of which they end up forming a part) are rather simpler: in general, people with lower levels of resources may be more likely to live with other people, either because they cannot afford to live in a smaller household, or because they need the security of a larger household as "insurance" against events such as job loss. It is likely that the nature of this effect would differ over the life course. At certain stages, we would expect individuals with fewer means of their own to be particularly likely to form a household with other people, taking advantage of the opportunity to share household expenses. There is evidence that for some groups in particular this influence is fairly strong; for example, Aassve et al. (2007) show that young people with lower incomes are more likely to remain living in the parental home, while a corresponding literature shows that the same is true for elderly people, who are more likely to live with their adult children if their own incomes are smaller.

At other times in the life course, higher individual-level incomes may be associated with a tendency to live in larger households. For example, young adults may choose to delay marriage or cohabitation until such time as they can live in a degree of relative comfort, and couples may delay having children until their incomes are high enough to support a growing family. This paper cannot examine in detail the possible effects at every single stage of the life course on all different permutations of living arrangements; however, it does demonstrate clearly that these variations in effects over the life course do occur.

2 DATA AND METHODS

2.1 DATA: THE EU-SILC

The data used in this paper are from the User Database (UDB) of the European Community Statistics on Income and Living Conditions (EU-SILC). The EU-SILC is a data set covering all 27 countries of the post-enlargement European Union. In addition, several non-EU countries have implemented the EU-SILC: Norway and Iceland (from 2003 and 2004 respectively; Turkey and Switzerland (from 2006 and 2007 respectively); and Croatia from 2010. The EU-SILC is a general-purpose data set, with a particular focus on incomes. The survey is administered annually. In most countries the design takes the form of a four-year rolling panel: a representative sample is selected, each year one quarter of the sample is replaced with a fresh representative sample, while the other three quarters are re-interviewed (either at their existing addresses, or at their new addresses, if they have moved to a new address within their home country). Data are released in both longitudinal and cross-sectional files. The analysis in this paper is based on the cross-sectional UDB files from all the years between 2005 and 2010, using the latest release for each year. All years of data are used at various points in the paper; we are particularly interested in comparisons between 2007 (before the effects of the recession had made themselves known) and 2010 (when many countries in Europe were firmly in the throes of recession).

We use data on all available countries except Norway. The central concern of this paper is household structure; in the absence of a full household grid in the EU-SILC (see Iacovou et al, 2012), we derive indicators of household structure from a range of variables, including the person numbers of an individual's partner, mother and father. In Norway these variables have a high rate of missingness in some years, so we have not used Norwegian data for any year.

Data on incomes at the individual level come from the personal files of the EU-SILC, but for data on aggregate incomes we refer to published sources (Eurostat, 2013). The measure of aggregate income we use is per capita gross domestic product, adjusted for purchasing power parity. These data are shown in Appendix 1.

The use of repeated cross-sectional data has one disadvantage, namely that the data on household structures relate to the time of interview (in this case, 2009) while the data on incomes relate to an earlier period, the "income reference period" which in most countries is the previous 12 months, though in some cases relates to the previous calendar year. This causes two problems. Most seriously, where there have been movements in or out of the household, the calculated total income over the past year may not refer to individuals currently living in the household. Even where no movements in or out, the problem remains that household income relates to a 12-month period, whereas household composition and other variables in the data set relate to a moment in time.

In order to address the first of these problems, many researchers follow a procedure when working with longitudinal data sets, which involves matching incomes collected at time $t+1$ (but which relate to time t) with other data which are collected at time t and which also refer to the situation at time t Heuberger (2003). This is not possible when using the EU-SILC cross-sectional files; incomes for households therefore relate to the incomes of current household members measured over a previous time period.

2.2 WEIGHTING & STATISTICAL INFERENCE

All estimates are calculated using sampling weights. We also implement a procedure proposed by Goedemé (2013) which makes optimal use of the sample design information in the UDB to reconstruct sample design variables, and which produces more reliable estimates of sampling variance.

2.3 COUNTRY GROUPINGS

The majority of analysis in this paper is at the single-country level (although we sometimes present results for selected countries rather than all countries). Occasionally, when trying to synthesize results, we refer to broad geographical groupings of countries. These follow the schema used in Iacovou (2013), obtained via a minimum-distance algorithm on household structures, but with strong similarities to theoretically-based models such as those proposed by Esping-Andersen (1990 and 1999), and adapted to incorporate a “southern” cluster as suggested by Ferrera (1996).

TABLE 1: SCHEMA OF COUNTRY GROUPINGS

Nordic	Sweden, Denmark, Finland, Iceland
North-Western	UK, Ireland, France, Belgium, Luxembourg, Netherlands, Germany, Austria
Southern	Italy, Spain, Portugal, Greece, Cyprus, Malta
Eastern	Czech Republic, Hungary, Estonia, Lithuania, Latvia, Romania, Bulgaria, Slovakia, Slovenia, Poland.

Source: Iacovou (2013)

2.4 HOUSEHOLD TYPES

The analysis in this paper is based on a typology of ten household types, as developed by Iacovou and Skew (2011) and Iacovou (2013). This typology builds on the classifications used by the UN (United Nations, 2006 and 2007) and the European Union (Eurostat 2008), and is described in detail in Iacovou and Skew (2011). The reader should note that because the EU-SILC does not collect a full household grid, some households which we classify as belonging to the “other” category are in fact extended families.

TABLE 2: SCHEMA OF HOUSEHOLD TYPES

Single person < 65	A single person under age 65
Single person >= 65	A single person aged 65 or over
Couple both < 65	A couple (married or cohabiting) both aged under 65
Couple, at least one >= 65	A couple (married or cohabiting), one or both of whom is aged 65 or over
Couple + dependent child/ren	A couple with one or more of their own children, including at least one child aged under 18.
Couple + adult child/ren	A couple living with one or more of their own children, all of whom are aged 18 or over.
Lone parent + dependent child/ren	A single adult plus one or more of his or her own children, including at least one child aged under 18.
One parent + adult child/ren	A household consisting of one parent plus one or more of his or her own children, all of whom are aged 18 or over.
Extended family	Non-nuclear households whose members all belong to the same family. Most of these are either three-generation families, or households including a parent and an adult child with a partner or spouse.
Other households	Other households, incl. lodgers, unrelated sharers, etc.

Source: Iacovou and Skew (2011)

The distribution of household types under this classification, reproduced from Iacovou and Skew (2011), and using data from the 2008 EU-SILC, is provided in Appendix 2.

3 INCOME AND HOUSEHOLD COMPOSITION

3.1 THE MACRO LEVEL – GDP AND HOUSEHOLD STRUCTURE

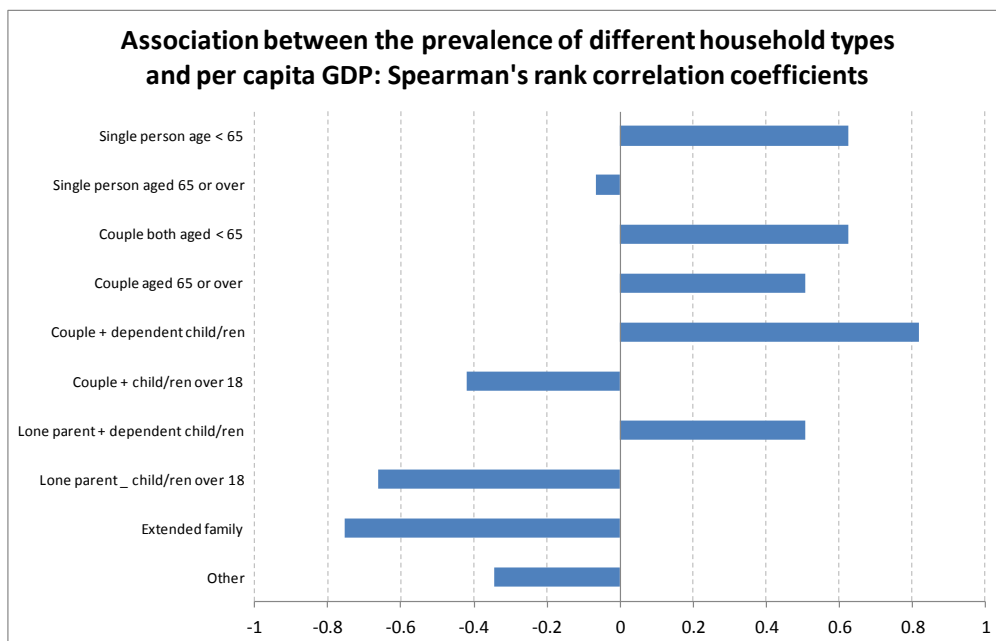
As Appendix 2 shows, household structures vary greatly between countries. The purpose of this paper is to ask to what extent these variations in household structure are associated with differences in national incomes. One simple way in which we may do this is to compare aggregate income on the one hand, with the prevalence of different household types on the other.

We use the Spearman's rank correlation coefficient, a statistic comparing two sets of rankings. Although other measures of correlation are available, the Spearman's rank correlation coefficient has the advantage that it is not sensitive to outliers. Measures of correlation which are more sensitive to outliers run the risk of being unduly affected by the position of Luxembourg, whose adjusted GDP is very much higher than that of all the other countries in the EU. The Spearman's rank correlation coefficient is calculated as:

$$S = 1 - 6\sum d_i^2 / [n(n^2 - 1)]$$

Where S is the Spearman's rank correlation coefficient, d_i is the difference between the two sets of ranks for country i , and n is the number of countries in the sample. It takes the value 1 if the rankings agree completely, down to a value close to zero if the rankings are orthogonal, and negative values if the rankings are inversely related, down to a minimum value of -1, which shows perfect negative relationship.

