LIS
Working Paper Series

No. 874

Changing Household Structures, Household Employment, and Poverty Trends in Rich Countries

Leo Azollini, Richard Breen, Brian Nolan

December 2023

Luxembourg Income Study (LIS), asbl

Changing Household Structures, Household Employment, and Poverty Trends in Rich Countries

Leo Azzollini[ab], Richard Breen[b,] Brian Nolan[ab]

[a] Institute for New Economic Thinking and Department of Social Policy and Intervention, University of Oxford

[b] Nuffield College, University of Oxford

Abstract

Changes in household structures and employment patterns alter the balance between households with an above- versus a below-average poverty risk while also affecting relative income poverty thresholds. Examining eleven countries for which suitable microdata is available from the Luxembourg Income Study (LIS) back to the mid-1980s shows that patterns of change in household composition and employment exhibited some common features but also very substantial variation. The share of single adult households rose in most countries, couples with no or only one person in paid work fell in most, while couple households with two earners increased in a majority but not in Denmark, Norway and the USA and only modestly in Hungary and the UK. A counterfactual exercise assessed the impact of these changes in composition on relative income poverty rates by reweighting the 2019 samples to impose the composition structure observed in 1986. In the absence of these composition changes the relative poverty rate in 2019 would have been a good deal higher in Germany, Greece, and Italy, and especially in Israel and Spain. Composition changes had only a modest impact in the UK and made very little difference in Denmark, Hungary, and the USA, while working to increase the relative poverty rate in Czechia and Norway. This reflected the varying scale and nature of the composition changes seen across these countries. Their impact included driving up the relative poverty threshold (except in the USA), and if this effect is discounted the composition shift over the period would have had a greater poverty reduction impact in most countries, especially in Israel, Italy and most powerfully in Spain.

Funding from ERC Synergy Award 856455 for Project DINA is gratefully acknowledged.

Changing Household Structures, Household Employment, and Poverty Trends in Rich Countries

1. Introduction

Progress to date in reducing poverty in rich countries in terms of the aggregate poverty indicators widely used to monitor poverty and social inclusion has been limited and disappointing to many (Cantillon 2011; Vandenbroucke and Vleminckx, 2011; Cantillon and Vandenbroucke, 2014; Cantillon, 2022). Marked changes in the structure of households have taken place across rich countries over recent decades, with falling household size driven by a range of distinct but inter-related processes including declining fertility and an increasing share of single-adult households. At the same time, the nature of households' employment patterns has been changing dramatically, driven in particular by increases in women's labour force participation and share of couples with both partners in paid work. These trends have major implications for household poverty in ways that need to be disentangled and better understood, not least to inform debates about the design of anti-poverty policies including strategies that rely primarily on increasing employment.

The evolution of household structures and employment patterns may impact on standard measures of household poverty in a variety of different ways. On the one hand, this may serve to alter the balance between groupings of households that face an elevated poverty risk versus ones with a below-average risk, feeding directly into trends in overall poverty aggregating across such groups. At the same time, some such changes may serve to push up average/median incomes in the population and thus relative income poverty thresholds, and in that respect represent a 'headwind' against which policy has to struggle. This makes it all the more important to tease out what those changes in household structures and employment patterns - taken together - have been and how they have fed through to the relative income poverty measure that plays such a prominent role in poverty monitoring in rich countries.

The aim of this paper, in which we employ microdata from the Luxembourg Income Study for eleven rich countries going back to the mid-1980s, is to capture the variety of their experiences over a lengthy period. We apply counterfactual reweighting techniques to these data to assess the role played by changes in household structures and employment patterns, taken together, in trends in relative income poverty. We bring out the implications of our findings for

understanding what has driven those trends and for strategies to reduce poverty, as well as for how progress in that regard is monitored and assessed.

Section 2 provides a brief overview of relevant research. Section 3 describes the data and analytical methods to be employed. Section 4 describes how aggregate poverty levels have evolved and how the risk of relative income poverty varies across different types of household categorised in terms of their joint structure and employment patterns. Section 5 examines how household structures and employment patterns have changed over time in the countries we study. Section 6 presents the results of our counterfactual analysis assessing how changes in household structures and employment patterns impacted on overall trends in relative income poverty, and also how the relative income thresholds involved were affected and the role this played. Section 7 highlights the key findings and discusses their implications.

2. Background and Literature

The context for this study is that both household size and composition and patterns of labour market participation have been changing substantially over recent decades in rich countries. Population ageing and its implications for the size of the elderly versus working-age population has received most attention, but here our focus is on the changes affecting working-age households (with the household reference person, aged 20 to 60) for which we draw on various OECD studies and databases (including OECD, 2011a and the OECD Family Database) to capture key trends in household structures. Low and/or declining fertility rates in most OECD countries have meant families have fewer children, contributing to the widespread decline in average household size with the OECD average declining from 2.9 in the 1980s to around 2.5 currently. Households with children now predominantly contain only one or two children, with fewer than one-fifth having three or more on average across the OECD. At the same time, both falling marriage rates and increasing divorce rates have contributed to an increase in the number of lone-parent families - though most children still live with two married or cohabiting parents. Lower fertility rates and changing family structures have led to a growing share of households without children, now accounting for over half of all working-age households in most OECD countries. The proportion of these households that comprise a single adult living without children or partner (sometimes with another unattached adult) has also generally been on the rise, for a variety of reasons, with the share of single person households (among households of all ages) across the OECD increasing from 10% in the 1990s to 13%.

At the same time, female employment has risen substantially (albeit with extent and timing varying across countries), with the biggest change in behaviour seen for married mothers where growing numbers of mothers are remaining in employment or re-entering the labour force. This has led to an increase in the share of couple families where both adults are in paid employment, with the male breadwinner household replaced by dual-earners as the predominant pattern among couples in most countries. Among lone parents, while their employment rates have often risen over time, the extent of unemployment or inactivity generally remains substantially elevated (Smock and Schwartz, 2020)

Household structures and labour market patterns have been the focus of considerable attention in research that has highlighted the extent to which the risk of poverty varies with household composition and employment. While the prevalence of different household types varies greatly between rich countries, the same household types are at the highest risk of poverty and hardship in most countries. Income poverty rates are mostly relatively high (for the country in question) in lone parent families and other single-adult households and relatively low for dual-earner families (see for example Iacovou, 2013, who also shows for EU countries that this is the case for subjective measures of hardship). Lone-parent families with a working adult generally have higher poverty rates than two-parent households with only one parent employed (Whiteford and Adema, 2007). Despite recent increases in in-work poverty joblessness greatly exacerbates poverty risk, OECD (2011b) reported poverty rates among non-employed lone parents to be at least twice as high as among those with paid work, while poverty rates among couples with children where neither parent was employed were, on average, three times higher than where one parent is employed, and more than ten times higher than where both parents were employed. Unsurprisingly, child poverty is then strongly related to single parenthood, though this association is considerably stronger in some countries than in others (Heuveline and Weinshenker, 2008; Brady and Burroway, 2012; Maldonado and Nieuwenhuis, 2015).

