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INCOME INEQUALITY AMONG CHILDREN IN EUROPE 2008–2013

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Abstract: With income inequality increasing and children exposed to higher risks of poverty and material deprivation than the population as a whole in the majority of European countries, there is a concern that income inequality among children has worsened over the financial crisis. This paper presents results on the levels of bottom-end inequality in children's incomes in 31 European countries in 2013 and traces the evolution of this measure since 2008. The relative income gap is measured as the difference between the median and the 10th percentile, expressed as a percentage of the median. In 2013 it ranged from 37% in Norway to 67% in Romania. The relative income gap worsened in 20 of the 31 European countries between 2008 and 2013. The unequal growth rate in child income across the distribution is a factor contributing to the increase in bottom-end child income inequality. Between 2008 and 2013 only three countries – the Czech Republic, Finland, and Switzerland – have managed to decrease the relative income gap between the average and the poorest children as a result of the income of poor children rising faster in real terms than the income of a child at the median. Social transfers play a positive role in reducing income differentials, as post-transfer income gaps are smaller than those before transfers, especially in countries like Ireland and the United Kingdom. Countries with greater bottom-end income inequality among children have lower levels of child well-being, and higher levels of child poverty and material deprivation. They also have higher income inequality overall, as measured by the Gini coefficient.

Keywords: income inequality, child poverty, relative income gap, child well-being

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Country Abbreviations

AT	Austria	FI	Finland	MT	Malta
AU	Australia	FR	France	NL	Netherlands
BE	Belgium	GR	Greece	NO	Norway
BG	Bulgaria	HR	Croatia	PL	Poland
CA	Canada	HU	Hungary	PT	Portugal
CH	Switzerland	IE	Ireland	RO	Romania
CY	Cyprus	IS	Iceland	SE	Sweden
CZ	Czech Republic	IT	Italy	SI	Slovenia
DK	Denmark	JP	Japan	SK	Slovak Republic
EE	Estonia	LT	Lithuania	UK	United Kingdom
ES	Spain	LU	Luxembourg	US	United States
DE	Germany	LV	Latvia		

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1. INTRODUCTION

Income inequality has emerged as one of the most pressing concerns in the global community of scholars, policy makers and development professionals alike. A number of high-profile reports and publications (OECD 2009; OECD 2014; Ostry, Berg &Tsangarides 2014; Dabla-Norris et al 2015; Stiglitz 2015; Atkinson 2015) present evidence on rapidly growing extreme income inequality and challenge governments to reassess their approaches to redistribution. Issues around social divisions are particularly troublesome when attention is drawn to children and young people. This paper will measure and compare the evolution of income inequality with a focus on children across 31 countries; it therefore contributes to the wide-ranging debate on inequality and child material well-being within the policy agenda of increasing social mobility and future productive growth of industrialized nations.

Global inequality remains high and ranges from 0.55 to 0.70 depending on Gini measure used[1] (Dabla-Norris et al 2015). This is mostly due to the differences between higher- and lower-income countries (Milanovic 2013). Income inequality has also been growing rapidly in many countries over the last 20 years despite the immense wealth created through impressive economic growth (UNDP 2013). Market income inequality in advanced economies increased by an average of 5.25 Gini points during 1990–2012. These adverse trends appear to be mainly driven by different developments in income shares by deciles: a growing income share of the top 10% and a shrinkage of the income share accruing to the middle 20% in many advanced economies (Dabla-Norris 2015, p.13).

Recent financial and economic crises contributed to this growing divide. Market income inequality increased by 1 percentage point or more in 20 OECD countries between 2007 and 2011/12 (OECD 2014:1).[2] The largest increases in inequality took place in countries that were most affected by the recent economic crisis: Estonia, Greece, Iceland, Ireland and Spain, but also in France and Slovenia. Simultaneously, inequality of disposable income increased by 1 percentage point between 2007 and 2011 only in a handful of countries, while remaining stable overall in the OECD. This suggests that taxes and social transfers have cushioned the rise in market income inequality. But while real household disposable income stagnated across the OECD countries, the income of the bottom 10% of the population declined from 2007 to 2011 by 1.6% per year. Between 2007 and the latest data year available, on average across the OECD, the drop in income was twice as large for the bottom 10% compared with the top 10% in 19 countries (OECD 2014, 2).

Young people[3] suffered the most severe income losses in the first four years following the crisis. Moreover, in the last 25 years the young replaced the elderly as the group experiencing the greater risk of income poverty (OECD 2014, 5). The crisis has also affected children (under 18) more severely than pensioners across the EU (Bradshaw and Chzhen 2015). There is ample evidence to suggest that children are at a higher risk of relative income poverty and material deprivation in the majority

[1] Gini coefficient is measured on 0-1 scale with 0 representing perfect equality and 1 representing perfect inequality, see Dabla-Norris et al 2015 for details on Gini measures used.
[2] Market income relates to gross income before taxes and social transfers.
[3] Aged 18 to 25.

of European countries (Bradshaw et al. 2013, Atkinson and Marlier 2010, Gábos and Györky 2011). The Social Protection Committee (2014) of the European Commission informs us that, based on 2011/2012 EU-SILC data, children were at a higher risk of poverty or social exclusion than the overall population in all but five countries of the European Union. Children from the most vulnerable households (e.g. workless households, lone-parent families and migrant families) were also hit hard during the recent economic crisis (Chzhen 2014). Therefore it is reasonable to hypothesize that income inequality in the lower half of the distribution increased the most in the countries that suffered most during the economic crisis.

The disproportionate effects of economic crises on children and young people prompts research on income inequality to focus on this most vulnerable group. The rationale for this is twofold. Firstly, "childhood is a unique period of human development, and a critical phase for preparing future generations to be social, productive, healthy and happy" (Richardson and Welteke 2015, 1). The need to promote the material well-being of children is a widely accepted moral imperative, and a requirement enshrined in national commitments to the 1989 Convention on the Rights of the Child (CRC). Experiencing poverty and deprivation in childhood is related to poor physical and mental health, difficulties in personal and family relationships, and low subjective well-being (Griggs and Walker 2008). It is also linked to increased risks across a wide range of later-life outcomes (Brooks-Gunn and Duncan 1997), including lower levels of school achievement, impaired cognitive development, lower productivity, reduced skills and earnings, higher rates of unemployment, higher dependence on welfare and higher prevalence of antisocial behaviour (see Duncan, Ziol-Guest, and Kalil 2010).

Secondly, the unequal circumstances children face and, for many, a lack of opportunities in the family to which they are born, are not their choice or 'fault' (Save the Children, 2012; 11). Inequality of outcomes[4] among parents – such as severe income shortage or low educational attainment – denote inequality of opportunities[5] for their children. Wealthier households can afford to invest in a better education for their children, with the potential to improve children's chances of higher wages and to accrue wealth (Biggs and Dutta 1999). In highly unequal societies, family background can be a more powerful determinant of outcomes for young people than hard work. Corak (2013) illustrates that countries with high income inequality tend to have lower levels of mobility between generations, with parents' earnings influencing children's earnings. The OECD shows that in the countries with high income inequality such as Italy, the United Kingdom or the United States, intergenerational earnings mobility is low. This implies that inequality 'can stifle upward social mobility, making it harder for talented and hard-working people to get the rewards they deserve' (OECD 2011, 40).

Thirdly, ensuring that the younger generation is growing up today in more equal communities is imperative from the perspective of a social investment policy agenda. Improving the living standards

[4] Inequality of outcome relates to economic outcomes and can be measured in economic terms such as income or wealth distributions (but is not limited to these measures and can also be measured with well-being indicators relating to education or health).

[5] Inequality of opportunities can be understood in the context of the potential of every individual to fulfil their capabilities. In order to fulfil their potential, the individual ought to have access to equal opportunities and public goods and services.

of children in the bottom and middle income quantiles can ensure inclusive prosperity. Since the rising skill premium resulting from technological progress and intertwined global economies has a potential to contribute to income inequalities (Dabla-Norris et al 2015), early investment in the human capital of children at risk of poverty and social exclusion will support efforts for future equalization of income. This argument is in line with a broader mainstream economic argument that higher inequality lowers growth (Ravallion 2004) and limits the ability of lower-income households to stay healthy and accumulate physical and human capital (Galoor and Moav 2004).

Despite the significant impacts of inequality and poverty on children, little attention has been paid to measuring income inequality among children. The few existing studies have illustrated that inequality is twice as high among children as in the general population (Save the Children 2012).[6] For example, across 32 developing countries,[7] a child in the richest 10% of households has 35 times the effective available income of a child in the poorest 10% of households (ibid; 34). Moreover, since the 1990s, the income gaps have increased by 35%, driven by the decline in the effective available incomes of the children in the poorest decile (as a share of GDP) and the simultaneous increase in those in the richest decile (ibid). The gaps between the poorest and richest children are considerably greater than the gaps between adults, indicating that children's experience of inequality is magnified.

The disparity between the richest and the poorest children can be indicative of the 'great divide' in society (Stiglitz 2015). The income gap between children at the very bottom of the income distribution and those who enjoy average living standards in a given society reflects the chances and opportunities of the most vulnerable children relative to the 'norm'. The focus on income inequality at the low end of the distribution is important because children experience the world relative to their peers and not just in relation to their absolute objective circumstances. Qualitative studies confirm that children themselves highlight their overwhelming need to fit in with other children (Main & Pople 2011, Ridge 2002). Thus, a greater disparity between the middle group and the 'bottom' may mean that poorer children will be left out of the social, learning and other experiences that their average income peers take for granted. Furthermore, higher levels of inequality in the bottom-end of the distribution can also be a reflection of social exclusion dynamics and failure of public policies to address the structural factors that produce the intergenerational transmission of inequality and disadvantage (UNICEF, 2010).

The UNICEF Report Card 9 (UNICEF 2010) examined inequality at the bottom end of the distribution in disposable income for children in 27 OECD countries prior to the recent economic crisis. It demonstrated that the relative gap between the child at the 10th percentile and the child at the 50th percentile (as % of 50th percentile) reached 46.9% on average for 27 OECD countries. Norway and other Nordic countries were found to have the lowest levels of bottom-end inequality while Greece had the highest, with the gap reaching 56%, followed by Canada, Italy, Spain and Portugal.

[6] For the general population, the richest 10% of people have access to 17 times the income of the poorest. Children in the richest decile have access to 35 times the income that is available to children in the poorest decile. This means that for children, the gap in access to resources is double that of the total population.

[7] The 32 countries comprise a mix of developing countries, and provide a rationale for research on the income gap in developed countries.