FIGURE 1: THE RELATIONSHIP BETWEEN HOUSEHOLD TYPES AND AGGREGATE GDP



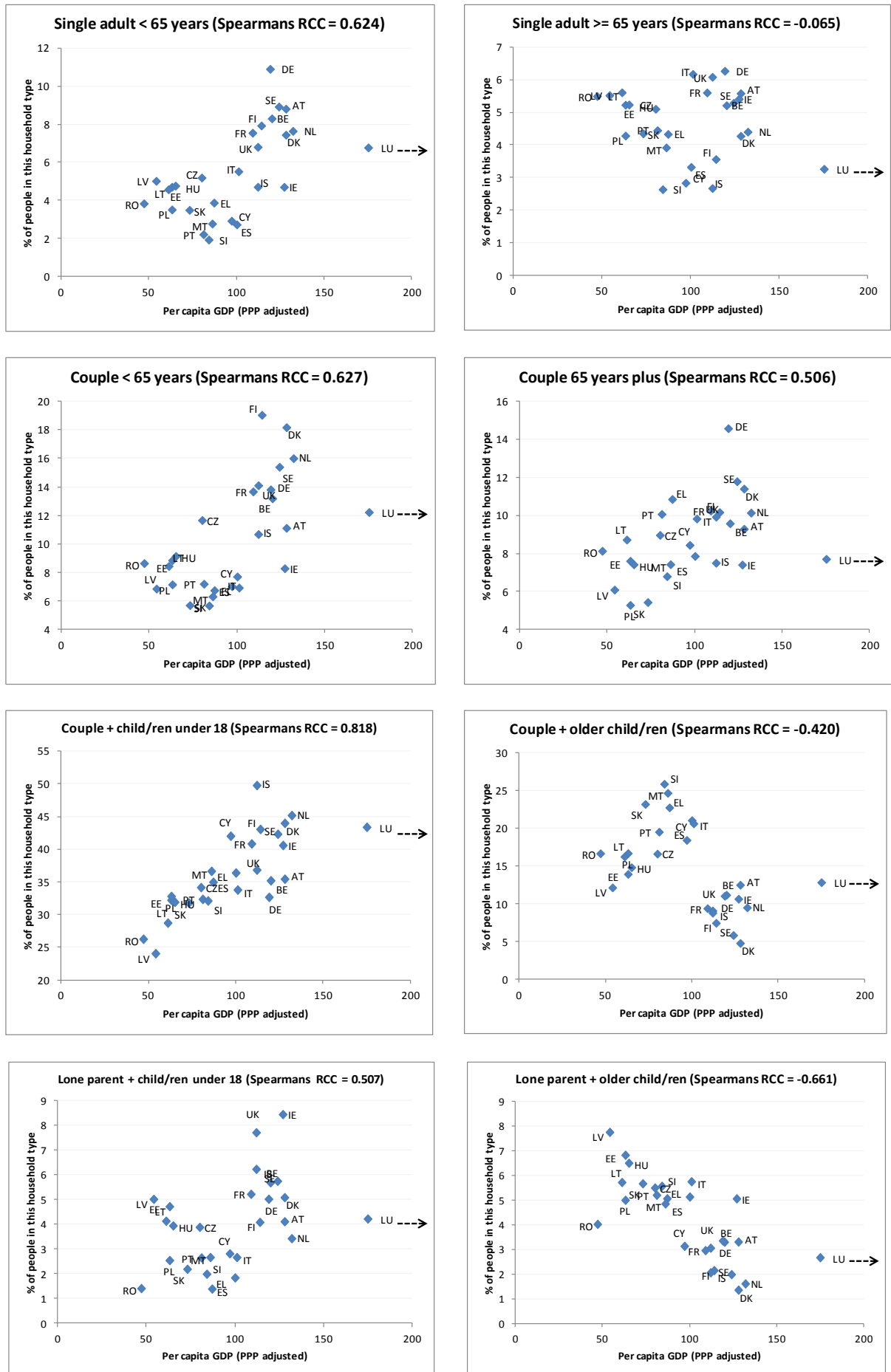
Source: EU-SILC cross-sectional files, 2008

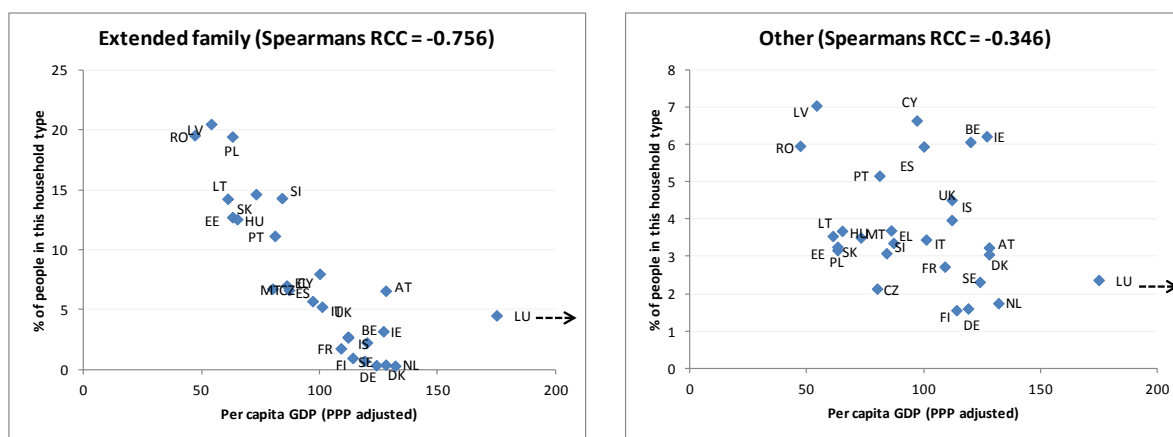
Figure 1 plots the Spearman’s rank correlation coefficients for each of the ten household types described earlier, with GDP. We observe that the household types associated with higher levels of GDP are living alone (for the under-65s, where the coefficient is 0.6), living as part of a couple-only household (0.5 and 0.6 for the under-65s and over-65s respectively), and living as a couple or a lone parent with one or more dependent children (0.8). By contrast, those household types associated with lower levels of GDP are living as a couple or as a lone parent with children over the age of 18 (-0.4 and -0.7 respectively); and living as part of an extended family (0.75). The “other” category is also more common in countries with lower levels of income.

Of course, these relationships tell us nothing about causality. It is certainly possible that people in poorer countries tend to live in larger households is that they are pooling their resources in response to their higher risk of poverty. But we should not jump to conclusions: it’s also possible that the observed associations are not causal, and that regional patterns of household formation have arisen from cultural and historical factors not directly caused by levels of income.

Figure 2 presents individual scatterplots of the level of national income (horizontal axis) and the prevalence of the 10 household types (vertical axis). Because the Spearman’s rank correlation coefficient is nonparametric, and is calculated only on the basis of country rankings, we should not necessarily expect those household types where the rank correlation coefficient is highest (or lowest), to be those same household types where the points on the scatterplot are most closely clustered around some straight line of best fit. Nevertheless, we do observe a close relationship between the scatterplots and the coefficients reported in Figure 1. There is a strong negative relationship between GDP and the prevalence of extended family households and households with older children; there is a strong positive relationship between GDP and couple households with dependent children, and, to a lesser extent, couple-only households of all ages.

FIGURE 2: TEN HOUSEHOLD TYPES AND AGGREGATE GDP LEVELS





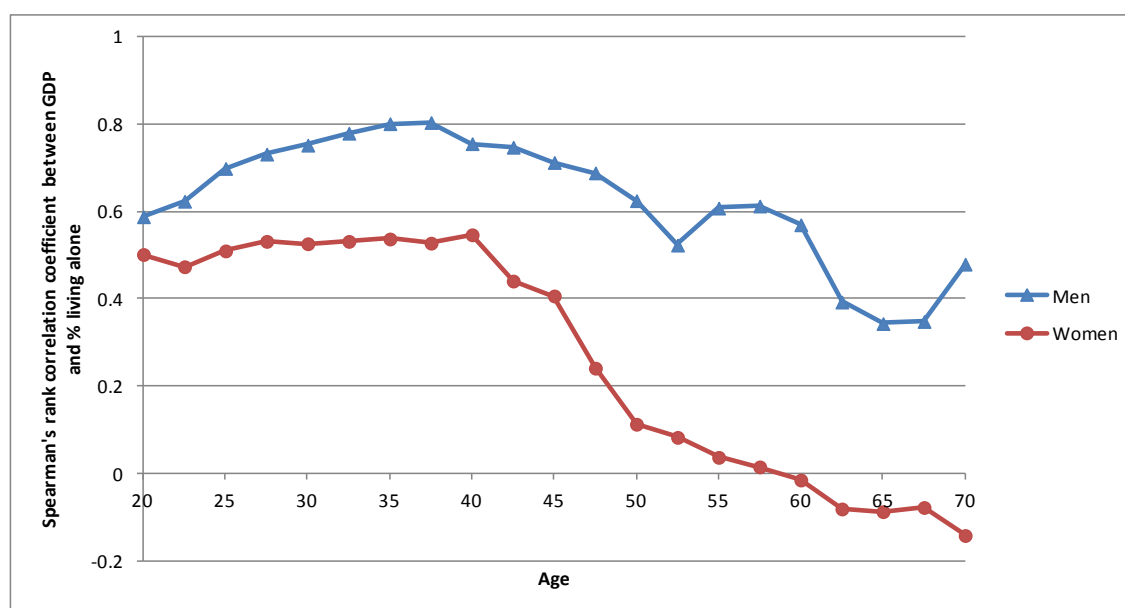
Note: Because GDP is so much higher in Luxembourg than in all other countries, the point for Luxembourg has been shifted to the left on all graphs, in order to allow more space in which variation between the other countries may be observed. The true value is 256, rather than 175 as shown on the graphs.

Source: EU-SILC cross-sectional files, 2008

3.2 ALLOWING ASSOCIATIONS TO VARY BY SEX AND AGE

The associations in Figures 1 and 2 relate to the population as a whole; in fact, there is no reason why the association between living arrangements and per capita GDP should not vary by demographic factors such as age and sex. Figures 3 and 4 plot variations in the Spearman's rank correlation coefficient by age and sex for the two household types displaying the strongest association with GDP: the single-person household on the one hand, and the extended family on the other.

FIGURE 3: SPEARMAN'S RANK CORRELATION BETWEEN GDP PER CAPITA AND THE PERCENTAGE OF PEOPLE LIVING ALONE, BY SEX AND AGE.



Source: EU-SILC cross-sectional files, 2008

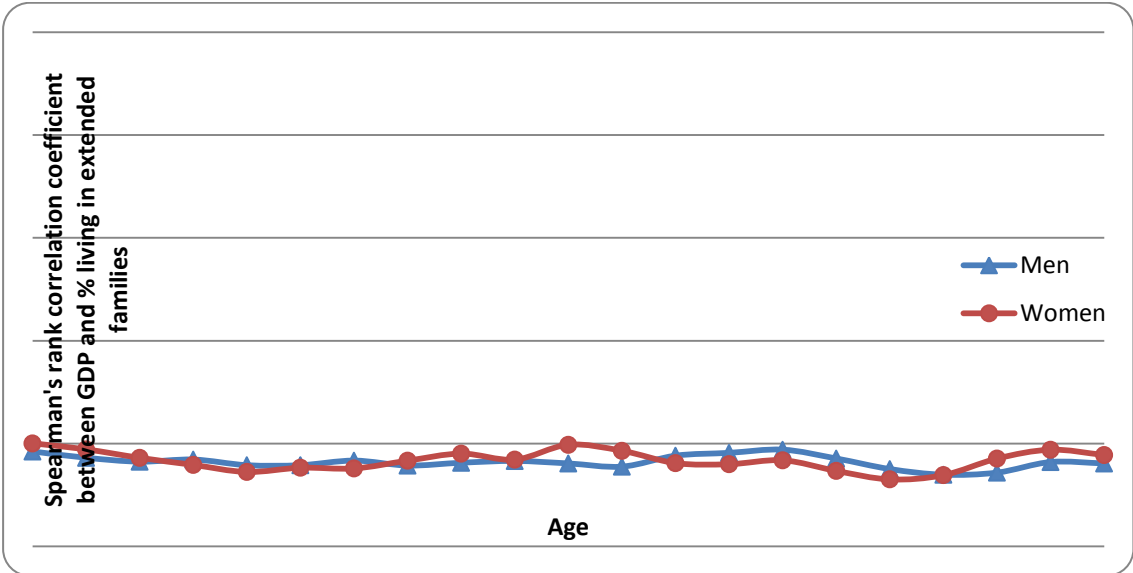
If one were to attempt to calculate these rank correlation coefficients on single-year age groups, or even two- or three-year age groups, the resulting coefficients would be quite unreliable due to the

variation in ranks which might arise from imprecise point estimates of the percentages living in a particular household type. Therefore, the estimate for each point on the graph is calculated on the basis of age bands which include individuals up to 4 years older or younger than the age indicated on the graph; the sample is re-weighted so that individuals further from the central age receive a lower weight.