Focusing on the impact of changes in age profile and household composition on aggregate trends, some widely-cited comparative studies have sought to assess this for summary measures of income inequality rather than poverty. Jäntti (1997) used Luxembourg Income Study (LIS) data for Canada, the Netherlands, Sweden, the United Kingdom and the United States, and on the basis of a decomposition analysis concluded that “Demographic shifts can at most be given a minor role in increasing inequality”; increased inequality of household

head's earnings and increased shares of spouse's earnings in family income accounted for much of the observed increases in income inequality. OECD (2008) presented simulation results showing that changes in demography (ageing and household structure combined) contributed to higher income inequality in most of the countries studied, with the increase of single-parent households a key element. OECD (2011b) analysed changes in household structure distinguishing couple households with children; couple households without children; iii) single-parent households; single unattached persons; and single persons with other adults. Decomposing the overall change in household earnings inequality among working-age households with at least one earner for 23 OECD countries for periods from (mostly) the mid/late 1980s to the mid 2000s, it found that assortative mating and changes in household structure contributed to greater inequality in household earnings, but to a much lesser extent than changes in men's earnings dispersion and men's and women's employment rates. More recently OECD (2020) and Förster and Vindics (2022) carry out a similar analysis across many OECD countries and again conclude that demographic composition plays only plays a minor role in explaining changes in household market income inequality. Harkness (2013) presents a comparative analysis of the impact of increasing women's labour force participation on household earnings inequality. Various national studies have also focused on the role of household structure and employment changes in income inequality trends including for the United States (Karoly and Burtless, 1995; Burtless, 1999; and Daly and Valletta, 2006; Schwartz, 2013) where the increase in the share of single households was again identified as an important contributor, as well as Germany where Peichl et al., (2012) investigate the impact of declining household size on both income inequality and poverty.

Perhaps surprisingly given the extent of the variation in poverty risk by household composition, there have been relatively few comparative studies on the impact of changes in household structures on aggregate trends in poverty. Retrospective or prospective analyses of trends in relative income poverty include changes in employment levels as a potential key driver (e.g. Marx et al, 2012; Niewenhuis et al, 2020), but a specific focus on the linked changes in household composition and employment patterns is much less common. An exception is Brady and Burroway (2012), whose LIS-based analysis of 18 rich (mostly OECD) countries, found that the increase in the share of children in single-mother families had an effect on increasing the poverty headcount, but that employment and welfare state institutional factors dominated. Nieuwenhuis et al., (2020) focus on how the trend in women's employment/rise of dual-earner households was associated with poverty. Brady et al. (2017) examine variation in poverty

levels across countries rather than over time in terms of the share of the population having a particular risk factor, which they term 'prevalence' and includes single motherhood, versus an increased probability of poverty associated with each factor which they term 'penalties'. Zagel et al., (2022) extend this framework to incorporate heterogeneity among single mothers and use Blinder-Oaxaca-Kitagawa decomposition methods to assess the relative importance of prevalences and penalties to explain time trends in single-mother poverty in Germany, the United Kingdom and Sweden since 1990. Nieuwenhuis (2022) also focuses on single-parent households, using LIS data for eighteen OECD countries over the period 1984 to 2010 to derive poverty rates and then regressing these, aggregated at the level of the country-year, on indicators of the institutional context. The central finding is that single parents face higher relative income poverty risks in countries with a large share of dual-earner households, and that this is related to those dual-earner households raising relative poverty thresholds, but only in countries that have relatively low public expenditures on childcare and relatively low income transfer policies. (See also Zagel and Van Lancker, 2022, on poverty for partnered versus single mothers and the impact of family policies at the transition to parenthood).

Many national studies of the evolution of working-age poverty have also included the role of changing family/household composition and employment patterns. To give just a few examples, for the UK these patterns feature in the series of studies on poverty trends by researchers at the Institute for Fiscal Studies (e.g. Cribb et al, 2022); a substantial stream of research has focused on trends in child poverty in particular and the role of changing family structures in that respect (e.g. Joyce, 2014; HMSO, 2014). For Germany, Levanon et al (2019) present a decomposition analysis of the demographic components of trends in working poverty compared with Israel. For the USA, Blank and Card, (1993), Cancian and Reed, (2001), Daly and Valetta, (2006), Hoynes et al, (2006) are among the studies on factors underlying poverty trends; the increasing prevalence of female-headed households at high risk of poverty is seen to have less impact on the US poverty rate than would have been expected because it was accompanied by an increase in women's earnings and labour force attachment.

It is important to emphasise though that studies of the US experience are mostly based on the official income poverty line in use there, which is not purely relative and thus will not be subject to the effect already noted whereby increases in the prevalence of dual-earner households serves to raise relative poverty thresholds. In debates about disappointing progress in reducing poverty in Europe, 'the bar getting raised' in this fashion when poverty is being

measured via relative income thresholds is frequently mentioned. This is reflected for example in Marx et al.'s (2012) analysis of the relationship between employment and poverty trends in Belgium, in OECD's (2011a) conclusion that increased labour market participation of mothers had only a limited effect on the relative child poverty rate as households without children made even larger income gains, and in Niewenhuis' (2022) framing of single mothers 'competing with' dual parent households. The implications for analyses of the impact of changing household composition and employment patterns on aggregate poverty trends remain to be teased out, however, and that is one of the primary aims of this study.

3. Data and Methods

The data we employ are from household surveys brought together in the Luxembourg Income Study (LIS) harmonised micro-data, for the years 1986 (or closest available) and 2019 (or closest available). This includes the information we require on household structures, income, and labour market participation. Crucially, it also allows us to cover the evolution of household structures and employment for a considerably longer time-span than would be permitted by other comparative micro-datasets such as the EU-SILC (even combined with the European Community Household Panel). Our comparative analysis covers 11 countries: Czechia, Denmark, Germany, Greece, Hungary, Israel, Italy, Norway, Spain, United Kingdom, and United States of America[1]. For these countries LIS has both the full information on household structure and employment and the long observation period we need and it covers a wide range of economic and institutional contexts which allows us to capture the extent of cross-country variation in the role of changing household structures in poverty over a sufficiently long period to capture those longer-term changes.

We restrict our analysis to working-age households, as the distinctive situation of older mostly retired households can more productively be studied separately. While various empirical approaches are employed in the literature to distinguish working age households, here we focus on those where the household reference person is aged between 20 and 60. Disposable household income is defined in the standard way to include earnings from all sources, income from capital and from private pensions, and cash social transfers, deducting income tax and

[1] Here are the specific pairs of years we rely on for each country: Czechia (1992, 2016), Denmark (1987, 2016), Germany (1986, 2019), Greece (1995, 2016), Hungary (1991, 2015), Israel (1992, 2018), Italy (1986, 2016), Norway (1986, 2019), Spain (1990, 2019), United Kingdom (1986, 2019), and United States of America (1986, 2019).

social insurance contributions paid. All earnings are converted into 2017 US Dollars adjusted for Purchasing Power Parity using the provided LIS deflators, to facilitate comparisons across countries. Household structure is measured using information on the ages of individual household members, their marital status, and their relationship to the household reference person. A couple household is where the reference person is married or in a union/cohabitation, while single adults may be never married, widowed or divorced. In our categorisation of household types we define 'child' not in terms of age but rather as offspring of the household reference person so those of working age living with one or both parents are included[2].

We measure household poverty in the manner widely employed in both the academic literature and in official monitoring, using relative income poverty lines. Household disposable income is 'equivalised' to take the size and composition of the household into account using an equivalence scale, here the square root of household size. The poverty line in a given country in a particular year is then derived as a proportion of the median or mean income in that country at that point in time. The most widely used threshold is 60% of median income; here however we employ 50% of the mean, which gives very similar levels and very much the same pattern of results but has advantages in terms of manipulation and interpretation of our results as will be discussed.

Turning to analytic methods, we employ a counterfactual approach based on reweighting the samples for each country to assess the impact of changes in their composition. Counterfactuals of this kind are staples of the literature on the relationship between demographic structures and income inequality (Fortin, Lemieux, and Firpo 2011), starting from the approach developed by Lerman and Yithzaki (1985), but they are much less commonly used in comparative studies. As with all such analyses, the counterfactuals are artificial, insofar as they only vary some parameters while keeping everything else fixed. They are none the less informative on the broad direction and scale of likely effects of the major changes in household structures and employment patterns on which we are focusing.