Revisiting the analysis pioneered by Report Card 9 under the new economic realities of the industrialized world, is a timely empirical task. Undoubtedly, the recent economic recession has impacted on the distribution of income, but, to our knowledge, no other studies of bottom-end income inequality among children have emerged to date. While ample evidence has been reported on the levels and changes in income inequality across EU and/or OECD countries, it is usually done for the overall or youth population (OECD) and not at the child level (OECD, 2009, OECD 2014, Dabla-Norris et al 2015).

With the alarming trend of increasing inequality and higher risk of relative child income poverty and material deprivation in the majority of European countries, there is a concern that inequality in the material well-being of children has worsened over the crisis. Hence, one of the analytical tasks of this paper is to examine the relationships between bottom-end income inequality and other indicators of material well-being such as poverty and material deprivation rates.

This study contributes to a growing body of evidence on child well-being in rich countries (UNICEF 2010, OECD 2009 and 2011, European Commission 2008, Bradshaw et al, 2007 and 2009) following a pioneering assessment of children's lives in 21 developed economies presented in Innocenti Report Card 7 (UNICEF 2007). A vast literature examines multidimensional child well-being through the framework of six domains of international children's rights (Bradshaw et al, 2007 and 2009, Pickett and Wilkinson 2015). However, most of this work focuses on national averages (e.g. percentage of children living in income-poor households), without necessarily reflecting disparities within countries. This paper, as well as others in the series, intends to fill this gap.

Overall, the present analysis across 31 European countries over the period between 2008 and 2013 is guided by the following questions:

a) How far behind are children at the bottom of income distribution allowed to fall, compared to those with a median income?

b) Has the recent financial and economic crisis and its aftershocks contributed to the growing income disparity between these groups of children?

c) What is the role of social transfers (and more broadly social protection systems) in reducing income differentials among families with children in Europe?

d) What is the relationship between the gap in children's equivalent disposable incomes and other monetary measures of individual, economy-wide wealth and income inequality? (such as relative poverty rates, child poverty gaps, child material deprivation rates, Gini coefficient, and GDP per capita (PPP US$)).

The paper is structured as follows. First, it presents the data and measures used in the analysis in the context of existing methodological approaches. It then goes on to present results on the levels of bottom-end inequality in children's incomes in 31 European countries in 2013, the latest year for which internationally comparable data are available, and to trace the evolution of this measure since 2008. Further, it decomposes the change in relative income gap by looking at the changes in

the median and the 10th percentile, to examine the reasons behind the trends in child income inequality in Europe. Next, the paper illustrates the analysis of the relative income gap without social transfers and moves on to an assessment of the relationship of the relative income gap with other measures. It concludes with the summary of key findings.

2. INCOME INEQUALITY AMONG CHILDREN IN EUROPE

2.1. Methodology

The study uses micro-data from the European Union Statistics on Income and Living Conditions (EU-SILC) 2008-2013 for 31 European countries (EU-28, Iceland, Norway and Switzerland). The EU-SILC is the main source of comparative statistics on poverty and social exclusion in the European Union. Although the EU-SILC is based on a common set of target-variable definitions and rules, the data are not fully harmonized because distinct data collection methods are used in different countries within the framework provided by the EU regulations. Details on the structure, content and design of the survey are documented in Eurostat (2009). Target variables on income are extracted from administrative sources in some countries and collected from household surveys in others.

The analysis uses disposable household incomes for households with children aged 0 to 17, which are expressed in Euro, equivalised using the modified OECD scale, and assessed at the individual level of the child.[8] Child disposable income is used here as a proxy for child material well-being because there is no cross-country comparable data on child-specific material deprivation for 2013.[9] Following Currie et al (2010) and UNICEF (2010), to measure inequality in the lower half of the children's income distribution, the income of the child at the 10th percentile is compared with the income of the child at 50th percentile (the median). How far behind the average the poorest children are allowed to fall is then measured as the gap between the two, expressed as a percentage of median income. Real changes in the 10th percentile and the median are measured as simple growth rates, i.e. the difference between the values in two different years divided by the value in the base year (e.g. (Y2013-Y2008)/Y2008), adjusted for inflation, using 2008 prices.

It has to be noted that if the relative gap for any two countries (i.e. the difference between the median and the 10th percentile) is the same, but those two countries have different medians, then the country with the higher median, by arithmetic calculation ((median-10thpercentile)/median), will have a lower relative gap as a percentage of the median. Yet, since the value at the 10th percentile is not constant across countries and it depends on the distribution of the income at the country level, this potential drawback does not affect these findings.[10]

[8] Each child is attributed disposable income of the household, adjusted for household needs. For conversion rates used for non-Euro countries see Eurostat 2009.
[9] EU-SILC 2013 data contain the information on child-specific deprivation items for only a few countries as the implementation of the module was voluntary.
[10] For more information see the Note in the Appendix on the relationship between the relative income gap and the median.

2.2 Income inequality among children in Europe: results

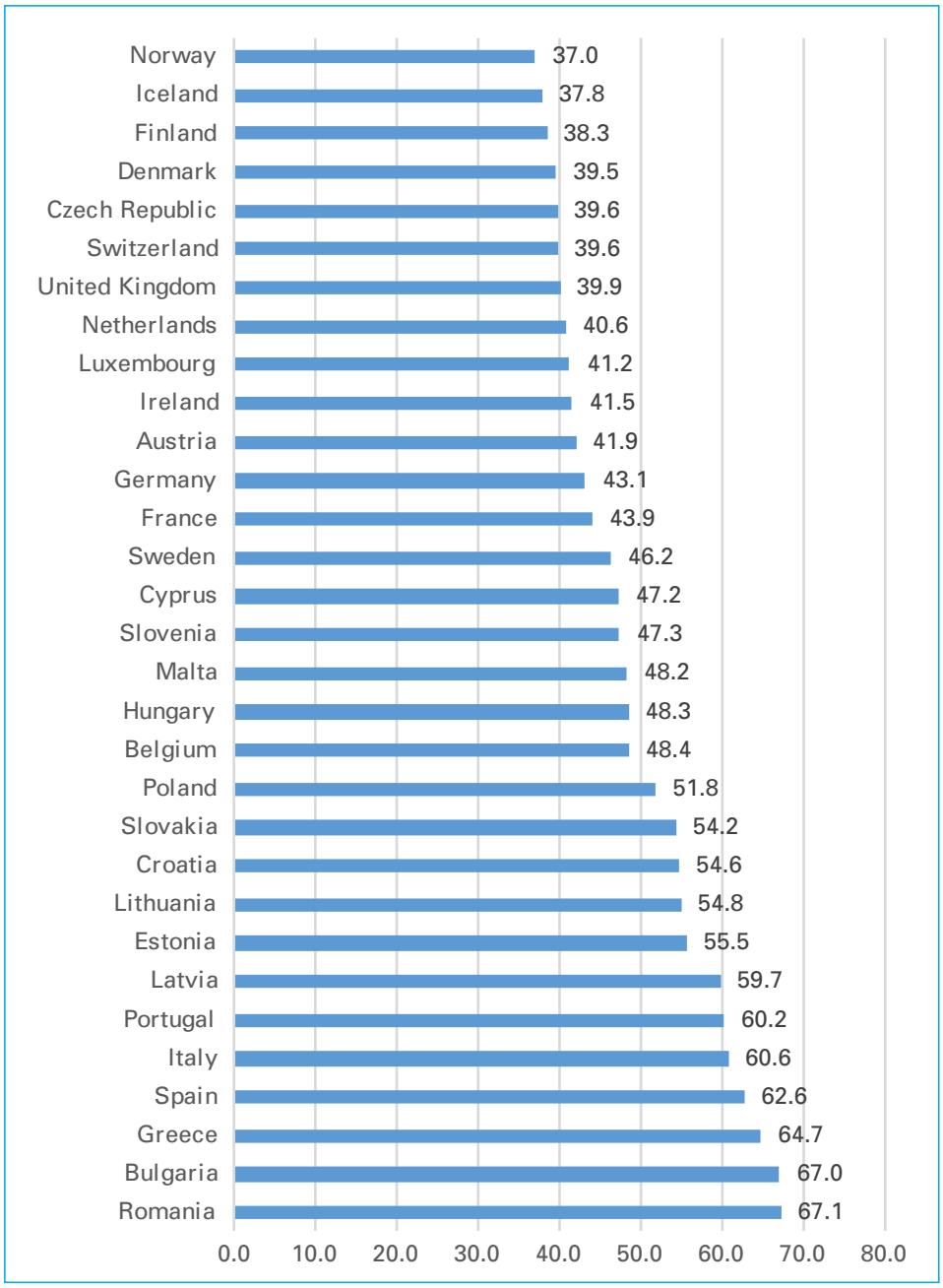
Table 1 illustrates the results of bottom-end child income inequality in Europe. The relative income gap ranges from 37.0% in Norway to 67.1% in Romania. The child in Romania located in the poorest decile holds only approximately 32.9% of the income of the child from the middle of the income distribution. In countries such as Lithuania, Poland and the Slovak Republic, the level of income of the child in the poorest decile is about half of the median child income in the country. On the other hand, in Finland, Iceland and Norway, the income of the child from the poorest decile is only about one-third less than that of the child placed at the median.

Table 1 – ***Bottom-end income inequality among children***

Country	50th percentile (€)	10th percentile (€)	The difference (50th - 10th)	Relative income gap
Norway	40634.6	25601.1	15033.5	37.0
Iceland	19621.0	12212.7	7408.3	37.8
Finland	22871.0	14103.3	8767.6	38.3
Denmark	28181.7	17039.8	11141.9	39.5
Czech Republic	7371.0	4451.0	2920.1	39.6
Switzerland	36269.2	21890.8	14378.4	39.6
United Kingdom	16150.0	9700.0	6450.0	39.9
Netherlands	19911.0	11818.3	8092.7	40.6
Luxembourg	26743.1	15723.5	11019.7	41.2
Ireland	17822.9	10427.4	7395.5	41.5
Austria	19250.6	11191.2	8059.4	41.9
Germany	18835.0	10714.8	8120.2	43.1
France	19410.0	10880.0	8530.0	43.9
Sweden	25491.0	13706.4	11784.7	46.2
Cyprus	15475.4	8172.4	7303.0	47.2
Slovenia	11856.8	6249.5	5607.3	47.3
Malta	10753.4	5569.2	5184.2	48.2
Hungary	4012.7	2072.8	1939.9	48.3
Belgium	20740.8	10700.3	10040.5	48.4
Poland	4725.3	2279.6	2445.7	51.8
Slovakia	6192.8	2835.6	3357.2	54.2
Croatia	4729.6	2147.6	2581.9	54.6
Lithuania	4289.6	1938.4	2351.2	54.8
Estonia	6860.8	3049.8	3811.0	55.5
Latvia	4525.5	1825.5	2700.0	59.7
Portugal	7532.4	3000.0	4532.4	60.2
Italy	13848.5	5450.5	8398.0	60.6
Spain	11833.7	4423.0	7410.7	62.6
Greece	7179.6	2534.8	4644.9	64.7
Bulgaria	2634.4	869.2	1765.2	67.0
Romania	1710.5	563.0	1147.5	67.1