Figure 3 shows that the association between living alone and GDP varies markedly by both age and sex. It is stronger for men than for women; for both sexes it increases somewhat between the ages of 20 and 40, and declines after that (indeed, for women, it declines to below zero). Thus, the association we observed between GDP and the prevalence of solo living is driven more strongly by men’s than by women’s behaviour, and more strongly by the behaviour of people under 45 than by people over that age.

By contrast, Figure 4 shows that there is very little variation by age or sex in the relationship between GDP and living in an extended family; the rank correlation coefficient remains at about -0.8 for both men and women, at all ages.

FIGURE 4: CORRELATION BETWEEN GDP AND THE PERCENTAGE OF PEOPLE LIVING IN EXTENDED FAMILIES, BY SEX AND AGE.



Source: EU-SILC cross-sectional files, 2008

3.3 LIVING ARRANGEMENTS AND INDIVIDUAL INCOMES

The previous analyses have all reported associations between living arrangements and incomes at the aggregate level. However, it may be more instructive for policy purposes to understand the ways in which living arrangements vary in response to individual incomes within each country.

This is not a straightforward exercise. As pointed out in the Introduction, the relationship between income and living arrangements is bi-directional: as well as incomes acting as a determinant of living arrangements, there may also be effects in the other direction, with living arrangements influencing incomes via the amounts of benefits which are paid to individuals or to households.

Clearly, any household-based measure of income, such as total equivalised household income, is liable to suffer from this problem, as is any measure of personal income which includes any type of means-tested benefit income. In order to circumvent this problem, we focus on the relationship between *earned income* and living arrangements. As noted earlier, even earned income may not be totally immune from influence by living arrangements, since work incentives may differ according to the incomes earned by other household members. This is particularly likely to be a problem in

respect of women's earned income, since women's incomes typically fall when their children are young. However, on the not too heroic assumption that the majority of men of working age would get a job if they could, it seems reasonable that for this group at least, earned income is not influenced substantially by living arrangements¹. The disadvantage of this course of action is that it does not allow us to analyse the relationship between living arrangements and income for older people, since as a group they will have little earned income².

Figures 5-8 present coefficients from regressions estimating the relationship between the different types of living arrangements and individual earned income. Because the outcome measures are all dichotomous (one either lives as part of an extended family, or one does not), logit regressions are estimated. However, the magnitude of logit coefficients does not necessarily reflect the magnitude of the estimated effect size; we therefore use a marginal effects transformation, so that the coefficients may be interpreted as reflecting the change in the probability of living in a particular living arrangement associated with a unit change in income.

Another problem arises in comparing the effects of incomes between countries. If we measure incomes in Euros, even adjusted for purchasing power parity, the effect of an extra 100 Euros in Luxembourg is likely to be much smaller than the effect of an extra 100 Euros in Bulgaria, simply because 100 Euros represents a much larger percentage of the average pay packet in Bulgaria than in Luxembourg. We therefore transform earned income into percentiles for each country and year. Another advantage of this approach is that while earned income in the EU-SILC is currently reported as gross amounts in all countries, this has not historically been the case, and until 2007, some countries were reporting only net amounts. The relationship between net and gross income is not linear, but it is, with very few anomalous exceptions, monotonic – that is, it preserves rankings between individuals. This means that a person in a particular income percentile in terms of their gross income will belong to that same income percentile (or to a percentile very close to it) in terms of their net income. So, using a measure of income percentile means that we can generate estimates which are comparable between countries in all years, without worrying about transformations between gross and net incomes. Of course, transforming incomes to percentiles is not a perfect solution. We are left with the problem that the distance (in terms of absolute income) between percentiles is not uniform within a given country, since the gap is smaller at the bottom of the distribution and larger at the top of the distribution; the gap also varies between countries, being larger in countries with higher levels of inequality. However, in making this transformation we have traded some potentially large problems for what are probably smaller problems, so we believe it is a step worth taking.

Reported coefficients are multiplied by 10; therefore, Figures 5-8 show the effect on each of the living arrangements concerned, of an extra 10 percentile points of income (ie, the effect of moving from the 40th to the 50th percentile, or the 70th to the 80th). This approach does restrict the effect of income to be linear throughout the range, which may not be the case. However, we maintain this restriction for the sake of simplicity, because we are really interested in the way that coefficients vary across the age range and between countries.

¹ The time frame over which any effect of earned income on living arrangements may be expected to occur is likely to vary according to individuals' characteristics. For example, one year may be a realistic time frame in which to expect to observe such an effect for a person in regular employment, while it may become evident much more quickly for people with irregular income flows.

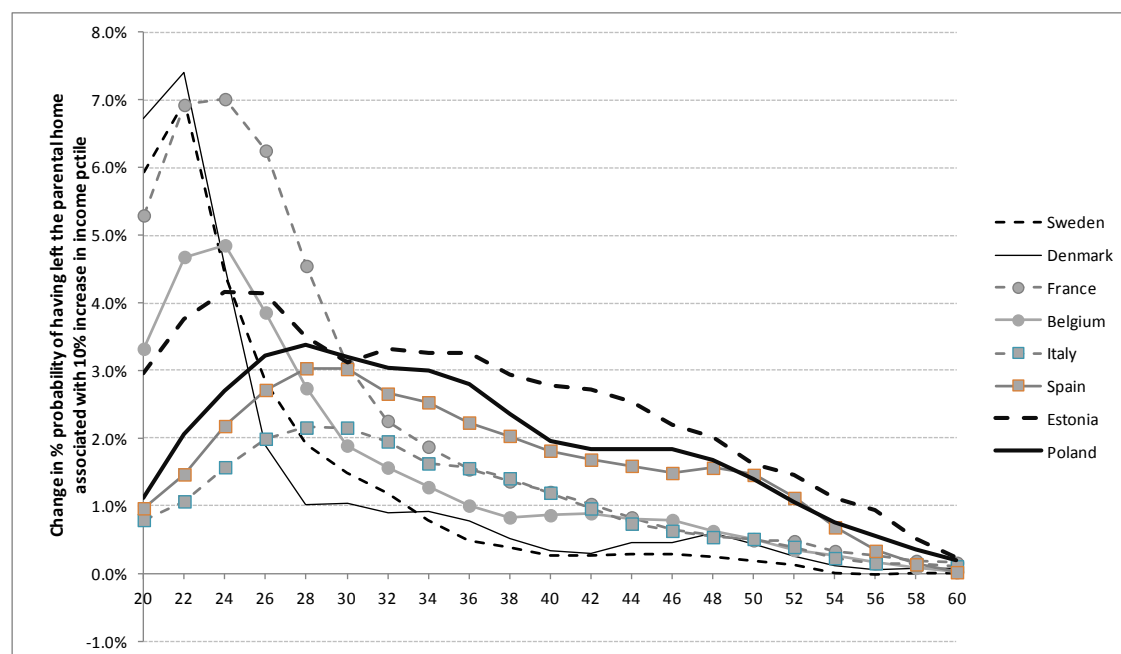
² In order to analyse the effect of income on living arrangements for older people, we would ideally like to have a measure of that portion of their pension income which is not means-tested and which does not depend on the absence or presence of other people in the household. However, this information is not easily available, so we restrict the analysis to working-age people.

Each of the lines in Figures 5-8 was obtained from a sequence of regressions centered on different ages. Rather than obtaining point estimates for each year of age, which would have led to very small cell sizes in many cases, each individual regression includes, as well as people of exactly the age in question, individuals up to four years older or younger; weights for these extra individuals are adjusted so that individuals further away from the central age are assigned a lesser weight.

The main focus of our investigations is the two household types which we examined earlier, namely the single-person household and the extended-family household. However, before looking at the single-person household, we consider one of the conditions necessary for living in a single-person household, namely having left the parental home. Because leaving home is a relatively simple transition, it is rather easier to understand in the context of its relationship with income than living alone³.

Figure 5 shows the coefficients of interest for a selection of eight countries: two from the “Nordic” group (Sweden and Denmark); two from the “North-Western” group (France and Belgium); two from the “Southern” group (Italy and Spain) and two from the “Eastern” group (Estonia and Poland). In all countries, the effects vary with age; however, the shape of the curves varies greatly between countries.

FIGURE 5: REGRESSION COEFFICIENTS (MARGINAL EFFECTS) BY AGE: THE EFFECT OF INDIVIDUAL-LEVEL EARNINGS PERCENTILE ON THE PROBABILITY OF LIVING SEPARATELY FROM THEIR PARENTS (MEN).



Source: EU-SILC cross-sectional files 2007-8

In Sweden and Denmark, the two representatives of the “Nordic” cluster of countries, the coefficient peaks at or just over 0.07 at age 22 – that is, at this age, an increase of 10 percentile points in a person’s earned income is associated with an increase of 7 percentage points in the probability that the young person will be observed living away from the parental home. After this age, the coefficient declines rapidly, so that by age 28 and afterwards, the income effect is smaller in these countries

³ Note that where young people leave home to live alone, their own income is likely to play a more important role than in cases where a young person leaves home to live with a partner; in this case, the income of the partner will play a role as well.

than in any of the others. This trajectory in the income coefficient is consistent with the fact that home leaving occurs far earlier in the Nordic countries than elsewhere; it is clearly strongly related to the young person’s income in the early twenties, but by the late twenties, so few young people are still living in the parental home that the effect of income is minimal.