We define a poverty threshold, $\underline{s}$, as 50 per cent of mean household income, Y:

[2] In a small number of cases, countries like Greece, Italy, and Spain feature two-earner households where the second earner is an adult child, rather than one of the spouses. These cases do not exceed 8% of the two-earner household types (often, amounting to less than 50 actual observations).

$$s = 0.5E(Y) = 0.5\sum_j \bar{y}(j)p(j) \qquad (1)$$

Here j indexes household types, $\bar{y}(j)$ is the mean household income in the j^{th} type, and $p(j)$ is the proportion of households of type j.

The poverty rate in each household type, $r(j)$, is the proportion of households of that type with incomes less than s. The overall poverty rate is

$$r = \sum_j r(j)p(j) \qquad (2)$$

A change in the distribution of household types affects the poverty rate in two ways: first, because it shifts the poverty threshold, s, via the relationship shown in equation (1), and, secondly, because it changes the weight given to each household type in the calculation of the overall poverty rate, as shown in equation (2). In our counterfactuals we can vary these independently.

Let r(86,86,86) mean the observed poverty rate in 1986 (and likewise for 2019, which we write r(19,19,19)). Here the first argument is the year for which incomes are measured. The second argument tells us which distribution of household types is used to weight the household-type specific poverty rates to get the overall poverty rate (this is the $p(j)$ in equation 2). The third argument tells us which distribution of household types is used to weight the household-type mean incomes to generate the poverty threshold, s (this is the $p(j)$ in equation 1).

Using this notation, our main counterfactual poverty rate for 2019 is r(19,86,86): we use the distribution of household types in 1986 to weight the 2019 incomes in both the calculation of the poverty threshold and the overall poverty rate. Comparing this with the actual poverty rate for 2019 and the observed change since 1986 allows us to see the impact that the changing distribution of household types had on that level and change. A second, and also informative, counterfactual is r(19, 86, 19): this uses the 1986 distribution of household types in deriving the poverty rate in equation (2) but the 2019 distribution of types in deriving the poverty threshold in equation (1). In other words, in the second counterfactual we apply the observed 2019 poverty threshold, not that threshold re-calculated with the 1986 distribution of household types.

The intuition behind these counterfactuals is that comparing the observed poverty rate in 2019 with the first counterfactual rate tells us the effect of the change in the distribution of household types between 1986 and 2019 on poverty, and thus its contribution to the observed change in poverty over the period. If the counterfactual rate is higher than the observed rate for 2019 this implies that the effect of the composition changes has been to reduce poverty because, hypothetically, if those changes had not occurred, poverty would be higher. Subtracting the counterfactual from the actual poverty rate in 2019, or equivalently subtracting the counterfactual change between 1986 and 2019 from the observed change, thus provides a measure of the impact of composition change on poverty over the period. The second counterfactual then allows us to see what that impact would be if the poverty threshold is not permitted to be affected, and thus infer how much of a role the shifting of the poverty threshold plays in the first counterfactual.[3]

4. Poverty and Household Composition/Employment Patterns

Our interest is in what has happened to relative income poverty in the countries we are covering over the period from 1986 and the role that changes in household composition and employment patterns have played in that regard. We therefore look first in Table 1 at poverty rates at the beginning and end of the period and the extent of change observed, using the relative income threshold set at 50% of mean equivalised disposable income as set out in the previous section. We see that levels of poverty measured this way varied widely at the outset across the eleven countries included, from a low of under 4% in Czechia to a high of 20% in the USA. By 2019 (or closest) those same countries were still at either end of the range but at considerably higher levels, the rate in Czechia having risen by over 5 percentage points to 9% and that in the USA by 4 ppt to 24%. Poverty rates also increased over the period for most of the other countries, though for Greece, Hungary and the UK the increase was only slight. For Denmark, Israel, Italy and Spain the increase over the period was substantial at about 3 percentage points, for Germany it was higher at almost 5 ppt, and Norway saw a remarkably large rise of almost 9 ppt. Overall, cross-national variation in poverty rates has declined by about one-third.[4]

[3] Another counterfactual would be r(19,19,86) where the 1986 distribution of household types is used to calculate the poverty threshold but the 2019 distribution of types is used to compute the poverty rate.
[4] Based on the change in the coefficient of variation from 0.42 to 0.28.

Table 1: Relative Income Poverty Levels and Change, Selected Countries, 1986-2019

	% below relative income threshold		
	1986	2019	Change 1986-2019
Czechia	3.6	9.1	+5.5
Denmark	8.8	11.3	+2.5
Germany	7.6	12.4	+4.8
Greece	17.6	18.4	+0.8
Hungary	12.2	12.5	+0.3
Israel	16.0	19.1	+3.1
Italy	17.8	21.4	+3.6
Norway	6.7	15.4	+8.7
Spain	15.0	18.6	+3.6
UK	15.4	15.6	+0.2
USA	19.9	23.9	+4.0

Source: Analysis of LIS database

Shifts in the profile of households in terms of composition and employment could potentially play a role in such poverty trends because poverty risk itself is strongly related to the composition of the household and the extent of employment (if any) among its members. As noted earlier, previous research suggests that the same household types face an elevated risk of poverty and hardship in most rich countries, though the extent to which they do so varies substantially across types and across countries. Here to capture the variation in relative poverty risk across households with different combinations of household structure and employment we distinguish an extensive set of 26 household 'types' in terms of those characteristics. These types go from households with 1 adult no children and no earner, one adult no children and 1 earner, one adult 1 child and no earner, and further combinations as listed in Table 2.

For each of these household types the table shows the relative income poverty rate in 2019, highlighting in red/bold the poverty rates that are more than one-third above the country average for that year and in blue/italics those that are less than two-thirds of that overall average. This brings out the very high degree of consistency across countries in the household types that face an above-average versus average versus below-average poverty risk. Households with a single adult who is not working are at above-average risk in all countries, irrespective of whether they include no children, 1 child, 2 children or 3 children; among those with children that poverty risk mostly increases with the number of children. Households with

a single adult and 1, 2 or 3 children were also at above-average risk everywhere even if they contain one earner; only where there are two earners (i.e. the parent and an adult offspring) was their risk mostly around or below the average.

Turning to couple households, those in which there is no earner face relatively high poverty almost everywhere, even without children, but those rates are higher where there are children and usually increase with the number of children. Couples with only one earner and no children often face an average risk (though in four countries it is above average), whereas where there are children these one-earner couples almost always have an above-average risk. By contrast, two-earner couple households almost always have below-average poverty rates, whether without or with children and irrespective of the number of children.

Table 2: Poverty by Household Type 2019 (Red/Bold indicates poverty rate > 1.33 times national average, Blue/Italics < 0.66 average)