Source: Author's calculations based on EU-SILC 2013, sorted by smallest relative income gap

Figure 1 – ***Relative income gap as % of the median***



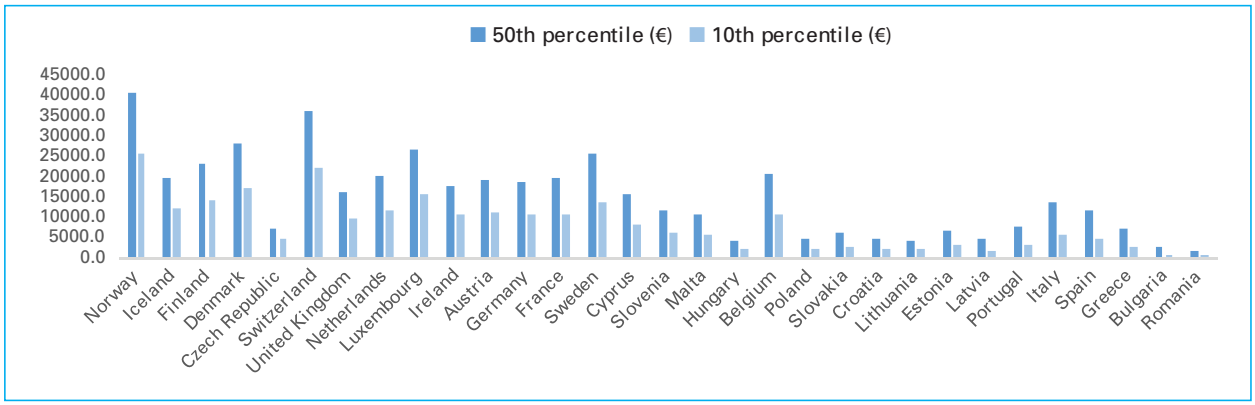
Source: Authors' calculations based on EU-SILC 2013, sorted by smallest relative income gap

Figure 1 illustrates the ranking of countries according to the size of the relative income gap. Norway, Iceland, Finland, Denmark and the Czech Republic open the ranking with the lowest levels of child income inequality in Europe.The relative income gap is the highest in Romania, Bulgaria, Greece, Spain and Italy. Figure 1 also reveals noteworthy groupings among the countries. Scandinavian countries, with the exception of Sweden, are all placed at the top of the table illustrating the lowest rates of inequality in Europe. On the other hand, Mediterranean countries severely affected by the Great Recession such as Greece, Spain and Italy are ranked together with Bulgaria and Romania at

the bottom of the table with a relative child income gap expressed as a percentage of the median above 60%. This suggests the possibility of a link between the types of welfare regimes in the countries and bottom-end income inequality. Scandinavian countries associated with the social democratic/Nordic model or welfare regime tend to have lower bottom-end income inequality than other European countries. In general, income inequality is also driven by changes in the income distribution. Hence, bottom-end income inequality is also dependent on differential impacts of the economic crisis across income distribution. These entangled impacts of welfare regime and the economic crisis on bottom-end income inequality require further, causal investigation in future research.

Figure 2 illustrates annual income levels for children at the median and poorest decile across European countries. The median equivalent disposable income of children varies greatly in the continent.[11] Also, income levels of children in the poorest decile demonstrate immense differences in living standards for poor children across Europe. Nonetheless, this should not overshadow the importance of within-country inequality. The difference in income between the child in the 10th percentile and the child at the median of the distribution is more than € 10,000 in Belgium, Denmark, Luxembourg, Norway, Sweden and Switzerland. This means that the children in households in the poorest decile have more than € 10,000 less income per year than the average child in those countries.[12]

Figure 2 – *Annual child income levels in Europe 2013*



Source: Authors' calculations based on EU-SILC 2013, sorted by the smallest relative income gap.

Table A2 (in the Appendix) illustrates how the relative income gap in the lower half of the distribution changes if negative and zero incomes are included in the calculations. The changes are

[11] In Norway, the average yearly income of a child is € 40,634.60 as compared to € 4,012.7 in Hungary or € 2,634.4 per year for an average child in Bulgaria. The level of annual child income in the poorest decile is below € 1,000 in Romania and Bulgaria, below € 2,000 in Latvia and Lithuania, below € 3,000 in, Croatia, Greece, Hungary, Poland and Slovak Republic. This is in contrast to yearly incomes of the poorest children above € 15,000 in countries such as Luxembourg, Denmark, Switzerland or Norway (see Table 1).

[12] A subsequent Working Paper explores what these differences in incomes between the 10th and 50th percentiles implies for children (i.e. this is what the rates of material deprivation would be for children in the poorest decile and in the middle of the income distribution).

minor as few households with children have negative disposable incomes. As expected, the relative gap between the average child and the 10th percentile, expressed as a percentage of the median, is slightly larger if negative values are included. The greatest difference in the bottom-end inequality is observed in Greece, Italy and Denmark, where it changes respectively from 64.7% to 66.4%, 60.6% to 62.5% and from 39.5% to 41.1%. In most countries there is no change in the level of bottom-end inequality as a result of calculation including negative values. Most importantly, the ranking of the countries is not changed severely, with Norway still leading the ranking of the lowest relative income gap in the lower half of the distribution.

Table 2 (page 15) illustrates other relative income gap measures. Calculations of the relative gap between the 20th percentile and the median as a proportion of the median and the relative gap between the 10th percentile and the 90th percentile (expressed as a percentage of the 90th percentile) complement the analysis of bottom-end child income inequality. The gap between the income of the child in the 20th percentile and the median ranges from 23.6% to 48.1% and is twice as large in Bulgaria and Romania as in Norway. The five best performers with the lowest bottom-end inequality as measured by the relative gap between the 10th and the 50th percentiles, i.e. Czech Republic, Denmark, Finland, Iceland and Norway, are also the countries with the lowest relative gap between the income of the child in the 20th percentile and the median. Similarly, countries showing the highest level of bottom-end inequality have high levels of gap between the 20th percentile and the median (Bulgaria, Greece and Romania). Graphic comparisons of relative income gaps are illustrated in Figure 3 (page 16).

However, moving the threshold from the 10th to 20th percentile does make a difference to several countries. For instance, Italy changes ranking by 5 places: it ranks fifth from the bottom of the league table on the relative gap between 10th and 50th percentile and 12th when the gap between the 20th percentile and the median is considered. On the other hand, Malta is placed in the middle of the ranking when the 10th and 50th percentiles are considered (17th place), but does considerably worse when the distance between the 20th percentile and the median is measured; it drops by 6 places falling to 24th position out of 31 countries. This suggests that in certain countries remarkable, potentially life changing differences may occur for children according to whether they are placed in the 10th or the 20th income percentile. For instance, in Italy the difference between the 10th or 20th percentile and the 50th percentile expressed as a percentage of the median is respectively 61.6% and 38.7%. The latter is considerably lower, meaning that the latent improvement of incomes between the 10th percentile and the 20th percentile has potential for improvements in welfare and lowering inequality in child incomes. On the other hand, Malta's gaps between the 10th and the 20th percentiles and the median are respectively 48.2% and 38.5% representing smaller differences in the incomes for children between the 10th and the 20th percentiles.

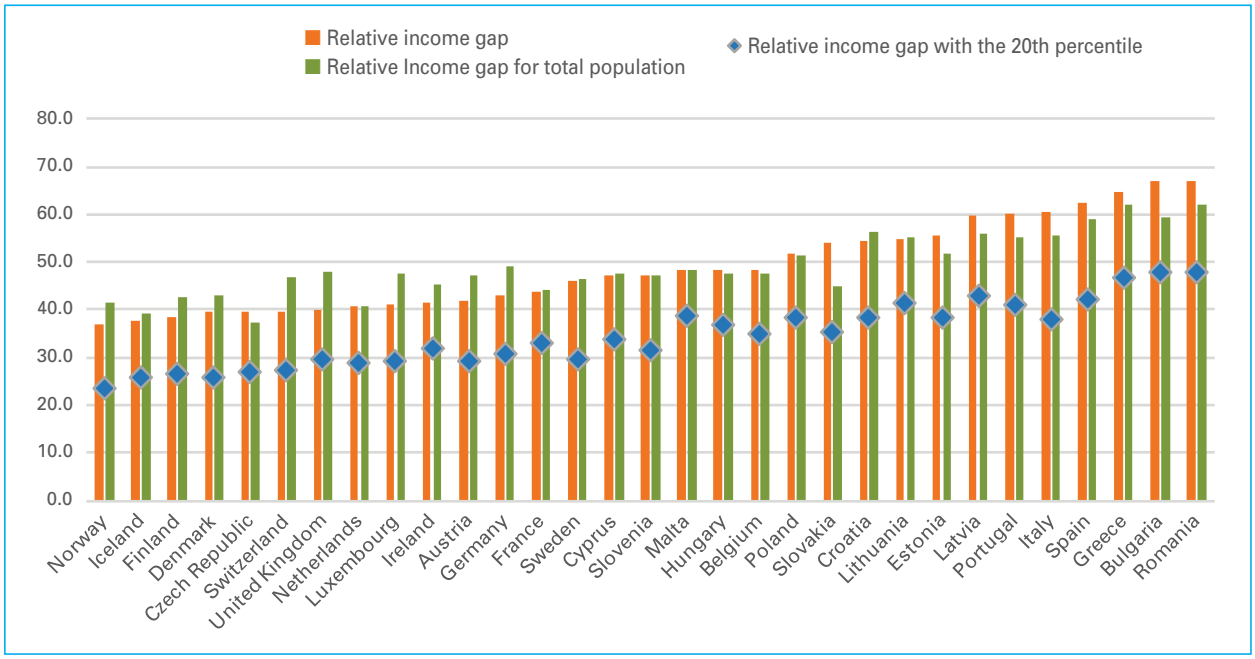
An analysis of the income of a child in the 10th percentile and a child in the richest 90th percentile expressed as a percentage of the 90th percentile illustrates overall inequality of income among children in a country. The gap ranges between 85.3% in Romania and 58% in Norway (see Table 2). The child in the 10th percentile in Romania, holds approximately only 14.7% of the income of the child in the 90th percentile. In comparison, in Iceland the child in the first decile has approximately 40% of the income of the child in the 90th percentile. This reveals significant within-country child income inequality which also differs considerably among European countries.