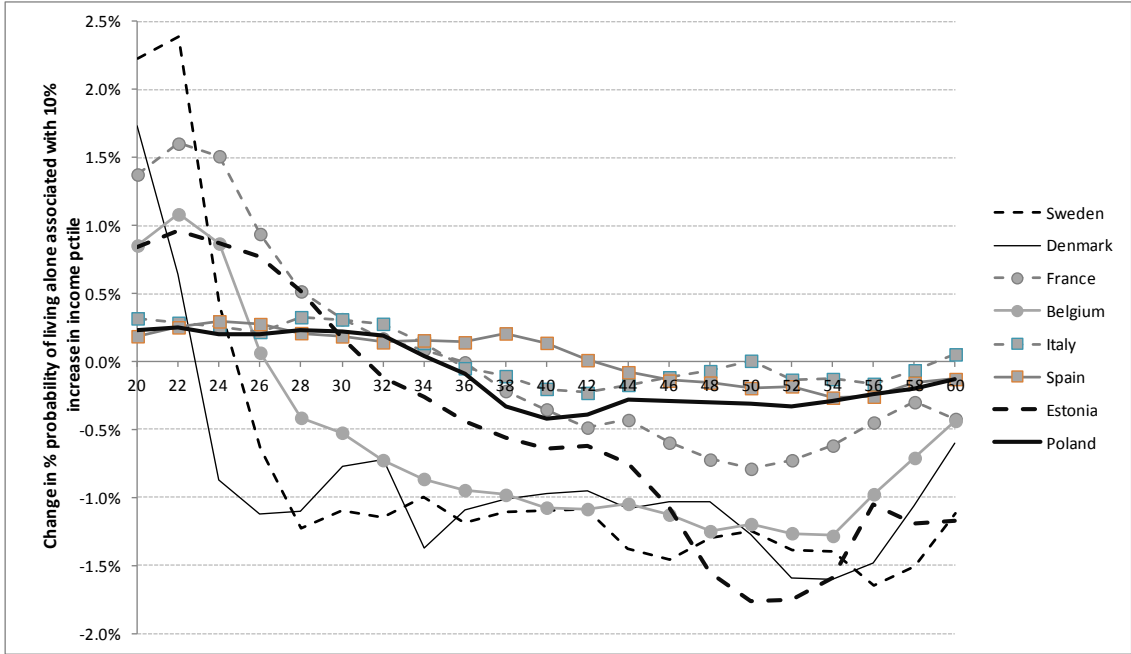
In France and Belgium, the two representatives of the “North-Western” cluster of countries, the coefficient peaks slightly later, at age 24, declining fairly rapidly thereafter until age 30, and more slowly after that. This is consistent with home-leaving occurring at fairly early ages in these countries, though later than in the Nordic countries.

It is in the Southern European countries that home-leaving takes place the latest of all European countries, and this is reflected in the trajectory of the coefficients in these countries. The coefficients are very low in the early twenties, when very few young people are leaving home. They peak around age 28 or 30, at relatively low levels (0.03 and 0.02 for Spain and Italy respectively) and decline relatively slowly after that.

Finally, the two Eastern European countries displayed in Figure 5 show rather different trajectories: the curve for Poland is rather similar to that for Italy and Spain, while the curve for Estonia peaks rather earlier, reflecting the relatively early age of leaving home in Estonia relative to many other Eastern European countries.

Figure 5 shows that in all the countries considered, the coefficient on income peaks at the ages when large numbers of young people are making the transition away from the parental home, and is lower at other ages. Unsurprisingly, the coefficients are always greater than zero, even at relatively advanced ages – perhaps more surprisingly, they remain significantly different from zero up to the late 50s. Confidence intervals are not shown in Figure 5, but they are shown in Appendix 3.

FIGURE 6: REGRESSION COEFFICIENTS (MARGINAL EFFECTS) BY AGE: THE EFFECT OF INDIVIDUAL-LEVEL EARNINGS PERCENTILE ON THE PROBABILITY OF LIVING ALONE (MEN).



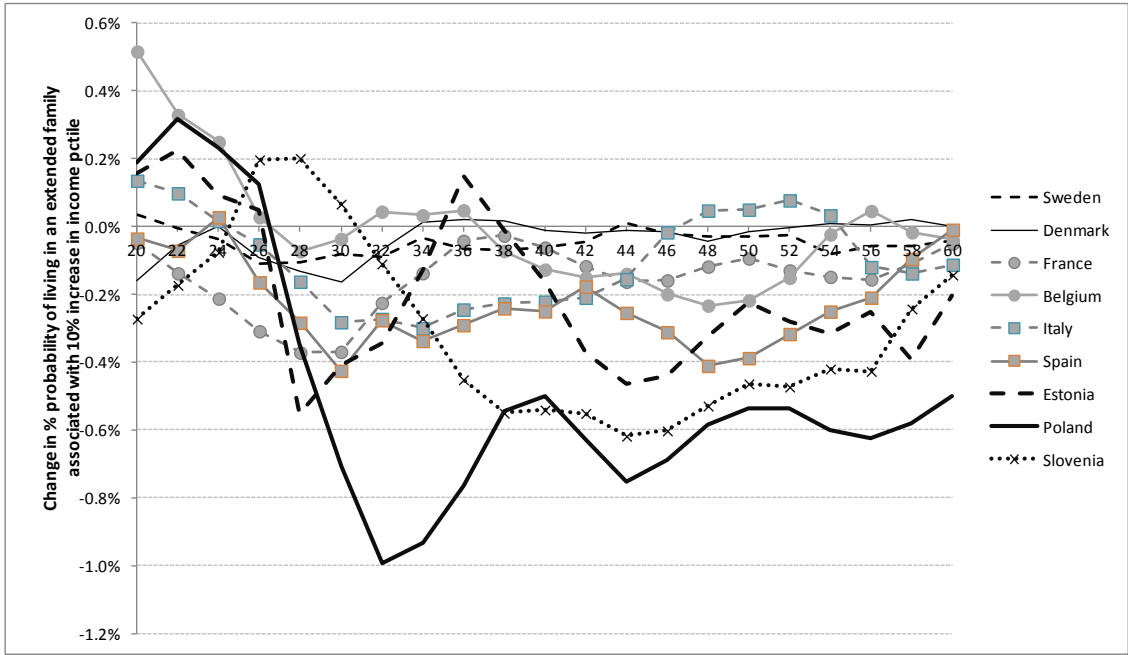
Source: EU-SILC cross-sectional files 2007-8

Figure 6 considers the relationship between earned income and the probability of living alone. Once again, there are features of the trajectory which are common across all countries. The coefficients tend to be positive at the youngest ages (until the mid-twenties in Sweden, Denmark and France, and until the early 30s in all the other countries) indicating that at these young ages, high levels of

income are associated with an increased probability of living alone. The coefficients then become negative and remain negative throughout the 40s and 50s, indicating that during this portion of the life course, higher incomes are associated with a *lower* probability of living alone, possibly because men with higher incomes are more likely to succeed in finding a partner with whom to live, or alternatively, as already hypothesized, because the presence of other family members to support may stimulate a man to find a job with more hours, higher hourly wages or both. Finally, there is at least visual evidence that the coefficients approach zero towards the late 50s. With the available data, which relate only to earnings and not to no-means-tested pensions, we cannot test whether the coefficients again become positive in the late 60s and 70s, as older people with high levels of income are able to sustain themselves in their own homes, while those with lower incomes have to move in with relatives. However, it remains a workable hypothesis that this would be the case.

Of course, there are differences as well as similarities between countries, with the main difference being that in the countries where solo living is more common (Sweden, Denmark, France, Belgium and Estonia – see Appendix 1) the coefficients are much further from zero, while in the other countries (Spain, Italy and Poland), where solo living is much rarer, the coefficients lie much closer to zero. In fact, Appendix 3 shows us that the curves for Spain and Poland do lie significantly away from zero over portions of the life course, although in Italy the coefficients are significantly different from zero only in the early twenties.

FIGURE 7: REGRESSION COEFFICIENTS (MARGINAL EFFECTS) BY AGE: THE EFFECT OF INDIVIDUAL-LEVEL EARNINGS PERCENTILE ON THE PROBABILITY OF LIVING IN AN EXTENDED FAMILY (MEN).



Source: EU-SILC cross-sectional files 2007-8

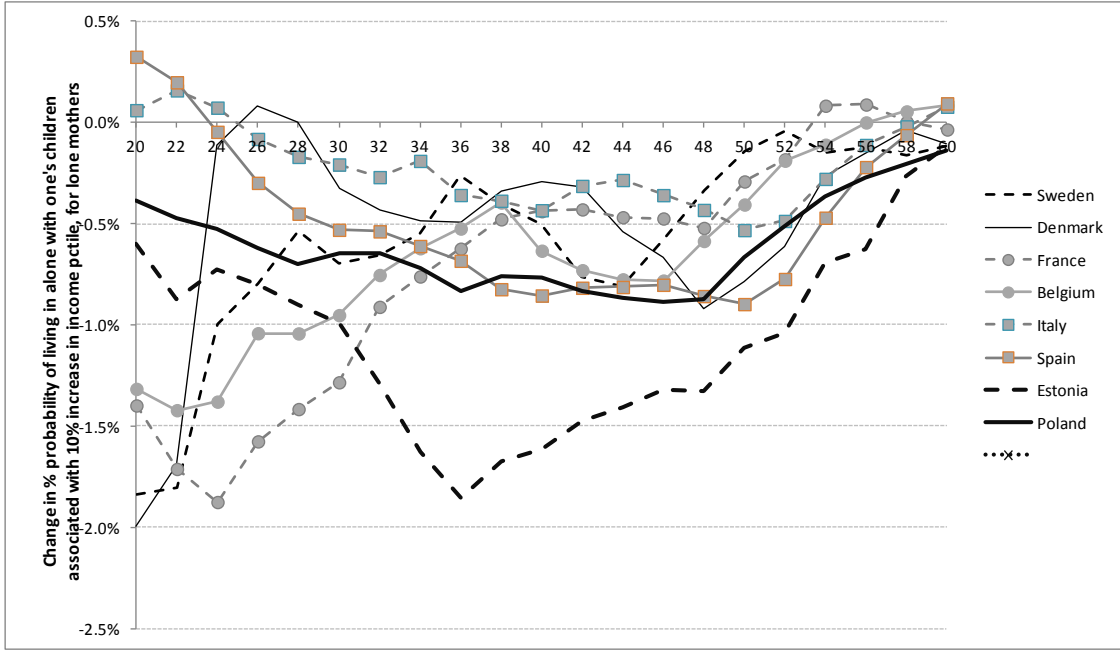
Figure 7 shows the relationship between income and living in an extended family. Here, the coefficients are smaller and the estimates are much less precise than in the previous two cases; they move around more across the age range, and in most countries (see Appendix 3) they are not statistically significant anywhere. The relationship is statistically significant in Italy and Spain for a period during the 30s and 40s, and for Poland from age 30 onwards; we have also included Slovenia in this graph, as an additional country where there is a high incidence of extended family living, and again in Slovenia the negative relationship between income and extended family living is significantly negative between the mid-30s and the late 50s.

This relative lack of individual-level effect is interesting. At the aggregate level, we saw that income was closely related to the incidence of both solo living (in a positive direction) and extended family living (in a negative direction). At the individual level, we see that the relationship between solo living and income is largest in the countries where rates of solo living are highest; however, it is still present, and statistically significant, in countries where solo living is much less common. However, when we look at extended family living, we see that in countries where this family form is uncommon, there is no relationship whatsoever with income levels; even in countries where extended families are common, the relationship with earnings is not statistically significant over much of the life course, and it is not particularly pronounced in terms of magnitude. This is partly to be expected, since the decision to live in an extended family is not the decision of one single person alone, but to a degree it is the joint decision of all the people living in the household, and is thus determined by a complex process involving the characteristics, circumstances, preferences and incomes, of all potential members of the extended family. However, it may also suggest that there is a cultural dimension associated with extended family living which is related to, but which is not dominated by, the effect of income.