Household type	Czechia	Denmark	Germany	Greece	Hungary	Israel	Italy	Norway	Spain	UK	USA
Single no child no earner	**72.8**	**51.8**	**82.3**	**56.6**	**58.8**	*77.4*	**72.2**	**75.7**	**77.4**	**70.9**	**86.9**
Single no child 1 earner	**14.5**	**21.5**	**20.8**	*9.5*	**17.0**	13.1	*9.5*	**29.4**	17.8	12.9	28.2
Single 1 child no earner	**65.2**	**48.6**	**70.6**	**40.5**	**93.3**	**69.2**	**75.3**	**79.7**	**60.5**	**65.0**	**85.0**
Single 1 child 1earner	**19.5**	12.7	**26.8**	17.8	**27.0**	**33.1**	22.0	**28.3**	**32.3**	**31.6**	**51.2**
Single 1 child 2 earners	*3.9*	*2.9*	9.2	*5.1*	*0.0*	*8.4*	*8.8*	*6.3*	16.1	*4.2*	20.6
Single 2 child no earner	**82.6**	**72.5**	**86.9**	**68.7**	**100.0**	**91.1**	**91.9**	**88.2**	**95.9**	**68.8**	**96.1**
Single 2 child 1 earner	**32.0**	**13.6**	**33.3**	**25.4**	**26.1**	**36.3**	**44.0**	**48.2**	**45.6**	**36.1**	**60.5**
Single 2 child 2 earners	*2.9*	**4.8**	14.0	*9.8*	*0.0*	*10.3*	15.2	12.1	20.3	*6.7*	25.3
Single 3 child no earner	**92.6**	**63.9**	**74.2**	**52.9**	**100.0**	**92.6**	**100.0**	**93.2**	**79.4**	**70.2**	**97.2**
Single 3 child 1 earner	**20.6**	**28.3**	**40.3**	18.2	**40.6**	**64.7**	**85.2**	**66.8**	**54.8**	**53.2**	**76.8**
Single 3 child 2 earners	**14.2**	11.0	10.7	*0.0*	*0.0*	18.7	*0.0*	**26.5**	15.8	*6.3*	**48.2**
Couple no child no earner	**46.2**	**30.5**	**54.5**	**27.6**	**23.4**	**60.6**	**50.9**	**35.7**	**57.6**	**51.3**	**61.0**
Couple no child 1 earner	11.4	**15.7**	16.7	16.5	**30.0**	**26.5**	14.2	17.1	24.1	**21.1**	29.7
Couple no child 2 earners	*1.4*	*3.9*	*2.7*	*5.4*	*1.7*	*3.1*	*2.7*	*5.0*	*4.7*	*2.6*	*6.2*
Couple 1 child no earner	**54.8**	**45.1**	**53.1**	**27.5**	**83.1**	**69.0**	**68.3**	**64.2**	**60.6**	**63.1**	**67.4**
Couple 1 child 1 earner	**13.6**	**15.3**	**22.0**	24.0	**21.5**	**42.1**	**23.6**	**24.9**	30.6	**32.2**	**37.0**
Couple 1 child 2 earners	*2.3*	*1.7*	*1.2*	*6.1*	*4.4*	*2.9*	*4.4*	*2.7*	*7.0*	*3.8*	*8.5*
Couple 2 child no earner	**100.0**	**41.6**	**85.8**	**55.3**	-	**92.9**	**67.5**	**75.9**	**97.7**	**85.3**	**81.2**
Couple 2 child 1 earner	**16.9**	**16.1**	16.1	**37.4**	**29.5**	**48.5**	**35.5**	**30.8**	**49.1**	**39.6**	**37.7**
Couple 2 child 2 earners	*2.8*	*1.4*	*2.2*	*5.8*	*6.8*	*3.3*	*5.0*	*2.5*	*8.2*	*4.5*	*9.7*
Couple 3 child no earner	**95.0**	**76.1**	**73.8**	**75.4**	**100.0**	**95.4**	**96.6**	**88.2**	**100.0**	**81.7**	**94.3**
Couple 3 child 1 earner	**20.7**	**31.2**	**25.1**	**37.3**	**46.8**	**70.0**	**56.0**	**45.7**	**72.9**	**50.7**	**50.9**
Couple 3 child 2 earners	*5.9*	*3.9*	*5.5*	*7.4*	*2.5*	*12.0*	*6.2*	*4.6*	**20.8**	11.2	18.6
All	**9.1**	**11.3**	**12.5**	**18.5**	**12.5**	**19.1**	**21.4**	**15.4**	**18.6**	**15.6**	**15.6**

Finally, a single adult in work with no children is one the few household types where the poverty risk is quite inconsistent across countries; this group have an above-average poverty risk in five countries but an average risk in four and a below-average risk in two.

While the overall poverty rate increased over the period from 1986 in most countries as we have seen, the relative position of the different household types in terms of poverty risk in each country at the outset was very similar, with very few cases of that poverty risk moving from above or below average to average, much less from above to below average.

Given the high level of consistency across countries in how household types rank by relative poverty risks, one might expect a particular shift in the profile of these household types to have broadly similar implications for the overall poverty rate across these countries, although the precise extent to which the poverty rate for a given group falls above or below the average will also matter for the implications of changing profiles for poverty.

5. Patterns of Change in Household Structure and Employment

We now set out how those sample profiles changed from 1986 to 2019 for our eleven countries. Presenting that for all the distinct household types in Table 1 would be unwieldy so we focus our description on more aggregated groupings of these types to convey the key features of how composition and employment structures have changed. Figure 1 shows the point of departure in terms of composition in 1986, distinguishing three highly aggregated groups: single adult households (irrespective of number of earners and whether there are children), couple households with only one or no earner (irrespective of presence and number of children), and couple households with 2 earners (irrespective of presence and number of children).

This shows that in 1986 the share of households with a single adult (with or without children) varied considerably across the countries covered, from a low of around 10% in Greece, Hungary, Israel and Italy to a high of over 20% in Denmark and Norway. The share of households comprising a couple with no-one or only one in work varied much more, from a low of about 10% in Norway up to more than half the sample in Greece and Italy. The share of couple households with (2 (or more) earners similarly ranged from around 20% in Greece, Italy and Spain up to 50% or more in Czechia, Denmark, Germany, Norway, the UK and the USA.

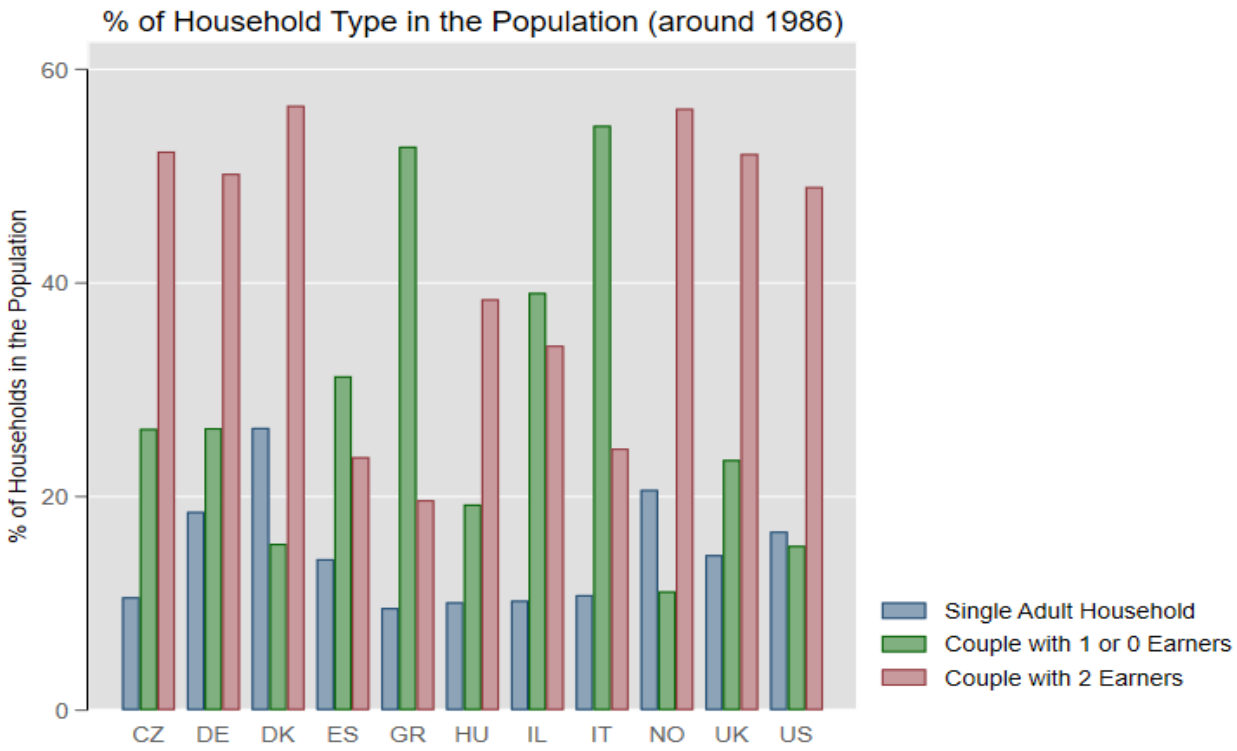

Figure 1: Importance of single Adult, Couple 0-1 Earners, and Couple 2 Earner Households in 1986