Table 2 – ***Other relative income gap measures 2013 (%)***

Country	Income gap (children)	Income gap (total population)	Income gap between 20th and 50th percentile (children)	Income gap between 90th and 10th percentile (children)	Income gap between 90th and 10th percentile (total population)
Norway	37.0	41.5	23.6	58.0	62.7
Iceland	37.8	39.2	25.7	60.2	63.4
Finland	38.3	42.6	26.6	61.9	66.4
Denmark	39.5	43.2	25.8	60.1	65.5
Czech Republic	39.6	37.3	26.7	64.8	64.0
Switzerland	39.6	46.8	27.3	66.3	70.5
United Kingdom	39.9	48.1	29.4	69.7	73.6
Netherlands	40.6	40.8	28.8	63.7	65.6
Luxembourg	41.2	47.6	29.3	71.0	71.9
Ireland	41.5	45.2	31.8	70.7	72.3
Austria	41.9	47.2	29.3	65.0	70.1
Germany	43.1	49.0	30.6	67.8	72.5
France	43.9	44.2	33.0	68.9	70.1
Sweden	46.2	46.6	29.4	64.5	66.9
Cyprus	47.2	47.5	33.5	72.7	74.3
Slovenia	47.3	47.3	31.3	67.5	68.2
Malta	48.2	48.5	38.5	71.3	71.3
Hungary	48.3	47.5	36.6	72.8	71.1
Belgium	48.4	47.5	34.9	68.8	68.5
Poland	51.8	51.2	38.2	76.5	74.9
Slovakia	54.2	45.0	35.2	72.4	67.1
Croatia	54.6	56.3	38.2	76.9	78.1
Lithuania	54.8	55.1	41.3	79.8	78.5
Estonia	55.5	51.7	38.2	79.1	77.1
Latvia	59.7	56.1	42.7	83.1	80.4
Portugal	60.2	55.1	41.1	80.5	79.1
Italy	60.6	55.7	37.8	79.1	76.0
Spain	62.6	58.8	41.9	82.6	79.5
Greece	64.7	62.1	46.6	82.6	79.5
Bulgaria	67.0	59.4	47.9	83.8	80.5
Romania	67.1	62.2	47.6	85.3	81.6

Source: Authors' calculations based on EU-SILC 2013, sorted by smallest relative income gap

Figure 3 – *Different relative income gap measures (%)*



Source: Authors' calculations based on EU-SILC 2013, sorted by the lowest relative income gap

In countries such as Bulgaria, Greece, Latvia and Romania, which have high levels of bottom-end child income inequality, the levels of the relative income gap between the 90th and the 10th percentiles expressed as a percentage of the 90th percentile are higher for children than for total populations. On the other hand, countries such as Denmark, Finland, Iceland and Norway have higher income gaps (the difference between the 90th and 10th percentiles expressed as a percentage of the 90th percentile) for the total population than for children. In Denmark, for instance, the gap for the total population is 65.5% compared to 60.1% for children. This illustrates that income inequality is higher for children in the countries that have been hit most by the crisis and that it is higher for children than for the total population, suggesting that children have been particularly badly hit by the crisis.

Table 3 (page 17) demonstrates relative income gaps for households with children between 2008 and 2013.[13] This may be interpreted as the impact of the economic crisis on income inequality among children. The relative gap between the median and the 10th percentile increased in 20 out of 31 countries. The largest increases in inequality of at least five percentage points occurred in four Southern European countries (Italy, Greece, Portugal and Spain) and three Eastern European countries (Hungary, Slovakia and Slovenia), the highest being in Greece, where the relative income gap rose by 9.1 ppt, from 55.6% in 2008 to 64.7% in 2013. Hungary, Spain and Sweden saw steady year-on-year growth in child bottom-end income inequality.

[13] There is a break in time series for United Kingdom.

Table 3 – ***Relative child income gap in Europe 2008-2013***

Country	2008	2009	2010	2011	2012	2013
Norway	36.6	39.3	39.8	35.8	34.4	37.0
Iceland	39.2	34.7	38.6	38.1	35.0	37.8
Finland	40.5	41.3	39.5	40.1	39.9	38.3
Denmark	38.5	39.0	40.8	39.9	39.8	39.5
Switzerland	42.4	43.1	41.4	41.8	43.2	39.6
Czech Republic	42.1	42.0	45.4	43.8	42.4	39.6
United Kingdom	48.1	47.3	43.8	43.6	41.2	39.9
Netherlands	39.4	42.6	39.8	40.8	40.7	40.6
Luxembourg	45.5	47.0	43.2	45.1	40.0	41.2
Ireland	46.7	42.8	42.8	43.2	45.7	41.5
Austria	42.7	45.3	43.8	43.4	41.6	41.9
Germany	42.6	44.0	45.2	42.8	44.2	43.1
France	41.4	44.0	44.0	44.1	44.1	43.9
Sweden	41.4	42.7	43.3	45.6	45.5	46.2
Cyprus	42.4	40.9	41.2	42.9	45.4	47.2
Slovenia	40.7	39.8	42.2	45.7	44.2	47.3
Malta	46.5	43.6	43.2	45.8	42.3	48.2
Hungary	42.6	43.1	43.5	46.3	49.7	48.3
Belgium	47.9	49.0	49.0	50.6	47.8	48.4
Poland	50.7	52.7	52.5	51.2	49.9	51.8
Slovakia	46.2	48.6	53.8	52.0	52.8	54.2
Croatia	–	–	55.4	55.5	58.0	54.6
Lithuania	56.9	56.3	64.7	58.3	52.5	54.8
Estonia	52.7	51.9	55.8	57.8	55.1	55.5
Latvia	60.9	64.7	62.8	62.8	60.4	59.7
Portugal	54.8	55.0	53.1	51.5	54.2	60.2
Italy	52.6	52.8	54.6	59.3	57.3	60.6
Spain	55.9	58.4	60.6	61.4	61.9	62.6
Greece	55.6	55.7	54.9	57.3	62.6	64.7
Bulgaria	65.7	63.7	64.0	65.8	68.2	67.0
Romania	65.6	64.8	61.4	63.9	64.1	67.1

Source: Authors' calculations based on EU-SILC 2008-2013, sorted by the lowest relative income gap

In many cases the level of inequality fluctuated during this period. In Ireland the relative gap decreased by 5.2 percentage points between 2008 and 2013, with some fluctuations in between. Decreases in bottom-end inequality also took place in Luxembourg (4.3ppt decrease), Switzerland (2.8 ppt), Czech Republic (2.5 ppt), Finland (2.2 ppt), Lithuania (2.1 ppt).[14] Although Latvia and Lithuania had some of the highest levels of inequality in the EU in 2013,

[14] The changes in inequality lower than 2 ppt are not commented on in the text.

there has been a gradual improvement since 2008-2009. In Norway the relative gap in incomes was 36.6% in 2008, increasing to 39.8% in 2010 and falling to 37% in 2013 – a level similar to the initial one in 2008. Hence, the country with the lowest relative income gap in Europe in 2013 has a level of inequality which is similar to that prior to the crisis. In the United Kingdom (UK) there was a noteworthy constant decline in bottom-end inequality over 5 years. The relative gap was equal to 48.1% in 2008 and decreased to 39.9% in 2013, this is the biggest absolute decrease in bottom-end child income inequality in Europe over the time period considered.

However, changes in the levels of bottom-end inequality can occur for different reasons, reflecting changes in income distributions over time. They could be related to changes in income at the 10th percentile, the median or both. For instance, if median income increases over time and the income at the 10th percentile declines, the gap will increase. Similarly, if the income at the median increased and the income at the 10th percentile also increased but at slower rate, the gap will increase. On the other hand, if the median incomes are decreasing while those in the poorest decile are rising, there will be a decline in the relative income gap.

Table A3 in the Annex illustrates changes in the real income for households with children at the 10th percentile and 50th percentile between 2008 and 2013. The largest increase in income at the poorest decile took place in Norway, Poland and Switzerland. In Switzerland the income at the 10th percentile increased faster than the income of the average child in the country, while in Norway and in Poland the median was rising faster. The fastest decline in the income in the poorest decile took place in Greece, Iceland and Italy. Income declined by more than half in Greece in real terms from €4,688.9 in 2008 to €2,199.7 in 2013, in Italy by more than €1,000 and in Iceland by 22 ppt. At the same time, the average child lost a smaller portion of income in Greece and Italy than the poorest child, while in Iceland the average child saw a greater loss of income that the poorest.

Analysis of the changes in the incomes at the median and the 10th percentile clarify the reasons for changes in inequality between 2008 and 2013. Table 4 (page 19) illustrates the change in relative income gap and distinguishes between the countries in which the income gap decreased because of a 'positive' closing of the gap, where the incomes of both the 10th percentile and median grew, but the 10th percentile increased faster (Czech Republic, Finland and Switzerland); in the second group of countries, the relative gap shrank because the median income declined while the 10th percentile either decreased more slowly (Ireland, Luxembourg, and Lithuania) or remained relatively unchanged (the United Kingdom); countries in which the median rose faster than income at the poorest decile (France, Slovakia, Sweden) and the countries where the incomes declined both at the median and at the poorest decile but the latter decreased more leaving the poorest children increasingly further behind (Cyprus, Estonia, Greece, Hungary, Italy, Portugal, Slovenia, Spain).[15]

For instance, in Finland the relative gap declined because incomes rose twice as fast at the 10th percentile than at the median. On the other hand, the gap in Ireland declined because the income at the median decreased to a greater extent than the income at the 10th percentile. Thus, the average child lost even more income than the child from the poorest decile. In the UK,

[15] Countries where the change is smaller than 2 ppt have not been clsssified into the categories.

the country with the largest absolute decline in bottom-end inequality, the decrease took place as a result of a decrease in the median while the first decile remained stable.[16]

Table 4 – ***Change in relative income gap 2008-2013***

Country	Income gap 2008	Income gap 2013	Change in income gap 2008-2013
Countries in which the 10th percentile increased faster than the median			
Switzerland	42.4	39.6	-2.8
Czech Republic	42.1	39.6	-2.5
Finland	40.5	38.3	-2.2
Countries in which 10th percentile decreased more slowly than the median			
United Kingdom	48.1	39.9	-8.2
Ireland	46.7	41.5	-5.2
Luxembourg	45.5	41.2	-4.3
Lithuania	56.9	54.8	-2.1
Countries in which the relative gap remained stable (+/-2pp)			
Iceland	39.2	37.8	-1.4
Latvia	60.9	59.7	-1.2
Austria	42.7	41.9	-0.8
Norway	36.6	37.0	0.4
Belgium	47.9	48.4	0.5
Germany	42.6	43.1	0.5
Denmark	38.5	39.5	1.0
Poland	50.7	51.8	1.1
Netherlands	40.6	39.4	1.2
Bulgaria	65.7	67.0	1.3
Romania	65.6	67.1	1.5
Malta	46.5	48.2	1.7
Countries in which the 10th percentile increased more slowly than the median			
France	41.4	43.9	2.5
Sweden	41.4	46.2	4.8
Slovakia	46.2	54.2	8.0
Countries in which the 10th percentile and the median decreased and the p10 declined faster			
Estonia	52.7	55.5	2.8
Cyprus	42.4	47.2	4.8
Portugal	54.8	60.2	5.4
Hungary	42.6	48.3	5.7
Slovenia	40.7	47.3	6.6
Spain	55.9	62.6	6.7
Italy	52.6	60.6	8.0
Greece	55.6	64.7	9.1

[16] The value at the poorest decile in UK in fact increased by 2ppt in real terms, however this change is too small to be considered statistically significant.