Finally, we examine one feature of the nuclear family/extended family nexus which may be particularly susceptible to influence by income. This is the situation of lone mothers. We take as a sample all women who live with one or more of their natural children, of any age, but who do not live with a partner. We divide these women into two groups: those living only with their children, and those living with their children plus other adults (either in the form of an extended family, in the case of lone mothers living with their own parents, or in the household type which we define as “other”, in the case of lone mothers living with friends, siblings or other relatives). We might predict that the higher the level of labour income which a lone mother commands, the more she is likely to live alone with her children.

In fact, we find that the opposite is true. Figure 8 plots the trajectory of the relevant coefficients over the life course for the same countries as previously; although the coefficients move around rather a lot, which is to be expected given the much smaller sample in these than in previous regressions, the coefficients are statistically below zero in all countries over at least part of the life course, and statistically different from zero over the majority of the life course in the majority of countries. This is not a statistical blip caused by the selection of particular countries; the majority of the countries omitted from our graphs also display exactly the same feature that lone mothers’ labour income is *negatively* associated with the probability of her living alone with her children.

FIGURE 8: REGRESSION COEFFICIENTS (MARGINAL EFFECTS) BY AGE: THE EFFECT OF INDIVIDUAL-LEVEL EARNINGS PERCENTILE ON THE PROBABILITY OF LIVING ALONE WITH ONE’S CHILDREN (LONE MOTHERS).



Source: EU-SILC cross-sectional files 2007-8

Why should this be? The most likely explanation is that many lone mothers who live with other people (particularly their own parents) have a ready source of affordable childcare, which means that it may be easier to combine taking care of child(ren) with the demands of paid work. This hypothesis is supported by two factors: first, that in Sweden and Denmark, two countries with comprehensive public provision of childcare, the coefficients are closest to zero; and secondly, that additional regressions (not shown) which indicate that lone mothers living with other family members as well as their own children, are more likely to work, and to work full-time, than other lone mothers.

4 CHANGES IN BEHAVIOUR IN RESPONSE TO THE RECESSION

We have seen clearly that money matters. Household composition varies with income, both at the aggregate level between countries, and at the individual level within countries. There is one question which we have not yet answered: has this effect translated into changes in behaviour as a result of the recent recession? Are we seeing a larger number of extended and multi-generational households, as families seek to protect themselves from economic uncertainty and hardship?

In order to address this question, we compare data from 2007 (before the recession was properly anticipated, and before its effects were experienced) and 2010 (when people in many countries had suffered substantial effects from the recession).

There are reasons why we might expect any such effect to be rather limited. First, not all countries have experienced the same degree of downturn in their economic fortunes. Second, in countries which have experienced a downturn, this has not affected all citizens equally; thus, to the extent that the recession has effects on living arrangements, we would expect them to be restricted to a particular subset of families and individuals. Third, even if an individual or a family has the economic motivation to change its living arrangements, it may be far from costless to make such a change. Moving from a nuclear to an extended family or other sharing situation requires the availability of other family members or friends with whom to share accommodation; some people may have these people available, but others may not. Additionally, this type of change in living arrangement typically requires a change of address on the part of at least one person. Someone living in rented accommodation with few personal effects may be able to make such a change at fairly low cost, but

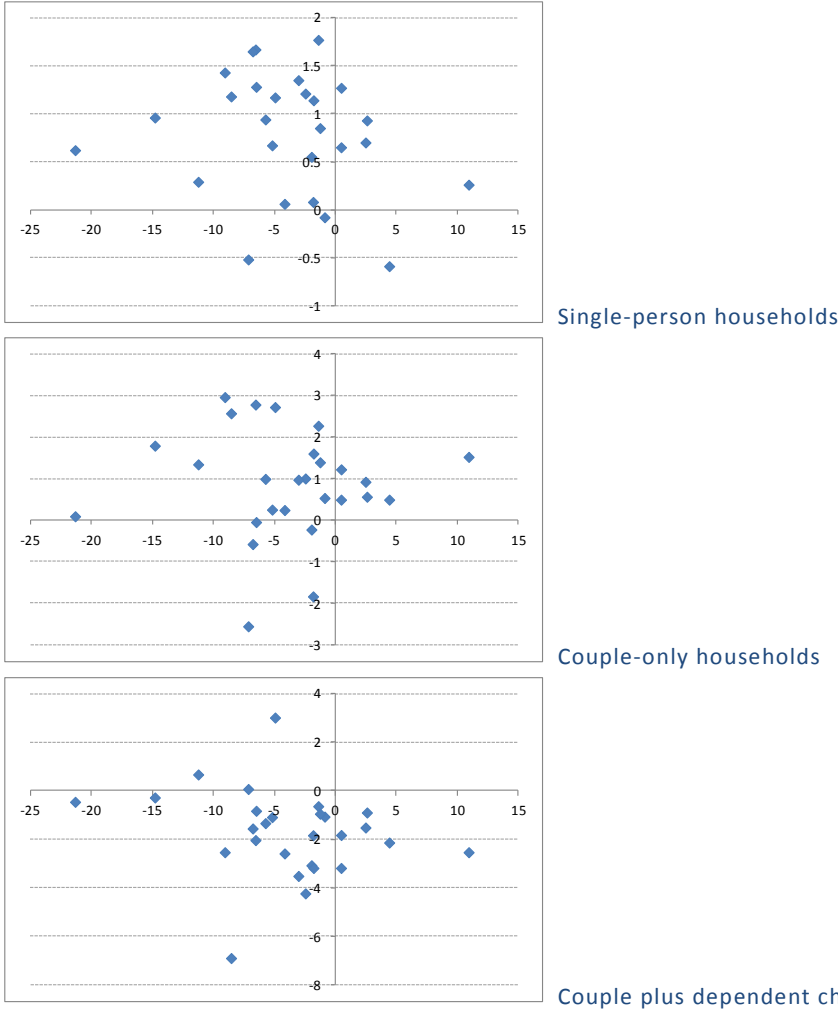
this would certainly not be the case for people living in owner-occupied accommodation. Finally, there is the issue of time: even where a family decides to make such a change, it may take months or years to put into effect, and we may therefore not observe these changes in our data when we compare observations a mere three years apart.

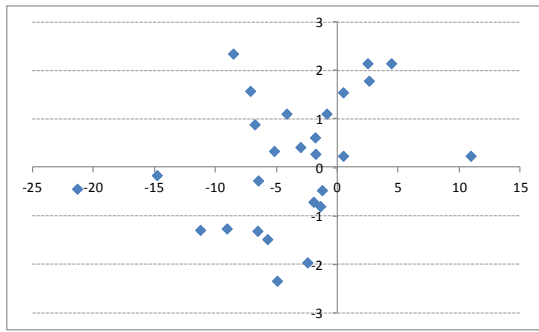
For these reasons, we will almost certainly *not* observe wholesale changes in living arrangements across Europe. However, there are certain groups among whom we might observe modest changes. One such group is couples deciding whether or not to have children. This question has been addressed by Sobotka et al (2011), who conclude that fertility is generally pro-cyclical, but that effects tend to be small and concentrated among young childless adults. Thus, we might expect to observe a very small reduction in fertility, particularly in the proportion of couples who have children at all.

Another such group is young adults, who move house much more frequently than other groups; for whom moves tend to be less costly; and who tend to have a range of options available, including living with their parents, living with friends, living with a partner, or living alone. To the extent that we might expect to observe a response to the recession, it may well be most marked in this group.

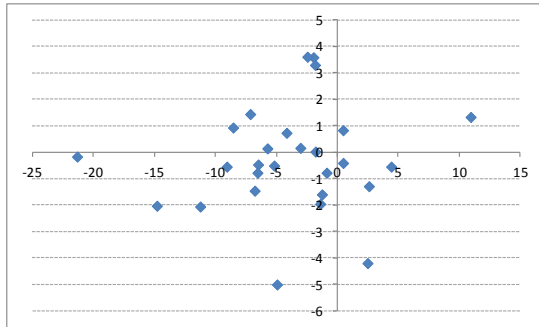
Figures 9 and 10 plot changes in the prevalence of living arrangements against changes in per capita GDP for the countries in our sample between 2007 and 2010; Figure 9 takes as a sample the general population, while Figure 10 is based on a sample of young people aged 18-30, whose living arrangements, as we have argued, may be more likely than those of the general population to change as the result of an economic downturn.

FIG. 9: CHANGES (2007-2010) IN THE PREVALENCE OF DIFFERENT HOUSEHOLD TYPES (HORIZONTAL AXIS) AGAINST CHANGES IN PER CAPITA GDP – SCATTERPLOT OF 27 COUNTRIES (EU-27 MINUS MALTA, PLUS ICELAND).





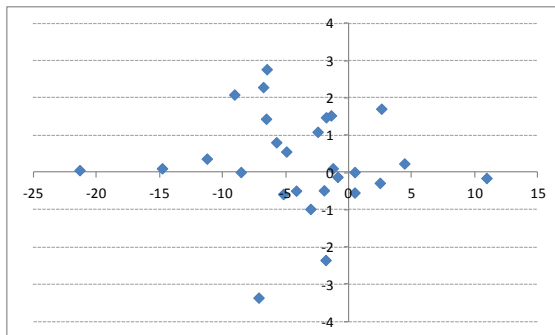
Couple plus older children



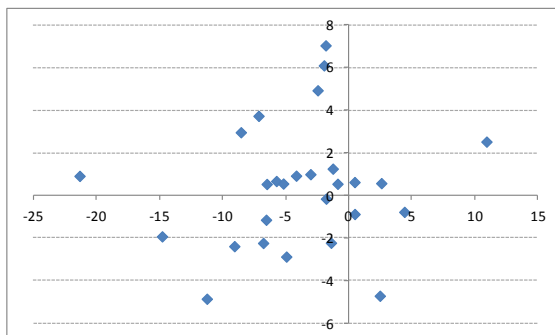
Extended family and "other" category

Notes and Sources: Please see notes to Fig 10

FIG. 10: CHANGES (2007-2010) IN THE PREVALENCE OF DIFFERENT HOUSEHOLD TYPES (HORIZONTAL AXIS) AGAINST CHANGES IN PPP-ADJUSTED GDP – SCATTERPLOT OF 27 COUNTRIES (EU-27 MINUS MALTA, PLUS ICELAND) – YOUNG PEOPLE AGED 18-30.



Solo living



Extended family and "other" category

Notes: In each figure, the horizontal axis represents the total percentage change in per capita GDP over the three years 2007-2010; the vertical axis represents the change in the percentage of people living in each of the living arrangements shown over the same three-year period.

Source: data on per capita GDP are calculated from the World Bank's World Development Indicators (World Bank 2013); data on changes in living arrangements are calculated using EU-SILC data.

In no case do we observe any marked relationship between changes in family type and changes in GDP – that is, we do not observe any movement towards extended-family households, or away from single-person households or couple-only households in countries where GDP has suffered more during the recession than it has in other countries. This is the case not only for the general

population, but also for younger people, whose living arrangements may be more responsive to economic hardship; even in the case of young people, we see little evidence that in countries which have suffered most in the recession, there is a tendency away from living alone, or towards living in extended families or “other” household types, with friends or other family members. This absence of a discernible relationship also holds if we consider changes in ppp-adjusted per capita GDP, or an even younger group of people aged 18-25.