Given this wide divergence in initial composition, it is no surprise to find that the extent and nature of the changes observed over the period from then to 2019 also varied widely across these countries. Figure 2 focuses on households with a single adult and distinguishes among these by whether there was an earner and by presence and number of children. We see that the share of one-adult households without children and with an earner rose in almost all these countries over the period, Denmark being the exception, with that increase being especially pronounced in Italy and Norway. The share of single adult households with an earner and children also rose in most countries, now including Denmark but not Spain, Hungary, or Norway; the increase was mostly by less than for those without children. Single adults not in work and with children, a particularly high-risk group from a poverty perspective, increased marginally in share in some countries while falling in others but had little impact on the broad patterns of change. Overall, the share of single-adult only households rose in all countries except Denmark and increased particularly rapidly in Germany, Hungary, Italy, Norway and Spain, driven primarily by those without children.

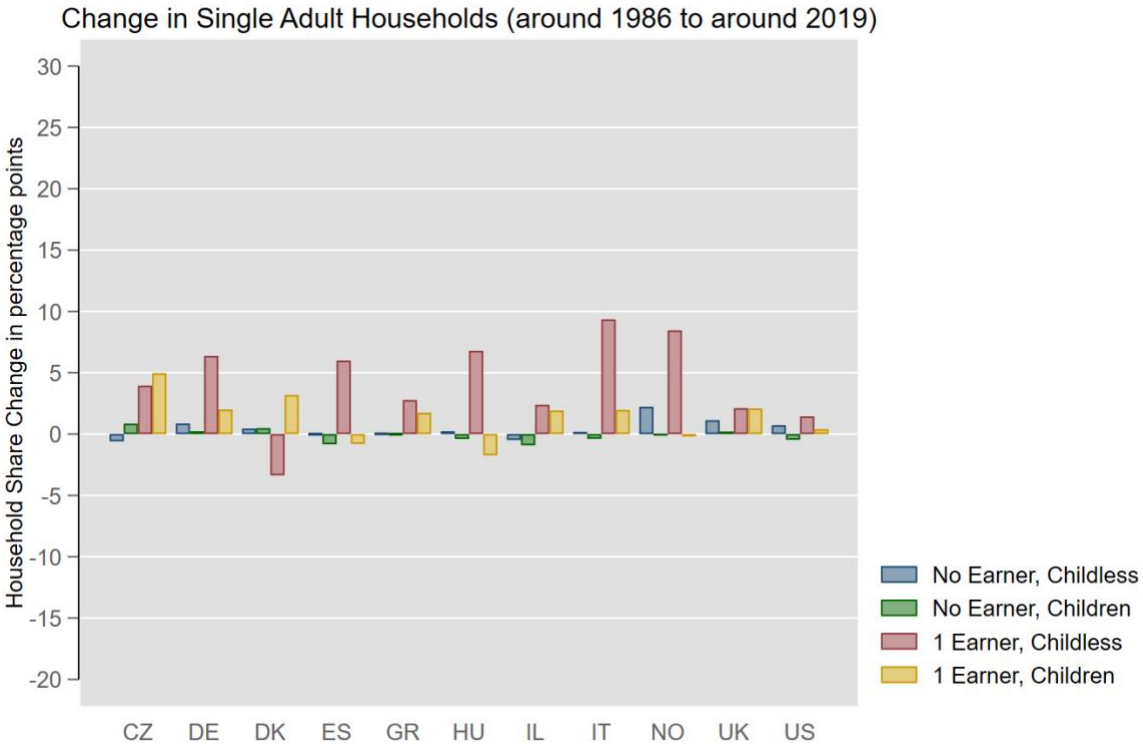

Figure 2: Changes in Importance of One Adult Households, Without and With Children, 1986-2019

Turning to couple households, Figure 3 shows that for those with no or only one earner a decline in share was generally seen both among those without and with children, but the largest fall was generally among families with 1 or 2 children. This was particularly pronounced in Germany, Greece, Israel, Italy and Spain. The share with 3 or more children also declined but this made a substantial impact only in Israel, Spain, and to a lesser extent Italy. The USA stands out as having registered very little change.

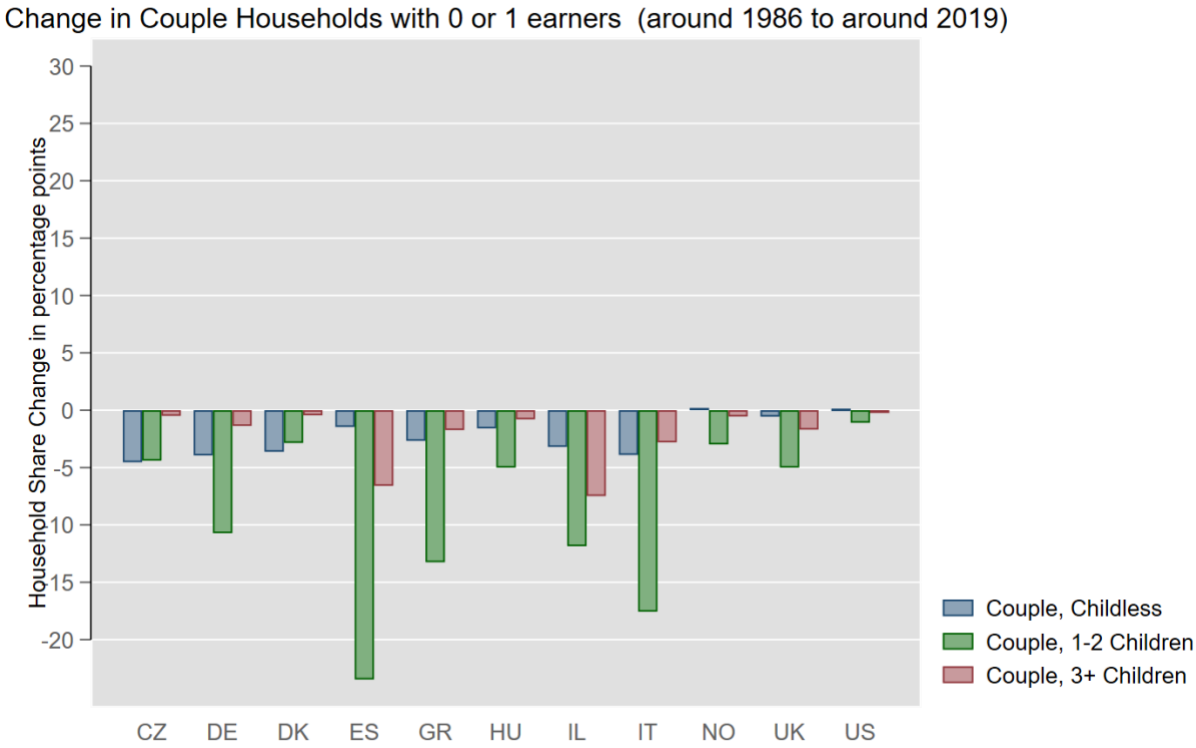

Figure 3: Changes in Importance of One-Earner Couple Households Without and With Children, 1986-2019

Finally, Figure 4 shows the patterns of change for couple households with two in work. We see that the share of such couple households without children rose everywhere, and especially strongly in Germany and Spain. There was also a marked increase in the share of two-earner couple households with one child in Czechia, Greece and especially Spain, and in those with two children for Greece, Italy and Israel (though Czechia, Hungary, Norway, UK and USA saw decines there); Israel was the only country to see a substantial increase for those with three or more children. Overall, Denmark, Hungary, Norway, the UK and the USA saw little or no increase in the importance of two-earner couple households because in those countries the increase in the share of such households without children was offset partially or entirely by a decline in the share with children.