Sweden's relative income gap rose while the income at the 10th percentile and the median increased, but the income at the median increased more, hence expanding the relative income gap further. The poorest children became even more left behind in relation to the average child as the growth in income for the latter was higher than for the child in the poorest decile. In Greece the relative gap grew bigger because the median and the income at the 10th percentile fell, but the income of the child at the 10th percentile fell more. Children at the median and at the 10th percentile were worse off, but the poorest lost most, implying that children in the poorest decile were left behind and particularly hit by the crisis. In many European countries child income at the poorest decile improved less than the income of the average child (the biggest country group). This illustrates that unequal growth in child income across the distribution is the background factor contributing to the increase in bottom-end child income inequality in 20 out of 31 European countries between 2008 and 2013.

The reasons behind the increase or decrease in inequality in the relative income gap in the lower half of the distribution are very important for understanding policy implications as, ideally, the motive behind reducing the income gap would be growth in the income of the poorest children. However, this analysis illustrates that this is not always the case. In many countries in the EU incomes grew faster in the middle than at the bottom of the distribution. This pattern calls into question the income growth strategy prevalent in Europe. Indeed there are worrying cases where the income gap changed due to decreases, rather than growth, in child incomes. In Ireland, Lithuania, Luxembourg and the UK the income gap decreased because the income of the average child was lower after the crisis than at the beginning of the economic downturn.

2.3 Income inequality among children in Europe: income without social transfers

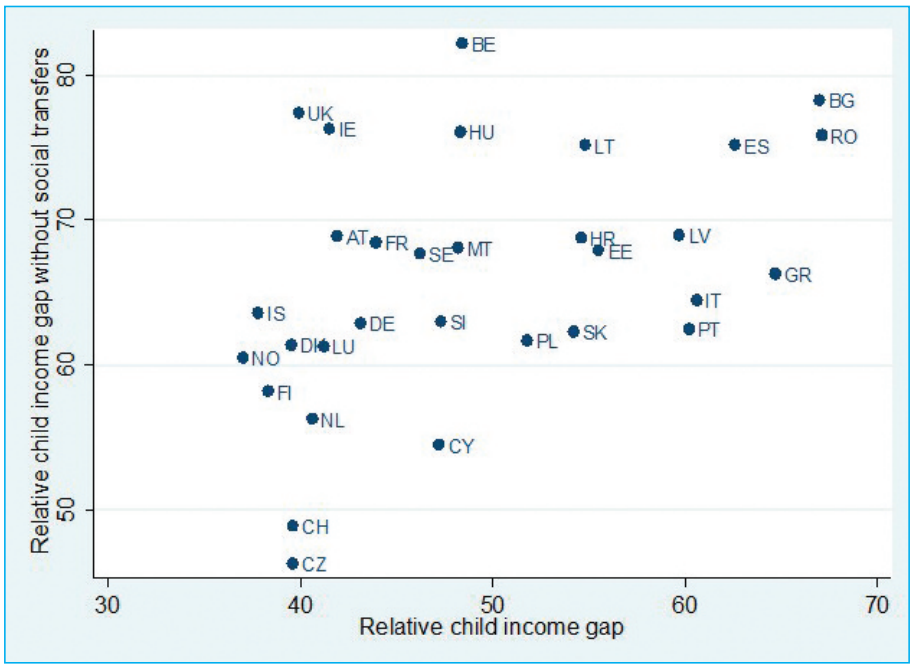
The definition for analysis used so far relates to child disposable income as it covers all households and income sources, after taxes and cash transfers. It is the most comprehensive measure, as all the factors or income sources included in it contribute in one way or another to shaping inequality. Nevertheless, it is worthwhile assessing child income inequality with relation to total disposable income after taxes but before social transfers. The analysis of incomes prior to social transfers enables evaluation of the effectiveness of social transfers in cushioning child income inequality in Europe.

Table 5 (page 22) illustrates the relative income gap in the lower half of the distribution in Europe based on incomes without social transfers.[17] It reveals significant differences in ranking between bottom-end child income inequality as based on total disposable income and income excluding social transfers. First of all, the relative income gap between the child from the poorest decile and the average child expressed as a percentage of the median is ultimately higher when only the incomes from market sources are included. This demonstrates that social transfers are effective in lowering child income inequality in Europe. The relative income gap is lowest in Czech Republic, Switzerland and Cyprus, being respectively 46.3%, 48.9% and 54.5%. It is the highest in Belgium (82.2%), Bulgaria (78.3%) and the UK (77.4%). Thus, households with children in the poorest decile in these countries are to a large extent dependent on social transfers, as their annual incomes without

[17] Pensions are not included in social transfers, in practice the variable provided in EU-SILC is used.

them are considerably lower. Figure 4 illustrates that there is no relationship between the relative income gaps with and without social transfers. Countries with a high relative income gap based on disposable incomes do not necessarily have a high relative income gap without social transfers.

Figure 4 – ***Relative child income gap with and without social transfers 2013***



Source: Authors' calculations based on EU-SILC 2013

In addition, the level of child income in the lowest decile is considerably lower than when social transfers are included. For instance, in Bulgaria the level of annual child income in the poorest decile is €869.2 when social transfers are included (see Table 1) and considerably smaller – €506.2 – when social transfers are not considered. In general, the income at the 10th percentile of households with children is lower without social transfers than for an income with transfers included. Perhaps the starkest difference is illustrated by the UK where the income at the poorest decile is €3,384.6 without social transfers as compared to €9,700 when social transfers are included.

In many countries, especially in Belgium, Bulgaria, Ireland and the UK, the market drives child income inequality to a large extent. For instance, in the UK the relative income gap when social transfers are included is 39.9% and has been declining the fastest in Europe since 2008. Nevertheless the relative income gap in the UK for income without social transfers is a staggering 77.4%, the highest in the comparison. When child income inequality based only on incomes without social transfers is considered, the United Kingdom becomes the worst country in Europe as regards child income inequality. This exemplifies that social transfers make a difference and lower the relative income gap, especially in these four countries.[18]

[18] This exercise does not take into account any potential behavioural consequences of withdrawing social transfers.

Table 5 – ***Relative income gap in Europe (income without social transfers) 2013 (%)***

Country	Median (€)	10th percentile (€)	Relative gap	Relative gap for total population	Relative gap with the 20th percentile
Czech Republic	6674.7	3585.1	46.3	44.1	32.0
Switzerland	33039.3	16873.1	48.9	53.9	34.3
Cyprus	14067.1	6400.0	54.5	52.5	39.4
Netherlands	18440.0	8057.0	56.3	60.5	37.7
Finland	19600.5	8196.7	58.2	58.7	39.4
Norway	35552.9	14050.9	60.5	64.5	38.6
Luxembourg	22109.1	8546.9	61.3	64.2	47.6
Denmark	26272.2	10136.4	61.4	62.9	41.0
Poland	4440.8	1699.0	61.7	58.9	45.3
Slovakia	5537.5	2088.9	62.3	53.1	40.6
Portugal	7170.0	2692.3	62.5	59.7	44.9
Germany	16386.7	6073.4	62.9	57.9	40.4
Slovenia	9881.4	3654.2	63.0	58.4	42.7
Iceland	17445.4	6355.5	63.6	57.4	39.5
Italy	12645.7	4483.8	64.5	58.4	43.4
Greece	7055.6	2380.0	66.3	62.4	46.1
Sweden	21810.0	7047.4	67.7	59.3	43.8
Estonia	5908.1	1897.4	67.9	58.5	46.0
Malta	9933.9	3167.0	68.1	58.9	47.7
France	16995.2	5345.8	68.5	60.6	46.6
Croatia	4221.9	1317.5	68.8	64.7	49.1
Austria	15512.2	4827.1	68.9	61.4	40.9
Latvia	4071.3	1261.8	69.0	59.8	49.5
Spain	10693.4	2650.1	75.2	70.7	54.8
Lithuania	3505.0	868.3	75.2	66.3	55.9
Romania	1580.9	381.2	75.9	67.0	55.0
Hungary	3123.6	745.7	76.1	64.2	54.0
Ireland	16221.1	3837.4	76.3	72.8	56.4
United Kingdom	15000.0	3384.6	77.4	66.1	57.1
Bulgaria	2337.4	506.2	78.3	62.9	54.3
Belgium	18424.6	3281.7	82.2	66.1	47.1

Source: Authors' calculations based on EU-SILC 2013, sorted by the smallest relative income gap

Table 6 illustrates the percentage of the gap reduced by social transfers. There are considerable differences among the countries in the effectiveness of social transfers in lowering income inequalities.[19] Social transfers reduce the relative income gap by nearly half in Ireland and

[19] The differences in effectiveness of the social transfers can be caused by many different factors, for instance the amount of transfers, effectiveness in targeting, or even limited presence of child specific transfers.

the United Kingdom. On the other hand, the pre- and post-transfer income gaps are very similar in Bulgaria, Greece, Italy and Portugal. These are countries with some of the highest levels of bottom-end inequality in the comparison.

Table 6 – ***Income inequality and social transfers***

Country	Relative income gap pre-transfers	Relative income gap post-transfers	Percentage of gap reduced by social transfers
United Kingdom	77,4	39,9	48,4
Ireland	76,3	41,5	45,6
Belgium	82,2	48,4	41,1
Iceland	63,6	37,8	40,6
Austria	68,9	41,9	39,2
Norway	60,5	37,0	38,8
Hungary	76,1	48,3	36,5
France	68,5	43,9	35,9
Denmark	61,4	39,5	35,6
Finland	58,2	38,3	34,1
Luxembourg	61,3	41,2	32,8
Sweden	67,7	46,2	31,7
Germany	62,9	43,1	31,5
Malta	68,1	48,2	29,2
Netherlands	56,3	40,6	27,8
Lithuania	75,2	54,8	27,1
Slovenia	63,0	47,3	25,0
Croatia	68,8	54,6	20,6
Switzerland	48,9	39,6	19,0
Estonia	67,9	55,5	18,2
Spain	75,2	62,6	16,7
Poland	61,7	51,8	16,2
Bulgaria	78,3	67,0	14,5
Czech Republic	46,3	39,6	14,4
Latvia	69,0	59,7	13,5
Cyprus	54,5	47,2	13,4
Slovakia	62,3	54,2	13,0
Romania	75,9	67,1	11,6
Italy	64,5	60,6	6,0
Portugal	62,5	60,2	3,6
Greece	66,3	64,7	2,4

Source: Authors' calculations based on EU-SILC 2013, sorted by the highest percentage.