5 CONCLUSIONS

In this paper we have examined the relationship between income and living arrangements. We have found strong evidence to suggest that at an aggregate level, these two factors are related (although we do not have enough evidence to suggest that this relationship is necessarily causal). Living alone, as part of a couple-only household, and as a couple with minor children, are associated with higher levels of aggregate income, while living with one’s adult children, in extended families, and in other types of multiple occupancy household are associated with lower levels of aggregate income.

Many, but not all, of these relationships are replicated at the individual level. When we look at the relationship between earned income and living arrangements, we observe that higher incomes are associated with a higher probability of living alone at younger ages in almost all countries, though with a reduced probability of living alone at older ages. However, the relationship between extended family living and income, which is so marked at the aggregate level, is much less pronounced at the individual level.

One of the key findings of this paper is that the relationship between income and living arrangements changes over the life course; thus, a living arrangement which is associated with higher incomes over one age range may be associated with lower incomes over another age range.

Another key finding, and one which is rather surprising, is the extent to which, for lone parents, living in households with friends or other family members is associated with higher levels of earned income. We hypothesize that this is due to assistance with childcare making participation in the labour market easier; however, this is an area which has clear implications for policy and which could benefit from further investigation.

Finally, one of the aims of this paper was to understand how living arrangements in Europe have responded to the recent recession. We predicted that the effect would be small, because not everyone suffers economically in a recession to the extent that they need to consider making lifestyle changes, and because even for those who do suffer to that extent, it may be difficult to change one’s living arrangements quickly. However, we did not find even this predicted small effect, even for groups of people, such as young adults, whose living arrangements may be more susceptible to change in response to economic circumstances.

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APPENDIX

APPENDIX 1: PER-CAPITA GDP, ADJUSTED FOR PURCHASING POWER PARITY, BY COUNTRY AND YEAR

	2004	2005	2006	2007	2008	2009	2010	2011	2012
AT	128	126	126	124	125	126	128	129	131
BE	122	120	118	116	116	118	120	119	119
BG	35	37	38	40	44	44	44	46	47
CY	91	93	93	95	100	100	97	95	91
CZ	78	79	80	83	81	83	80	80	79
DE	116	116	116	116	116	115	119	121	122
DK	126	124	124	123	125	124	128	126	125
EE	58	62	66	70	69	63	63	67	69
EL	94	91	92	90	93	94	87	79	75
ES	101	102	105	105	104	103	100	99	97
FI	117	115	114	118	119	115	114	115	115
FR	110	110	108	108	107	109	109	109	108
HU	63	63	63	62	64	65	65	66	66
IE	143	145	146	146	131	128	127	129	130
IS	132	131	124	121	124	121	112	112	113
IT	107	106	105	104	105	104	101	100	99
LT	52	55	58	62	65	58	61	66	70
LU	253	255	271	275	264	256	268	272	272
LV	47	50	53	58	59	54	54	59	62
MT	80	81	79	78	81	85	86	86	86
NL	130	131	131	133	135	132	132	131	129
NO	166	178	186	182	192	177	182	187	196
PL	51	51	52	55	57	61	63	65	66
PT	78	80	79	79	78	80	81	78	75
RO	34	35	38	42	47	47	47	47	49
SI	87	88	88	89	91	87	84	84	82
SK	57	60	63	68	73	73	73	73	75
SW	127	122	123	125	124	120	124	127	129
UK	124	123	121	117	113	111	112	109	110

Note: The baseline for all years is the EU-27 average, set to 100.

Source: Eurostat (2013)

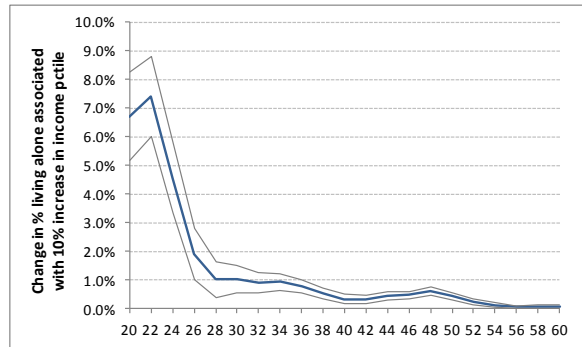
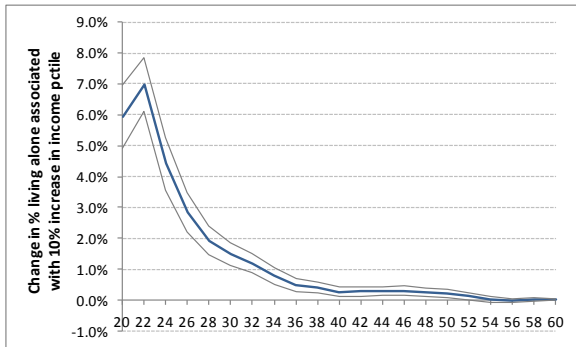
APPENDIX 2: HOUSEHOLD COMPOSITION (REPRODUCED FROM IACOVOU AND SKEW 2011)

	(1) Mean household size	(2) Single person under 65	(3) Single person 65+	(4) Couple only, both under 65	(5) Couple only, at least one 65+	(6) Couple with minor child(ren)	(7) Couple with adult child(ren)	(8) Lone parent with minor child(ren)	(9) Single person with adult child(ren)	(10) Extended family	(11) Other
Sweden	2.1	23.2	14.7	17.1	12.2	21.1	3.6	5.0	2.1	0.2	0.9
Finland	2.1	25.3	14.0	20.1	9.7	19.7	3.9	3.8	2.1	0.6	0.9
Denmark	2.0	31.4	14.4	15.9	9.8	<i>18.9</i>	1.9	4.9	1.5	0.1	1.4
Netherlands	2.3	23.9	11.6	16.3	11.3	22.3	6.6	3.0	2.0	0.1	2.8
Nordic average	2.2	25.2	13.2	17.0	11.1	21.0	4.7	3.9	1.9	0.2	1.8
UK	2.4	16.0	14.0	16.4	10.5	22.5	6.8	5.8	3.4	1.3	3.3
France	2.3	20.0	14.2	15.8	11.2	22.2	6.2	4.1	3.2	1.0	2.1
Germany	2.1	25.9	13.3	14.3	14.5	16.6	7.1	3.6	3.2	0.3	1.3
Austria	2.3	22.0	13.4	12.4	10.2	20.1	8.8	3.7	3.6	3.2	2.6
Belgium	2.3	21.2	13.6	15.7	10.7	19.2	7.9	4.5	3.4	1.1	2.9
Luxembourg	2.5	18.5	<i>10.4</i>	13.6	10.6	27.4	11.1	2.7	2.5	1.9	1.3
Ireland	2.8	12.0	9.7	10.3	7.8	28.2	7.9	8.4	7.4	1.9	6.5
North-Western average	2.2	21.2	13.7	15.2	12.2	20.0	6.9	4.4	3.3	0.9	2.2
Italy	2.4	14.6	15.2	8.1	11.2	22.0	14.6	2.6	6.2	2.6	2.8
Spain	2.7	9.2	8.8	12.2	9.5	26.6	16.7	1.4	6.1	4.5	5.1
Portugal	2.7	6.3	11.2	9.5	12.2	25.4	15.8	2.7	7.1	5.5	4.4
Greece	2.7	10.7	9.4	8.7	12.2	24.8	19.1	1.0	6.6	3.9	3.6
Southern average	2.6	11.8	12.2	9.7	10.8	24.1	15.8	2.1	6.2	3.6	3.8
Cyprus	2.9	8.7	7.3	9.4	11.4	31.5	17.2	3.3	4.3	2.7	4.2
Czech Republic	2.5	12.8	12.1	13.8	10.0	22.3	13.0	3.5	6.7	4.2	1.8
Hungary	2.6	11.7	12.5	11.8	8.4	21.5	11.6	3.8	7.9	7.3	3.7
Estonia	2.3	19.0	15.4	11.5	7.9	18.6	8.3	4.5	7.8	5.1	1.9
Latvia	2.6	13.5	13.2	8.0	6.2	17.4	10.1	4.4	9.1	12.1	6.1
Lithuania	2.6	11.8	14.1	9.1	8.7	22.1	12.0	4.5	6.4	8.0	3.4
Slovenia	2.8	9.7	11.2	7.3	9.9	23.6	19.3	2.5	7.3	6.7	2.5
Slovakia	2.9	10.9	13.2	7.6	7.8	21.5	17.8	2.2	7.0	8.5	3.5
Poland	2.8	11.6	13.1	10.3	6.7	23.0	14.1	2.1	6.1	10.8	2.3
Bulgaria	2.9	6.4	11.9	9.3	10.8	15.1	14.7	1.5	6.7	19.7	3.8
Romania	2.9	9.1	12.7	10.2	9.6	20.7	13.7	1.2	4.6	12.6	5.7
NMS average	2.8	10.9	12.8	10.5	8.3	21.5	13.7	2.4	6.2	10.3	3.4
EU-15 average	2.3	18.9	13.2	13.8	11.7	21.3	9.3	3.7	4.0	1.6	2.6
EU-27 average	2.4	17.5	13.1	13.2	11.1	21.3	10.1	3.5	4.4	3.2	2.8

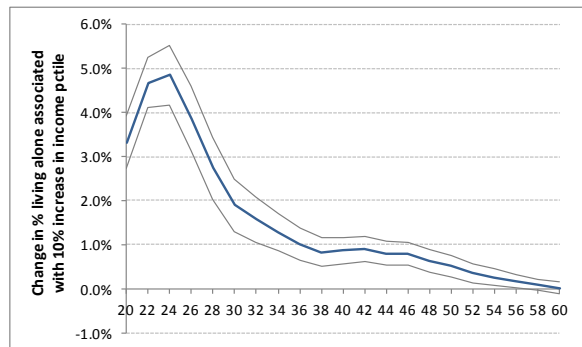
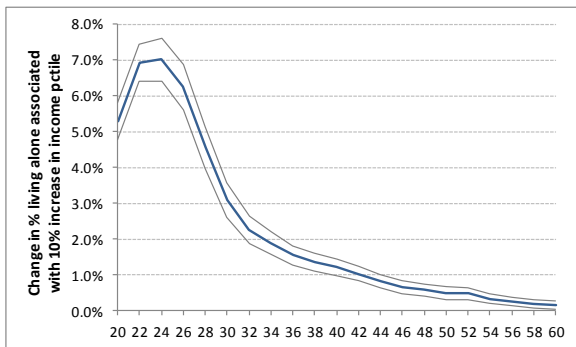
Notes: In this table, bold type denotes the five countries with the highest incidence, and italics denote the five countries with the lowest, incidence of each situation. Minor children are defined as children under 18 years old. Households with minor children (columns 6 and 8) may also contain adult children. Data are from the EU-SILC 2008-1 cross-sectional files, except for France where data are from the 2007-1 cross-sectional file.