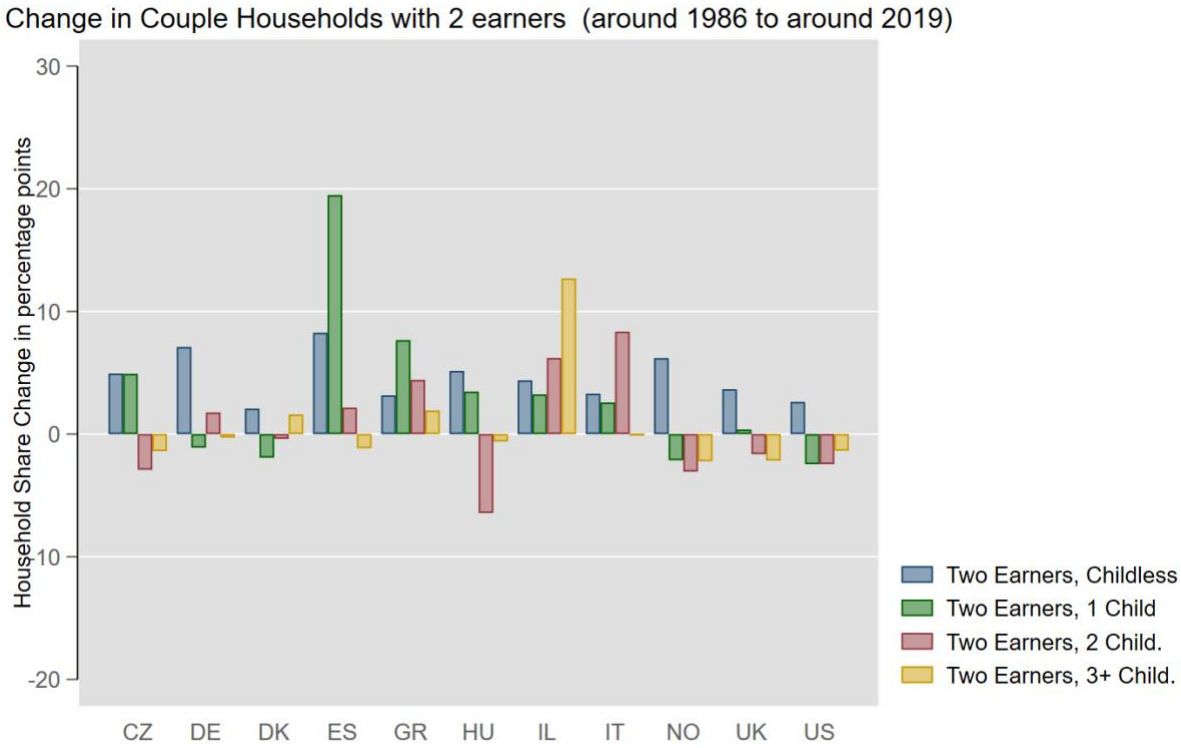

Figure 4: Changes in Importance of Dual-Earner Couple Households Without and With Children, 1986-2019

While there are some common features, then, what is perhaps most striking is the very substantial variation across these eleven countries in the extent and nature of changes in the profile of households in terms of composition and employment taken together. At one end of the spectrum this profile was relatively stable in Denmark and the USA, and only modest change was seen in the UK. At the other end of the spectrum Germany, Greece, Israel and Italy and even more so Spain saw very substantial change indeed. One would therefore expect the impact of these patterns of change on income poverty over the period to vary widely, as we investigate in the next section.

6. Changing Household Structure/Employment Profiles and Trends in Poverty

We now assess the implications of these changes in household structure and employment patterns for the overall poverty rate by asking what the poverty rate in 2019 would have been if each of the household types we distinguish faced its actual poverty risk for that year, but the composition of the sample in terms of those types was the one observed in 1986. As explained in Section 3, to answer this question we reweight our 2019 samples to align their make-up in

terms of those household types with that observed in 1986; for this reweighting exercise we use the detailed household type categories set out in Table 2.

Table 3 shows the change over time in the overall poverty rate when this counterfactual rate for 2019 is compared with 1986, alongside the change actually observed over the period for each country (repeated from Table 1). (The counterfactual poverty rates in levels for 2019 from which these changes are derived are given in the appendix.)

Table 3: Relative Income Poverty Actual versus Counterfactual Change, 1986-2019

	(1) Actual change	(2) Counterfactual change with 1986 composition imposed in 2019	Impact of composition shifts on poverty (1) - (2)
Czechia	+5.5	-0.6	+6.1
Denmark	+2.5	+2.4	+0.1
Germany	+4.8	+8.4	-3.6
Greece	+0.9	+4.8	-3.9
Hungary	+0.3	-0.3	+0.6
Israel	+3.1	+11.3	-8.2
Italy	+3.6	+6.8	-3.2
Norway	+8.7	+4.4	+4.3
Spain	+3.6	+12.4	-8.8
UK	+0.2	+1.7	-1.5
USA	+4.0	+4.4	-0.4

Source: Analysis of LIS database

The results of the counterfactual analysis show that in the absence of the changes in composition/employment observed over the period the relative poverty rate would have risen by a good deal more in Germany, Greece, and Italy, and this was even more pronounced in Israel and Spain. In these last two countries the poverty rate actually rose by about 3 percentage points but would have risen by 8-9 percentage points more than that had the profile of households not changed in the way it did. By contrast, the changes in profile in Czechia and Norway worked in the opposite direction, with the counterfactual increase in poverty being a good deal less than that observed. Such changes in profile made a modest impact in the UK and very little difference overall to the change in poverty in Denmark, Hungary, and the USA. The role played by changes in the household composition/employment profile as revealed by this counterfactual exercise is greatest in the case of Spain, serving to bring out some of the

dynamics involved. As described in the previous section, over the period Spain saw particularly substantial increases in the prevalence of households comprising one employed adult or a couple where both partners are employed, balanced by a decline in the importance of couples with neither or only one partner employed. This shifted the balance in the population towards household types with a below-average risk of poverty and away from ones with an above-average risk. in the absence of that shift, *ceteris paribus*, the increase in poverty over time would have been much greater than actually observed. By contrast, at the other end of the spectrum Denmark and the USA saw only quite limited changes in the profile of sample households over the period and no increase in the share of two-earner couple households, which is why the counterfactual exercise shows such little impact on the aggregate poverty rate.

A potentially important aspect of the measured impact of the changes in profile is that these affect the mean income of the sample and thus the (half mean) poverty threshold being applied in the counterfactual. Where the shift in composition increases the share of household types with poverty rates below the average this will work to reduce poverty, but since such groups have above-average incomes it will also push up the relative poverty threshold working in the opposite direction. To assess how substantial a consideration this channel of influence actually is, for each country Table 4 first compares the actual poverty threshold in 2019 with the threshold in the counterfactual exercise where the 1986 composition profile is applied to 2019. The actual threshold is higher than the counterfactual one in every country except the USA – reflecting the fact that in the absence of the shifts in composition mean income would have been lower. That difference is slight in the cases of Denmark, Norway, the UK and the USA, where as seen above the change in composition over the period was itself quite limited. In other countries, though, the difference is more marked, with the actual threshold being 4% higher than the counterfactual one in Czechia and Germany, 7% higher in Hungary, 14% higher in Greece, 20% higher in Israel and Italy, and almost one-third higher in the case of Spain.