The analysis also reveals that children are particularly prone to inequality driven by incomes without social transfers as the relative gap for children is higher than for the total population, with the exception of Denmark, Finland, Luxembourg, Netherlands, Norway and Switzerland. The biggest difference in the relative gap for the total population and for children is illustrated by Belgium where the relative income gap without social transfers is 82.2% for children as compared to 66.1% for the total population. This difference is closely followed by Bulgaria, the UK and Hungary. When the income of a household with children at the 20th percentile is examined, the relative income gap ranges from 32% to 57.1% and is lowest in the Czech Republic.

3. THE RELATIONSHIP OF INCOME INEQUALITY AMONG CHILDREN WITH OTHER INCOME MEASURES

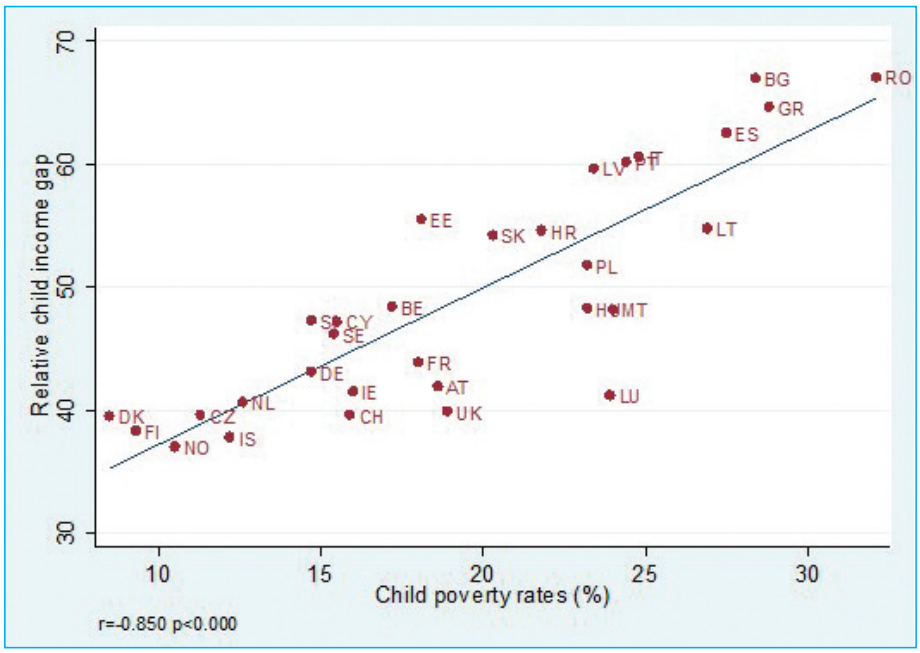
The increase in the relative income gap in the lower half of the distribution in Europe took place in the context of alarming levels of child poverty (UNICEF Report Card 12). Poverty and inequality are analytically distinct concepts, the statistics are conceptually related but provide distinct measures that do not necessarily relate to the same populations. In the case of this research, the measure of the relative income gap focuses on the 10th percentile and the median in the child income distribution within a country. The child population we are concerned with in relation to the relative income gap may not fully correspond to the child population that is below 60% of the median income as is the case for the child poverty measure. Also, measures of both inequality and poverty vary independently of each other, and it is misleading to treat the one as a marker of the other. The overall relationship between poverty and inequality is neither clear nor direct. The changes in both are dependent on changes in the distribution. Also, the levels of poverty and inequality do not change at the same pace, and they may even change in opposite directions, hence there is a need to study them side by side.

Analysis of the relative income gap, and especially its changes over time, also requires a macro-economic context for understanding variations between countries. This is especially relevant against the background of the recent economic crisis which had differential impacts across European countries and on within-country income distributions. Some countries have been affected by the economic crisis more than others. Hence, there is a need to assess child income inequality in the context of the macro-economic environment. There are many reasons why the relative income gap fluctuates over time and although it is beyond the scope of this paper to assess all factors in great depth, this section will focus on the relationship between the relative income gap and other monetary measures relating to child material well-being such as child poverty rates, poverty gap and material deprivation. This section will also evaluate the association of the relative income gap with variables illustrating the macro-economic situation of the country, such as national income inequality, levels of GDP (Gross Domestic Product) and GDP growth.

Figure 5 (page 25) illustrates the relationship between the relative income gap in the lower half of the distribution and child poverty rates in Europe in 2013. Child poverty is measured as the percentage of children with equivalised disposable household incomes after social transfers below 60% of median. It is one of the social indicators adopted by the EU to monitor progress

towards eradicating poverty and social exclusion. Countries with the highest relative income gap, i.e. Bulgaria, Greece and Romania are also the countries with the highest child poverty rates. In Romania, 1 in 3 children are considered poor in relative terms. Luxembourg and Malta have relatively high levels of relative child poverty (more than 20%), but low in comparison to the bottom-end child income inequality of other countries. A positive relationship between two measures illustrates that countries with high bottom-end child income inequality also tend have higher levels of child poverty.

Figure 5 – ***Relative income gap and child poverty rates 2013***

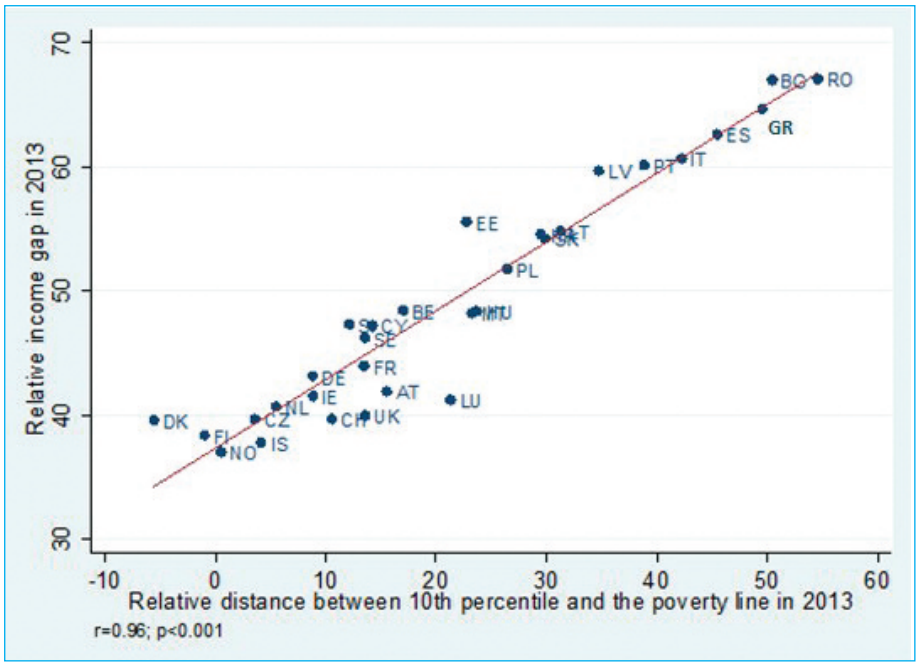


Source of child poverty rates: Eurostat, last update: 18-12-2015

Figure 6 (page 26) shows that in countries with greater bottom-end income inequality among children, the relative distance between the first decile of children's equivalent income and the population-based poverty line (i.e. the poverty gap) tends to be larger. This relationship becomes clear when the income distribution is represented with the poverty line, the income of the children in the first decile and the median marked. It reveals that indeed the population reflected in poverty statistics and income inequality is overlapping but not identical and hence there is a need to study poverty and inequality side by side. For instance, in Bulgaria, Greece, Romania and Spain (see Figure 7a page 27) children at the first decile are half-way from the poverty line and more than half-way from the "average" child. In Nordic countries and Iceland (Figure 7b page 27), first decile children are near the poverty line (in Denmark they are above the poverty line) and lie around 35%-40% from the median.[20]

[20] Poverty line is at-risk-of-poverty threshold (60% of national median of equivalised disposable income).

Figure 6 – ***Relative distance to the population poverty line and to the children's median 2013***



Source: Authors' calculations based on EU-SILC 2013

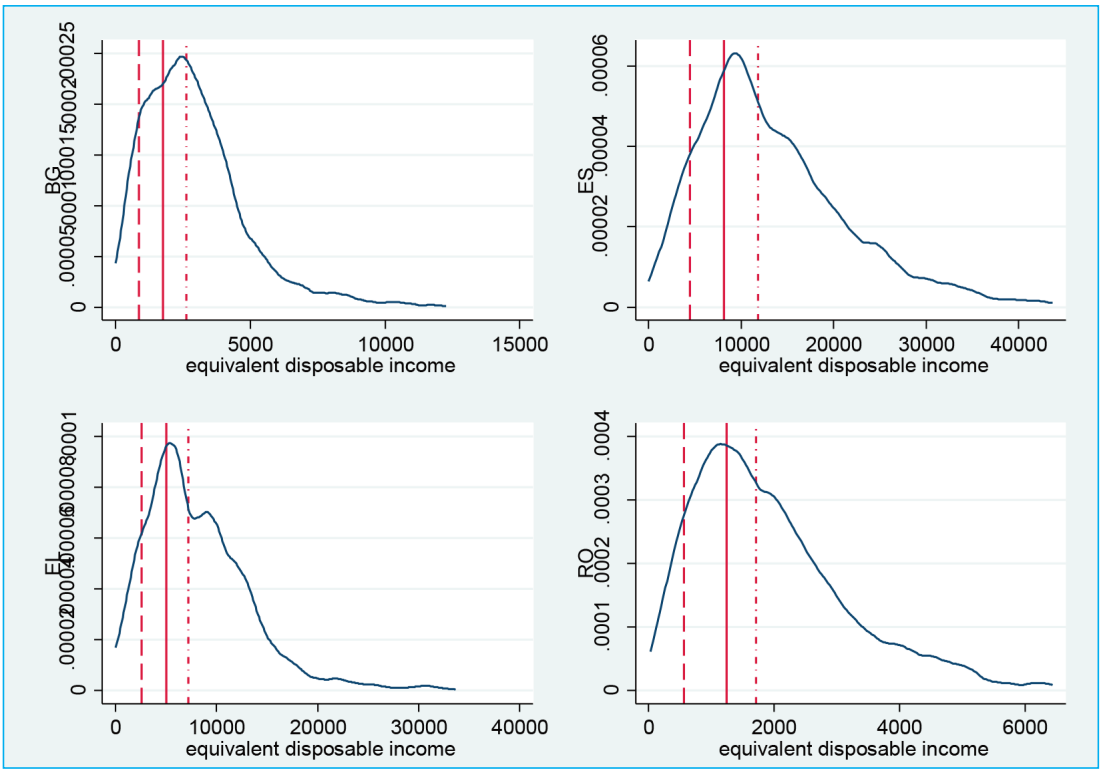
To gauge the depth of relative child poverty, which reveals nothing about how far below that line those children are being allowed to fall, it is also instructive to look at the poverty gap – the shortfall of the median equivalised disposable income of children from the at-risk-of-poverty threshold (60% of national median of equivalised disposable income). Figure 8 (page 28) illustrates the child poverty gap plotted together with the levels of income inequality among children expressed as the relative income gap. The child poverty gap is highest in Bulgaria, Greece and Romania where it is respectively 41.7%, 39% and 38.2%, and lowest in the Netherlands, Norway and Finland (12.1%, 12.6% and 13.4%). There is a strong positive relationship between the relative child income gap as a percentage of the median and the child poverty gap. The countries with highest bottom-end income inequality among children (Bulgaria, Greece and Romania) are also the countries with the highest child poverty gap. This confirms significant disparities in child incomes in these countries. Moreover, the countries with a high income gap between the average and poor children are also those with the highest levels of material deprivation rates in Europe[21] (see Figure 9 page 28).