APPENDIX 3A: VARIATIONS IN AGE IN THE RELATIONSHIP BETWEEN HAVING LEFT HOME AND INCOME AT THE INDIVIDUAL LEVEL, INCLUDING POINT ESTIMATES AND 95% CONFIDENCE INTERVALS: SELECTED COUNTRIES

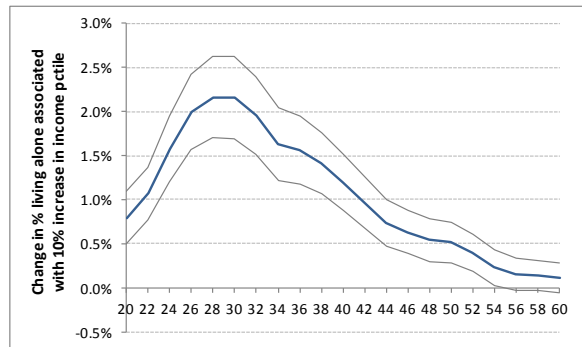
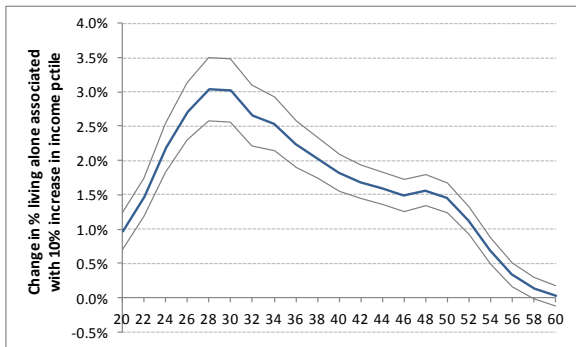
Sweden and Denmark



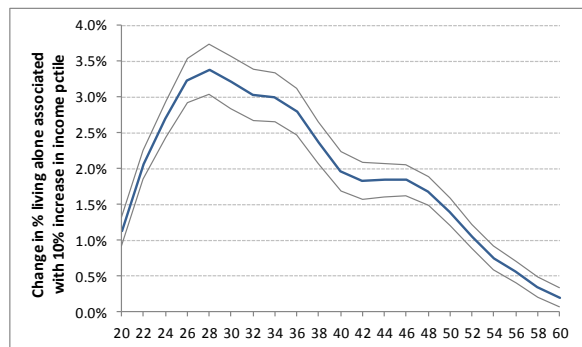
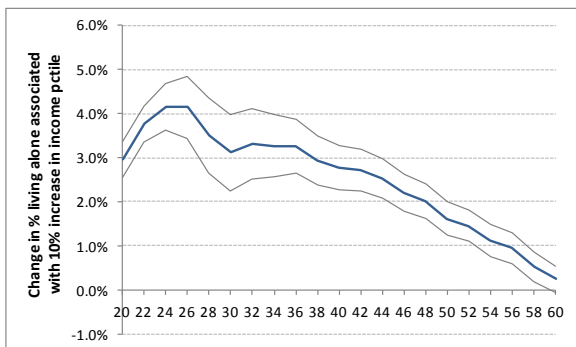
France and Belgium



Spain, Italy

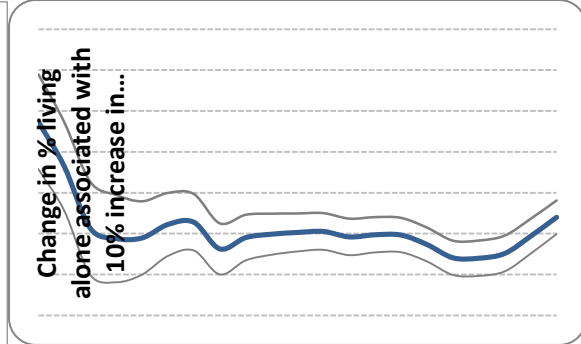
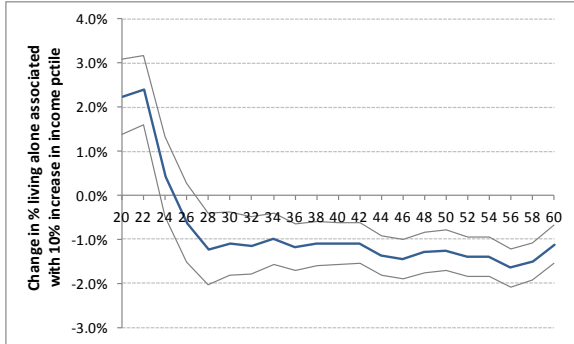


Estonia, Poland

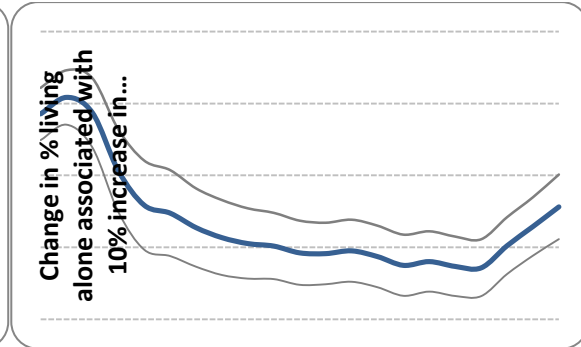
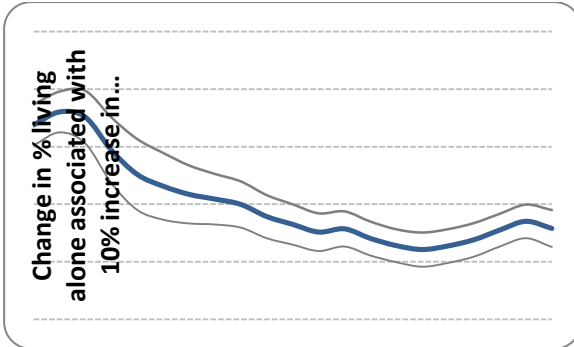


APPENDIX 3B: VARIATIONS IN AGE IN THE RELATIONSHIP BETWEEN LIVING ALONE AND INCOME AT THE INDIVIDUAL LEVEL, INCLUDING POINT ESTIMATES AND 95% CONFIDENCE INTERVALS: SELECTED COUNTRIES

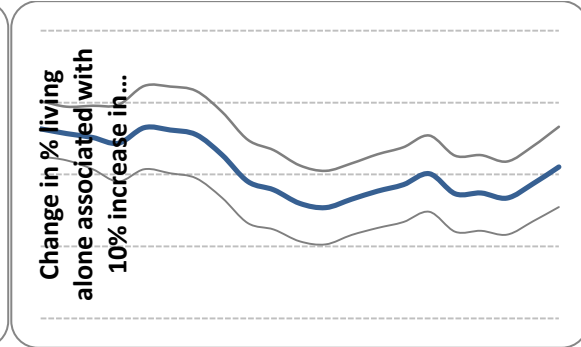
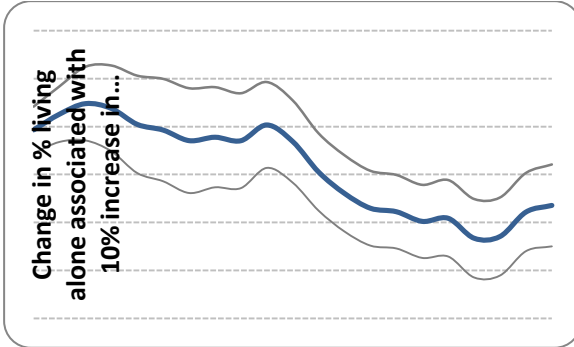
Sweden and Denmark



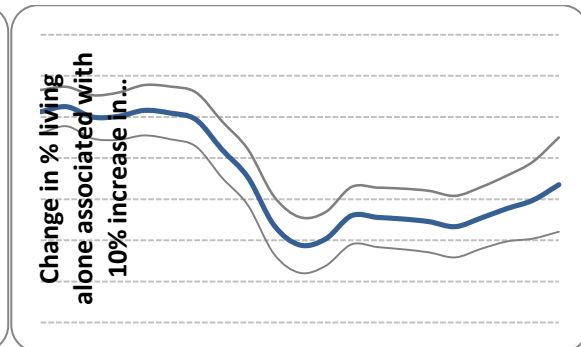
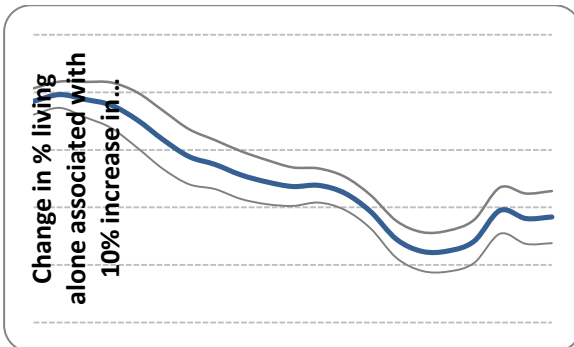
France and Belgium



Spain, Italy



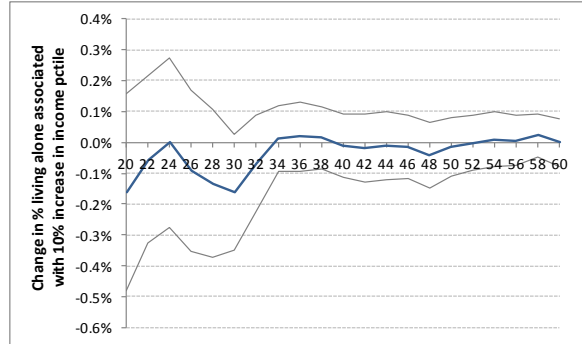
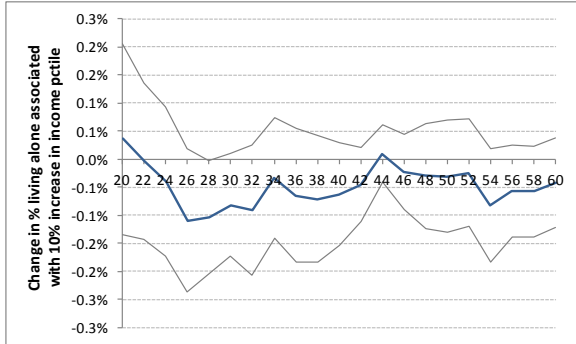
Estonia, Poland