This ‘threshold effect’ will thus have played a significant role in the counterfactual results just presented, and an extension of the that exercise to separate out that element is revealing. As outlined in Section 3, we can carry out the same reweighting exercise to impose the 1986 composition profile on the 2019 samples, but instead of re-calculating the poverty threshold we instead leave it unchanged at its observed 2019 level. This allows us to capture the impact of the composition shift over the period on poverty via the change it brought about in the share of higher versus lower poverty risk groups, abstracting from its effect on the poverty threshold

itself. Note that since we are using poverty thresholds set as a proportion of mean income, we could derive the same results by simply applying the actual 2019 poverty rates for each household type to their 1986 shares and aggregate – as in equation (2) above - this shift-share-type procedure in effect reweighting the sample while maintaining the 2019 threshold. This would not be the case with median-based thresholds, underlining the point made earlier about the greater ease of interpretation of mean-based thresholds.

The results from this complementary counterfactual exercise also presented in Table 4 show that if the effect on the poverty threshold were to be discounted, the composition shift over the period would have had a larger poverty reduction impact in most countries. (Once again the alternative counterfactual poverty rates for 2019 from which these changes figures are derived are given in the appendix.) This difference is particularly pronounced in Israel, Italy and especially in Spain where the reduction in poverty would have been as much as 21% compared with the 9% we saw in the main counterfactual when the threshold effect was included. This brings out that in certain countries the use of a purely relative threshold will indeed make a substantial difference to the measured effects of changes in household composition and employment, though as in other respects our results highlight the extent of variation across countries in that regard.

Table 4: Relative Income Poverty Thresholds and Alternative Counterfactual Poverty Changes, 1986-2019

	Actual 2019 threshold as % of counterfactual threshold	Impact of composition shifts on poverty*	Impact of composition shifts on poverty abstracting from effect on threshold**
Czechia	104.3	+6.1	-2.8
Denmark	101.2	+0.1	-0.4
Germany	104.2	-3.6	-0.8
Greece	114.0	-3.9	-8.7
Hungary	107.2	+0.6	-2.3
Israel	120.2	-8.2	-16.0
Italy	121.1	-3.2	-11.8
Norway	100.5	+4.3	+4.1
Spain	132.5	-8.8	-21.1
UK	101.3	-1.5	-2.9
USA	98.9	-0.4	+0.9

Note: * Derived from counterfactual change in poverty imposing 1986 composition in 2019 and recalculating threshold; ** Derived from counterfactual change in poverty imposing 1986 composition in 2019 but leaving 2019 threshold unchanged

7. Conclusions and Implications

Marked changes in the structure of households have taken place across rich countries over recent decades, while household employment patterns have also been changing dramatically. Previous research has highlighted the extent to which poverty risk varies with a household's composition and the employment of its members, but the role of changing household composition and employment patterns in aggregate poverty trends across rich countries is not well understood. Changes in household structures and employment patterns may alter the balance between households with an above- versus a below-average poverty risk, while at the same time affecting average/median incomes and thus relative income poverty thresholds. This means that composition changes that would in themselves have a positive effect in reducing relative income poverty against a fixed threshold may also 'raise the (income) bar' and offset that effect to a greater or lesser extent.

Looking at eleven countries for which suitable microdata for our purposes was available, we saw that patterns of change in household composition and employment taken together over the period from around 1986 exhibited some common features but also very substantial variation. The share of households with only a single adult rose in most countries, with that increase being especially pronounced in Italy and Norway; this related for the most part to households

without children. The share of households comprising a couple with no or only one person in paid work fell in most countries, most rapidly in Germany, Israel, Italy and especially Spain; this was generally among both those without and with children. Couple households with two earners increased in overall importance in a majority of countries, this being most pronounced in Greece, Israel, Italy and Spain. However, Denmark, Norway and the USA saw no such increase in the overall importance of couple households with two earners while in Hungary and the UK there was only a modest increase; the share of couple households with two earners without children did rise there but this was offset partially or entirely by a decline in the share of such households with children.

Our counterfactual exercise examined the impact that these changes in composition would have had on relative income poverty rates by reweighting the 2019 samples to impose the composition structure observed in 1986, with within-group incomes remaining as actually observed. The results showed that in the absence of these composition changes the relative poverty rate would have been a good deal higher/risen by a good deal more than it actually did in Germany, Greece, and Italy, and especially in Israel and Spain where the poverty rate in 2019 would have been 8-9 percentage points higher. By contrast, the changes in profile in Czechia and Norway worked to increase the relative poverty rate. Changes in the composition of the sample by household type had only a modest impact in the UK and made very little difference to the trend in poverty in Denmark, Hungary, and the USA. This reflected the varying scale and nature of the composition changes across these countries.

The changes in composition that our primary counterfactual exercise simulated will themselves have had an impact on the relative income poverty threshold and this will have played a part in its results. A complementary counterfactual exercise to separate out that element showed that the impact was in almost all cases to push up the poverty threshold (with the USA being the exception). If this effect on the poverty threshold is discounted, the composition shift over the period would have had a greater poverty reduction impact in most countries. This difference was particularly pronounced in Israel, Italy and especially in Spain.

This brings out that the use of a purely relative income threshold can indeed make a substantial difference to the measured effects of changes in household composition and employment on poverty. However, in this as in other respects our results highlight the extent of variation across the countries studied: in Denmark, Norway, the UK and the USA this ‘threshold effect’ played

little role whereas in Spain the measured positive impact of composition change on poverty was almost two and a half times greater when we abstracted from it.

Relying purely on relative income poverty thresholds in monitoring poverty trends and assessing the effectiveness of anti-poverty policies has been widely questioned in the research and policy evaluation literatures, as reflected in the now widespread practice of also drawing on income poverty measures where the threshold is 'anchored' at a point in time as well as non-monetary indicators of material deprivation. Both these complementary approaches are for example already embedded in the EU's suite of social inclusion indicators alongside the relative income 'at risk of poverty' measures, and these are employed in various ways in reporting on and assessing anti-poverty policies at national level in the national and joint reports produced as part of the Union's social inclusion process. The issues raised by the types of composition change discussed here can be seen within this broader debate but are also somewhat distinctive. A generalised increase in household incomes in which different types of households share would be reflected in a broadly-based rise in living standards, and seeing general standards of adequacy/inclusion as rising broadly in line with such an increase would not seem unreasonable; this is the core logic underpinning the use of relative thresholds. If however an increase in mean/median incomes is driven by a marked shift in composition, such as an increase in the share of couple households with two earners, then the reasonableness of the assumption that standards of adequacy for other types of household rise 'in lockstep' may be more open to question.

It may be that the increasing prevalence of dual-earner couples drives up certain costs for everyone – most obviously housing. However, it is not obvious that a single adult household, for example, would necessarily take the standard of living of a dual-earner couple as their reference point in assessing the adequacy of their own standard of living. It is also relevant that there are costs associated with having both partners in paid work that are not taken into account in standard measures of income and income poverty, including here, notably child-care and domestic services, so their living standards relative to other household types may be overstated. This means that it is very helpful to unpack the role that changes in household structure and employment patterns play in relative income poverty trends over time, but also to go beyond that to gain a deeper understanding of the implications of such changes for living standards and inclusion for different household types. The use of 'anchored' income thresholds alongside purely relative 'floating' ones provides some valuable insights but can usefully be

complemented by bringing other types of information into the picture, and the broad rationale for doing so has particular force in the context of composition change.

References

Blank, R. and Card, D. (1993) 'Poverty, Income Distribution, and Growth: Are They Still Connected', Brookings Papers on Economic Activity, vol. 24, issue 2, 285-340

Brady, D. and Burroway, R. (2012) 'Targeting, universalism, and single-mother poverty: a multilevel analysis across 18 affluent democracies', Demography, 49(2):719-46.