Bradshaw (2015) illustrate the relationship between income poverty and the other domains of child well-being. The remarkably strong link implies that the relative position of children in the income distribution, whatever the absolute level of income of a country may be, is associated with a range of child outcomes that are used to represent child well-being. In particular, material resources are strongly associated with child well-being at the country level. The level of deprivation is the most important determinant and, together with the relative income poverty rate, explains variation in overall well-being more than any other single indicator. Bradshaw (2015) also shows that

(continues on page 29)

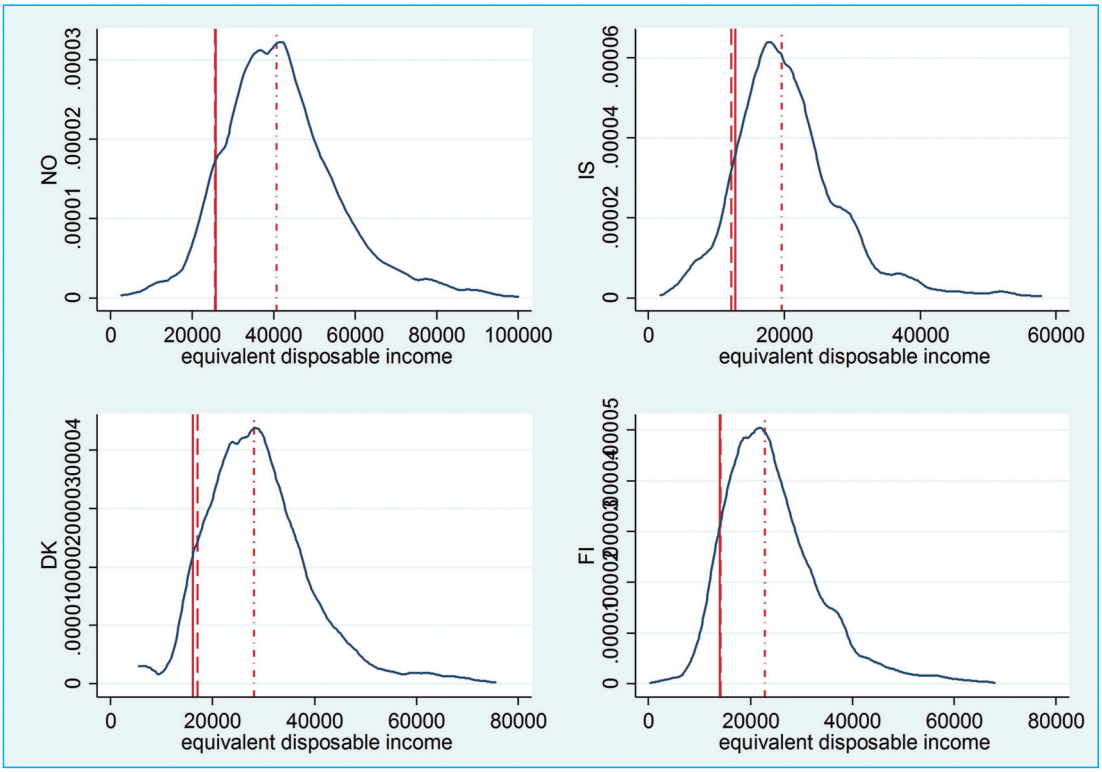
[21] The indicator is defined as the percentage of population with an enforced lack of at least three out of nine material deprivation items in the 'economic strain and durables' dimension.

Figure 7a – ***Country income distributions: Bulgaria, Greece, Romania and Spain***



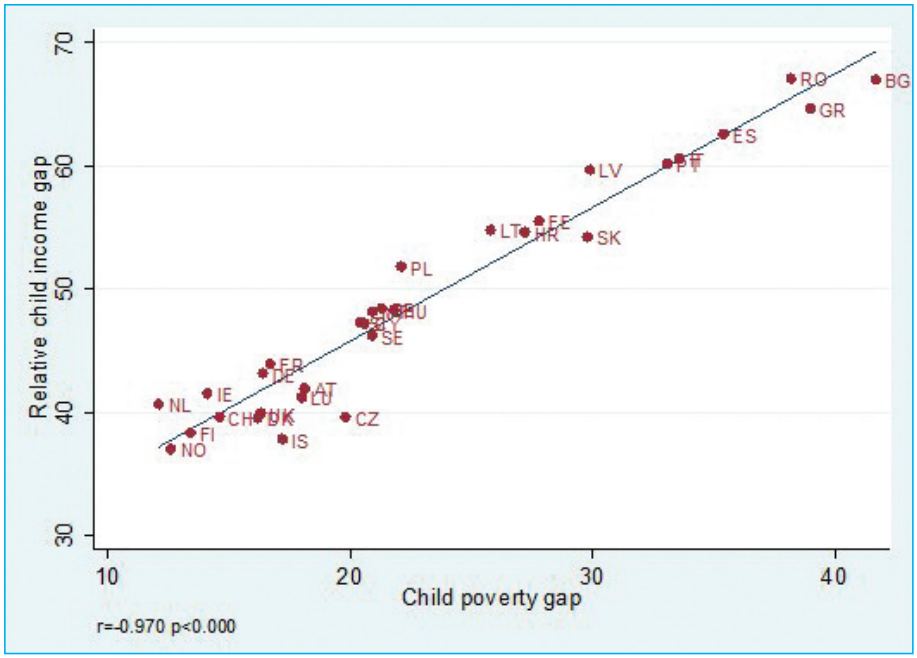
Solid line: population-based poverty line; long dashed line: 1st decile of children's income distribution; short dashed line: children's median.

Figure 7b – ***Country income distributions: Denmark, Finland, Iceland and Norway***



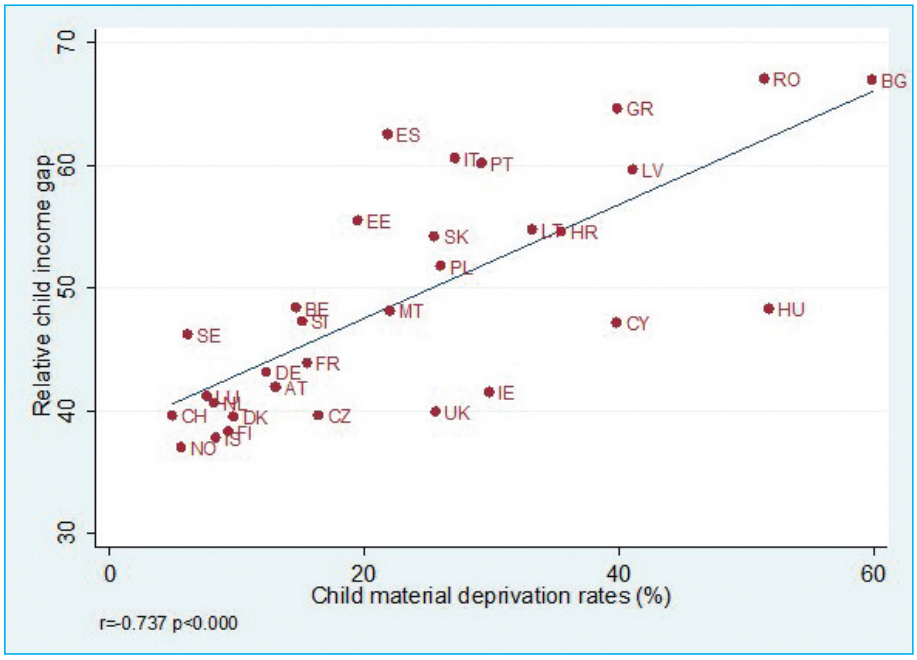
Solid line: population-based poverty line; long dashed line: 1st decile of children's income distribution; short dashed line: children's median.