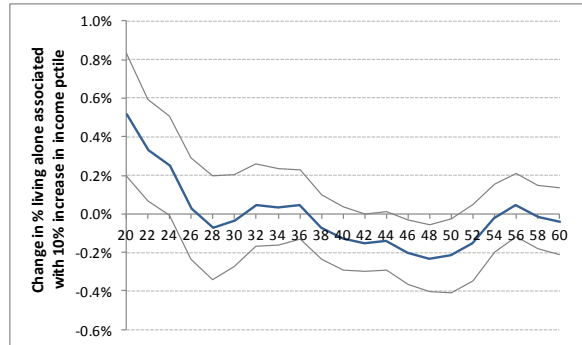
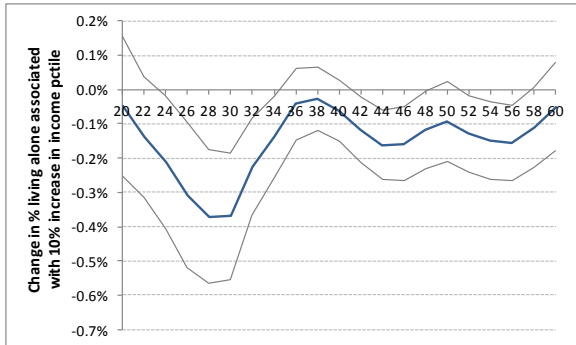
APPENDIX 3C: VARIATIONS IN AGE IN THE RELATIONSHIP BETWEEN LIVING IN AN EXTENDED FAMILY AND INCOME AT THE INDIVIDUAL LEVEL, INCLUDING POINT ESTIMATES AND 95% CONFIDENCE INTERVALS: SELECTED COUNTRIES

AND INCOME AT

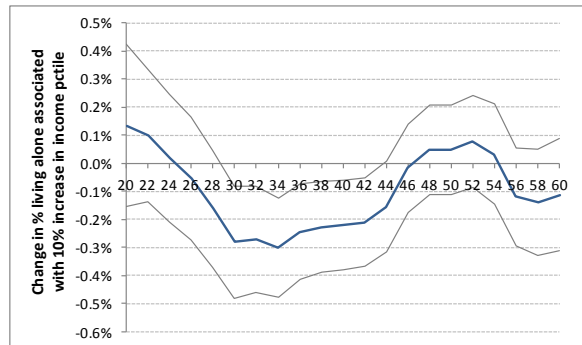
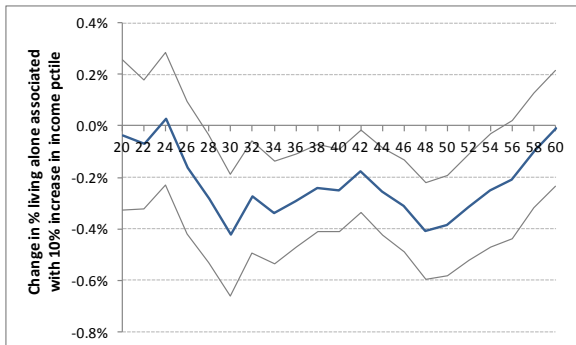
Sweden and Denmark



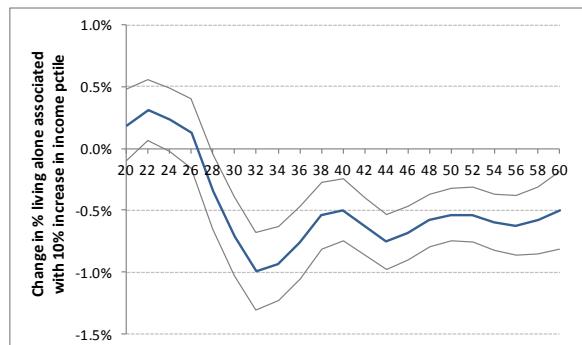
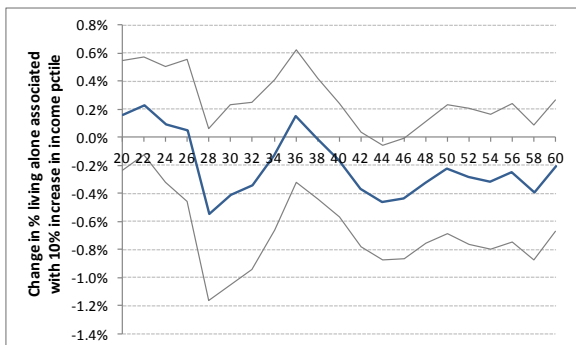
France and Belgium



Spain, Italy

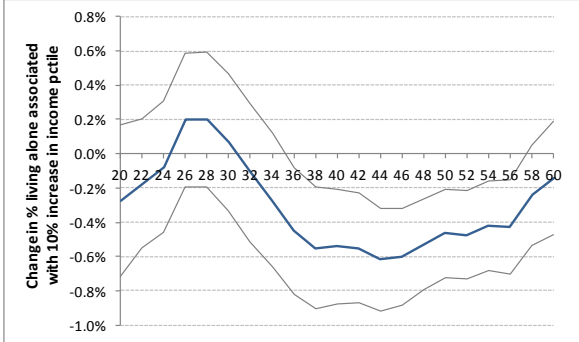


Estonia, Poland



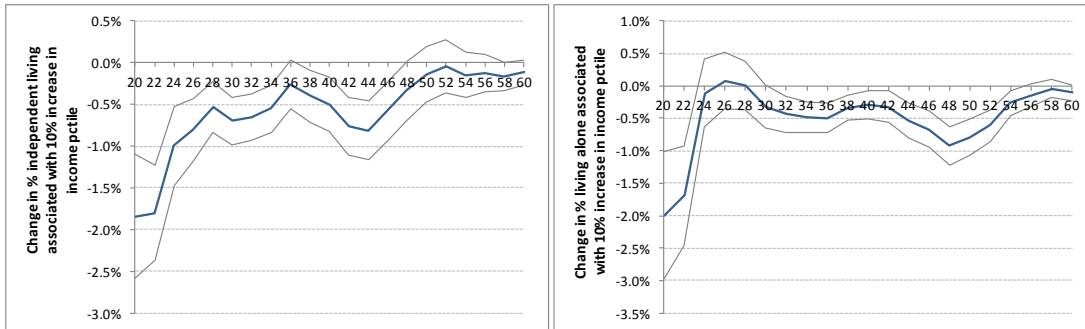
APPENDIX 3C (CONTINUED)

Slovenia

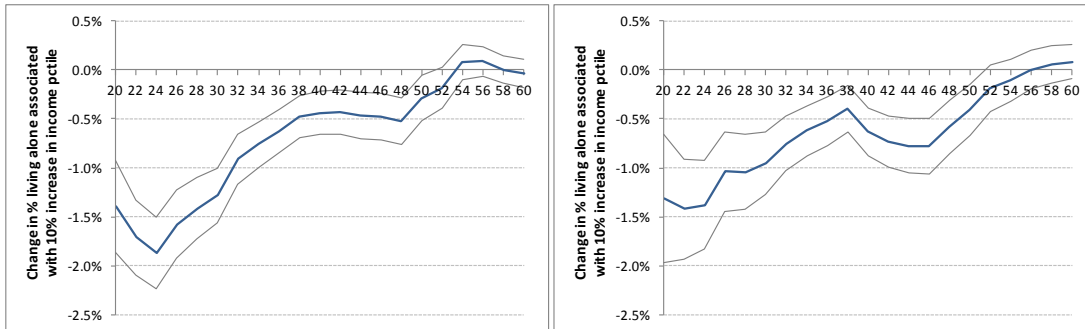


APPENDIX 3D: VARIATIONS IN AGE IN THE RELATIONSHIP BETWEEN LIVING INDEPENDENTLY FOR LONE MOTHERS, AND INCOME AT THE INDIVIDUAL LEVEL, INCLUDING POINT ESTIMATES AND 95% CONFIDENCE INTERVALS: SELECTED COUNTRIES

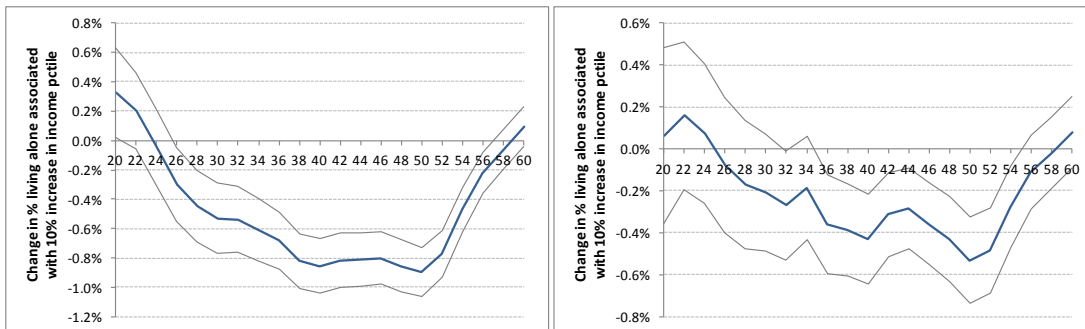
Sweden and Denmark



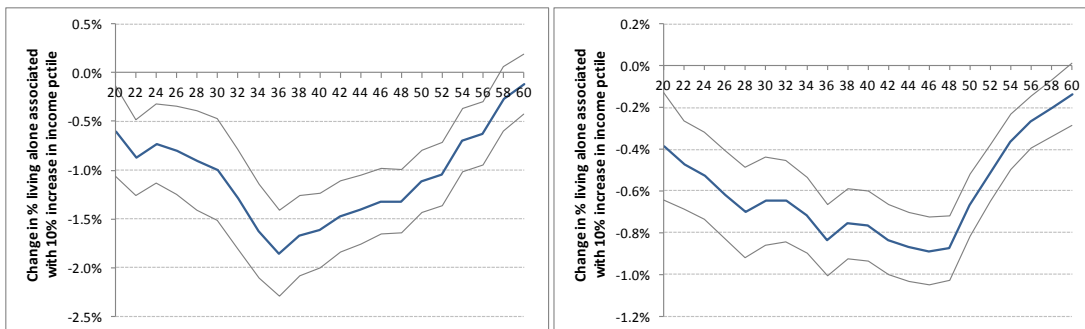
France and Belgium



Spain, Italy



Estonia, Poland



ImProvE: Poverty Reduction in Europe. Social Policy and Innovation

Poverty Reduction in Europe: Social Policy and Innovation (ImPRovE) is an international research project that brings together ten outstanding research institutes and a broad network of researchers in a concerted effort to study poverty, social policy and social innovation in Europe. The ImPRovE project aims to improve the basis for evidence-based policy making in Europe, both in the short and in the long term. In the short term, this is done by carrying out research that is directly relevant for policymakers. At the same time however, ImPRovE invests in improving the long-term capacity for evidence-based policy making by upgrading the available research infrastructure, by combining both applied and fundamental research, and by optimising the information flow of research results to relevant policy makers and the civil society at large.

The two central questions driving the ImPRovE project are:

- How can social cohesion be achieved in Europe?
- How can social innovation complement, reinforce and modify macro-level policies and vice versa?

The project runs from March 2012 till February 2016 and receives EU research support to the amount of Euro 2.7 million under the 7th Framework Programme. The output of ImPRovE will include over 55 research papers, about 16 policy briefs and at least 3 scientific books. The ImPRovE Consortium will organise two international conferences (Spring 2014 and Winter 2015). In addition, ImPRovE will develop a new database of local projects of social innovation in Europe, cross-national comparable reference budgets for 6 countries (Belgium, Finland, Greece, Hungary, Italy and Spain) and will strongly expand the available policy scenarios in the European microsimulation model EUROMOD.

More detailed information is available on the website <http://improve-research.eu>.

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