Brady, D., Finnigan, R. and Hübgen, S. (2017) 'Rethinking the risks of poverty: A framework for analyzing prevalences and penalties', *American Journal of Sociology* 123 (3): 740–86.

Burtless, G. (1999) 'Effects of growing wage disparities and changing family composition on the U.S. income distribution', European Economic Review, vol. 43, issue 4-6, 853-865

Cancian, M. and Reed, D. (2001) 'Changes in Family Structure: Implications for Poverty and Related Policy', in S. Danziger and R.H. Haveman (eds) Understanding Poverty, Cambridge, MA and London, England: Harvard University Press.

Cantillon B. (2011) The paradox of the social investment state: Growth, employment and poverty in the Lisbon era. *Journal of European Social Policy* 21(5): 432–449.

Cantillon, B. and Vandenbroucke, F. eds. (2014) *Reconciling work and poverty reduction: How successful are European welfare states?* International Policy Exchange Series. Oxford: Oxford University Press.

Cantillon, B. (2022) Poverty and the Tragedy of the Welfare State: Seven terms for a new social contract, CSB Working Paper NO. 22/06 University of Antwerp.

Daly, M. and Valetta, R. (2006) 'Inequality and Poverty in United States: The Effects of Rising Dispersion of Men's Earnings and Changing Family Behaviour', Economica, vol. 73, issue 289, 75-98.

Förster, M. and Vindics, A. (2022) The Impact of Demographic and Family Structure changes on Income distribution in Hungary and OECD Countries, DEMOGRÁFIA, Vol. 62. No. 5. English Edition, 77–105.

Fortin, N., Lemieux, T. and Firpo, S. (2011) Decomposition Methods in Economics, in O. Ashenfelter and D. Card eds Handbook of Labour Economics vol. 4A, Elsevier, Amsterdam.

Harkness, Susan. 2013. Women's employment and household income inequality. In *Income inequality: Economic disparities and the middle class in affluent countries*, eds. Janet C. Gornick and Markus Jäntti, 207–33. Studies in Social Inequality. Stanford, CA: Stanford University Press.

Heuveline, P. and Weinshenker, M. (2008) The international child poverty gap: Does Demography matter? Demography, vol. 45, pages 173–191.

HMSO, 2014). Child Poverty Strategy 2014-17, www.gov.uk/government/publications

Hoynes, H., Page, M. and Stephens, A. H. (2006) Poverty in America: Trends and Explanations', Journal of Economic Perspectives, Vol. 20, No. 1, 47-68.

Iacovou, M. (2013) *Household composition, poverty and hardship across Europe,* Eurostat methodologies and working papers, Publications Office of the Euro- pean Union, Luxembourg.

Jäntti, M. (1997) 'Inequality in five countries in the 1980s: The role of demographic shifts, markets and government policies', Economica 64 (255), 415-440.

Joyce, R. 2(014) Child poverty in Britain: recent trends and future prospects, IFS Working Paper W15/07, Institute for Fiscal Studies, London.

Lerman, R. and Yithzaki, S. (1985) 'Income Inequality Effects by Income Source: A new approach and applications to the US', Review of Economics and Statistics, vol. 67, issue 1, 151-56.

Levanon, A., Saburov, E., Gangl, M. and Brülle, J. (2019) 'Trends in the demographic composition of poverty among working families in Germany and in Israel, 1991–2011', Social Science Research, Vol. 83, 102318.

Luxembourg Income Study (LIS) Database, http://www.lisdatacenter.org (multiple countries; September 2022 – October 2023). Luxembourg: LIS.

Karoly, L. and Burtless, G. (1995) 'Demographic Change, Rising Earnings Inequality, and the Distribution of Personal Well-Being, 1959–1989', Demography (1995) 32 (3): 379–405.

Marx, I., Vanhille, J. and Verbist, G. (2012) 'Combating in-work poverty in Continental Europe: An investigation using the Belgian case', Journal of Social Policy, 41 (1): 19–41

Maldonado, L. and Nieuwenhuis, R. (2015) 'Family policies and single parent poverty in 18 OECD countries, 1978–2008', Community, Work & Family, 18:4, 395-415

Nieuwenhuis, R. (2022) 'Single Parents Competing in a Dual-Earner Society: Social Policy to Level the Playing Field', The ANNALS of the American Academy of Political and Social Science, 702(1), 114-128.

Nieuwenhuis, R. and Maldonado, L. eds. (2018) *The triple bind of single-parent families: Resources, employment and policies to improve wellbeing*. 1st ed. Bristol: Policy Press.

Nieuwenhuis, R., Van der Kolk, H. and Need, A. (2017) Women's earnings and household inequality in OECD countries, 1973–2013. *Acta Sociologica* 60 (1): 3–20.

Nieuwenhuis, R., Van Lancker, W., Collado, D. and Cantillon, B. (2020) Trends in women's employment and poverty rates in OECD countries: A Kitagawa–Blinder–Oaxaca decomposition. *Italian Economic Journal* 6:37–61.

OECD (2008) Growing Unequal, Paris: OECD Publishing.

OECD (2011a) The Future of Families - Synthesis report. Paris: OECD Publishing.

OECD (2011b) Divided We Stand: Why Inequality Keeps Rising. Paris: OECD Publishing.

OECD (2015) In It Together: Why Less Inequality Benefits All. Paris: OECD Publishing.

OECD (2020) The Impact of Shifting Demographic and Family Structures on Income Inequality and Its Policy Implications, Directorate for Employment, Labour and Social Affairs, ELS/JAI September 2019 (revised April 2020)

Peichl, A., Pestel, N. and Schneider, H. (2012) 'Does Size Matter? The Impact of Changes in Household Structure on Income Distribution in Germany', Review of Income and Wealth, 58: 118-141.

Schwartz, C. R. (2013). Trends and variation in assortative mating: Causes and consequences. *Annual Review of Sociology*, *39*, 451-470.

Smock, P. J., & Schwartz, C. R. (2020). The demography of families: A review of patterns and change. *Journal of Marriage and Family*, *82*(1), 9-34.

Whiteford, P. and W. Adema (2007), What Works Best in Reducing Child Poverty: A Benefit or Work Strategy?, *OECD Social, Employment and Migration Working Papers*, No. 51, OECD Publishing, Paris

Vandenbroucke, F. and Vleminckx, K. (2011) 'Disappointing poverty trends: Is the social investment state to blame?', *Journal of European Social Policy* 21 (5): 450–71.

Zagel, H., Hübgen, S. and Nieuwenhuis, R. (2021) Diverging trends in single-mother poverty across Germany, Sweden, and the United Kingdom: Toward a comprehensive explanatory framework. *Social Forces* 33. https://doi.org/10.1093/sf/soab142.]

Zagel, H. and Van Lancker, W. (2022) 'Family policies' long-term effects on poverty: A comparative analysis of single and partnered mothers', *Journal of European Social Policy*, . Available from https://doi.org/10.1177%2F09589287211035690.

Appendix

Table A1: Relative Income Poverty Rates, Actual and Counterfactual, 2019

	Actual	Counterfactual with 1986 composition and recalculating threshold	Counterfactual with 1986 composition but not recalculating threshold
Czechia	9.1	3.0	11.9
Denmark	11.3	11.2	11.6
Germany	12.4	16.0	13.2
Greece	18.4	22.4	27.1
Hungary	12.5	11.9	14.8
Israel	19.1	27.3	35.2
Italy	21.4	24.6	33.3
Norway	15.4	11.1	11.3
Spain	18.6	27.3	39.6
UK	15.6	17.1	18.5
USA	23.9	24.2	23.0