Figure 8 – ***Relative child income gap and child poverty gap 2013***



Source of child poverty gap: EUROSTAT, last update: 18-12-2015

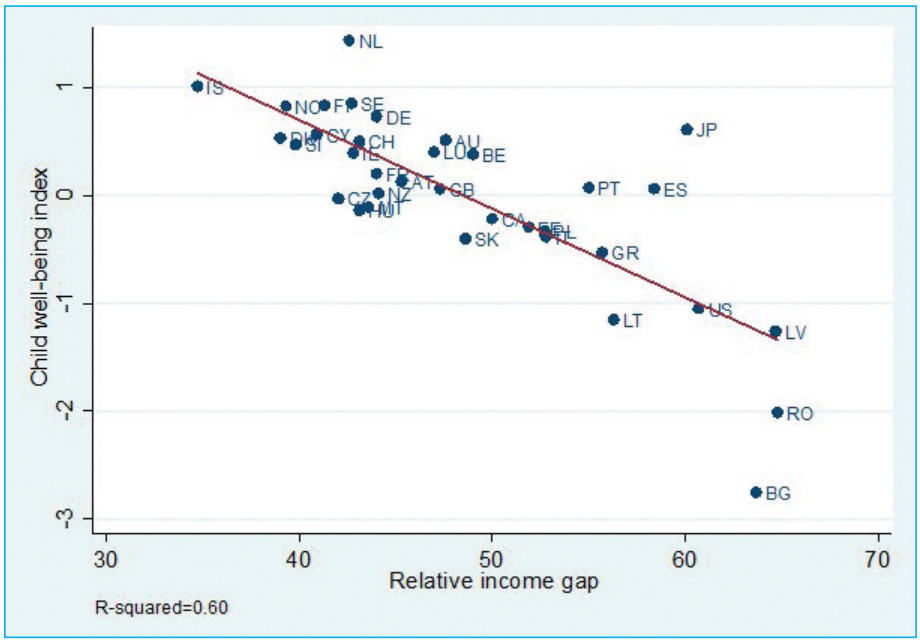
Figure 9 – ***Relative income gap and child material deprivation rates in Europe***



Source of child material deprivation rates: EUROSTAT, last update: 17-12-2015

the association between overall child well-being and inequality measured by the Gini coefficient is not as strong as the association with child poverty. This suggests that relative child income poverty may be a more salient influence on child well-being than overall inequality. However, although they are both measures of the income distribution, the Gini coefficient focuses more on the middle of the distribution while relative poverty focuses more on the bottom end. Hence, there is an expected association between bottom-end child income inequality and child well-being. Figure 10 relates the child well-being index as developed in the UNICEF Report Card 11 and the relative income gap.[22] There is a strong association between the two measures. Countries with higher income gaps tend to have lower levels of overall child well-being and vice-versa.

Figure 10 – ***Child well-being index and relative income gap 2009***



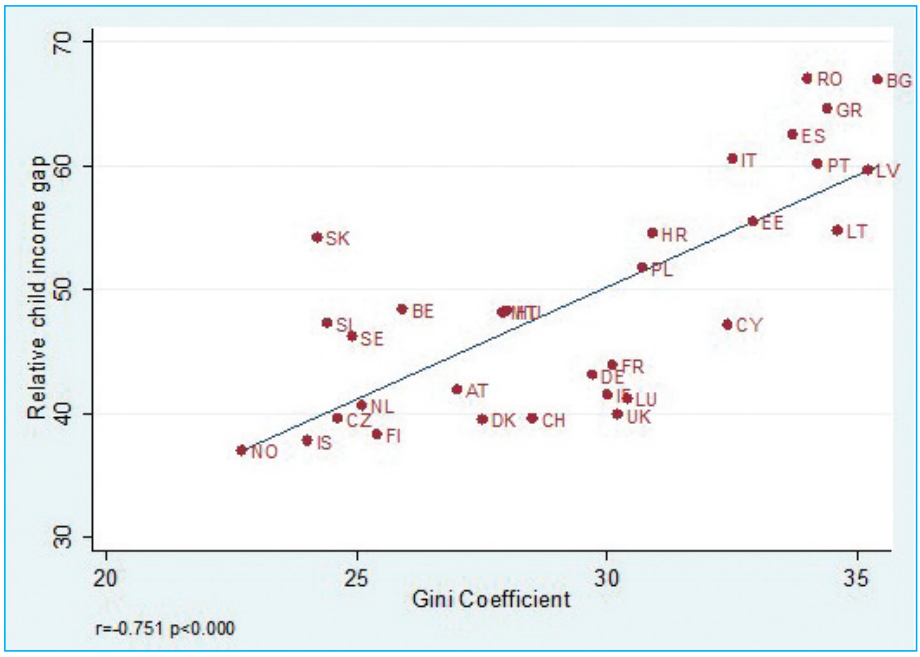
Pickett and Wilkinson (2015) concluded that child well-being was less highly correlated with average standards of living than it was with the prevalence of income inequality. Income mattered: well-being was lower where child relative poverty rates were higher. However, child poverty rates were highly correlated with the degree of income inequality. Hence, they conclude that improvements in child well-being might depend more on reductions in inequality than on further economic growth, as income inequality was strongly and significantly associated with child well-being, whereas average income was not.

In this context, it is instructive to analyse the relationship between a measure illustrating the extent to which children are left behind and the overall level of inequality in each country.

[22] The Y axis illustrates z-scores of multi-dimensional child well-being index. The Z score indicates the country's score in the child well-being index with relation to the mean in the group of countries and illustrates whether it is above or below the average and by how many standard deviations. For example, in Bulgaria child well-being is approximately 3 standard deviations away from the average. For the indicators and dimensions see Table 4.1 in Bradshaw 2015. The X axis represents the relative child income gap based on EU- SILC 2009.

Figure 11 illustrates the associations between the relative income inequality and the Gini coefficient. It reveals that bottom-end income inequality among children is closely related to overall inequality. The relative income gap in the lower half of the distribution is positively associated with national level inequality expressed by Gini coefficient. This means that the countries with a higher level of overall income inequality expressed by Gini have higher levels of inequality among children in the lower half of the income distribution. For instance, Latvia has high overall inequality and a high relative income gap. On the other hand, Norway has a low Gini coefficient and low relative income gap in the lower half of the distribution. The Slovak Republic is a country with a higher than expected relative income gap when compared with other countries. It has high child income inequality and low overall income inequality.

Figure 11 – ***Relative income gap and Gini coefficient 2013***



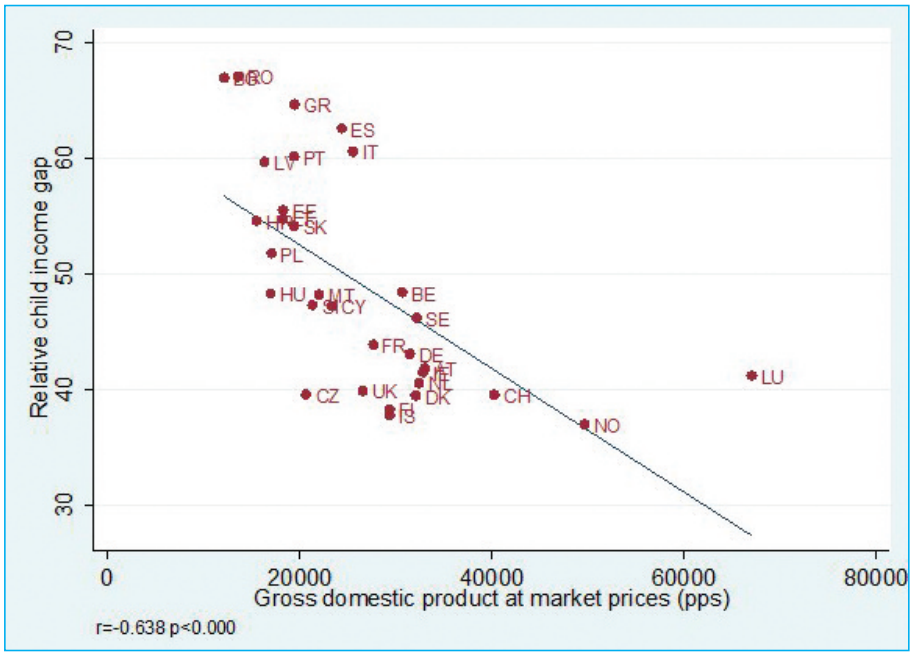
Source of Gini coefficient:
EUROSTAT, last update: 17-12-215

How does child income inequality relate to the average standard of living in each country? Figure 12 (page 31) shows the association between the relative income gap and the level of GDP which can be used as a proxy for average standard of living. The relationship illustrates that the level of GDP has a strong impact on reducing bottom-end inequality, nevertheless the relationship is to some extent driven by the existence of the outliers (Luxembourg, Norway and Switzerland). The graph also demonstrates strong nonlinearities. It suggests that the association between inequality and level of GDP becomes progressively weaker at higher levels of GDP. This may suggest that economic growth (i.e. increasing the level of GDP) alone is insufficient to reduce bottom-end income inequality.

These findings are by no means exhaustive and the topic requires further causal investigation into the question of to what extent the relative income gap is driven by economic growth and/or social transfers. The above results suggest that changes in bottom-end inequality are dependent upon

changes in the distribution, in other words the level of income at the median and the 10th percentile. This suggests that the location of the income growth along the income distribution is more important for reducing bottom-end income inequality than overall economic growth would be.

Figure 12 – ***Relative income gap and GDP at market prices***[23]



Source of Gross Domestic Product at market prices (PPS per capita): EUROSTAT, last update 04-01-2016

This section illustrates that the relative income gap in the lower half of the distribution is yet another measure which ought to be considered in the context of child well-being. A high relative income gap in Europe is associated with lower child well-being, high child poverty rates, poverty gap and material deprivation rates, meaning that children in Europe are exposed not only to the risk and impact of poverty but also all the consequences of high bottom-end income inequality. Dispersion of income between the average child and a child from the poorest decile is also closely related to the national income inequality measure expressed by the Gini coefficient. The countries with overall high inequality are also those with a high relative income gap for children. There is also a strong relationship between the relative income gap and GDP.

[23] The levels of GDP at market prices taken from Eurostat refer to 2012, just as the incomes in EU-SILC 2013 also refer mainly to incomes in 2012 with exception of the UK and Ireland. GDP (gross domestic product) is an indicator for a nation s economic situation. It reflects the total value of all goods and services produced less the value of goods and services used for intermediate consumption in their production. Expressing GDP in PPS (purchasing power standards) eliminates differences in price levels between countries, and calculations on a per head basis allow for the comparison of economies significantly different in absolute size.

4. CONCLUSION

This research presents an analysis of child income inequality over the period between 2008 and 2013 in Europe. In the context of an alarming trend of increasing inequality and higher risk of relative child income poverty in the continent, it contributes to the current literature by providing an update on the situation of children in Europe. It also addresses the need for an analysis due to a growing concern that inequalities in the material well-being of children have worsened over the crisis. However, the focus of this paper is on disparities within countries. It reports on the dispersion of income between the average child and a child from the poorest decile, communicating the extent to which children are left behind.

The analysis demonstrates immense differences in living standards for children across Europe. **The relative income gap ranges from 37% in Norway to 67.1% in Romania.** The poorest children in many European countries and especially among the worst performers such as Bulgaria, Greece, Italy, Romania and Spain fall behind the average child to a great extent. In these countries, children located in the poorest decile hold less than 40% of the income of a child from the middle of the income distribution. In countries such as Lithuania, Poland and the Slovak Republic the level of income of the child in the poorest decile is about half that of the average child. On the other hand, in Scandinavian countries (with the exception of Sweden) the income of a child in the poorest decile is on average one third less than the average child.

It is very likely that the recent economic crisis contributed to a widening income inequality among children. During the crisis, **the relative income gap for children in the lower half of the distribution in Europe worsened in 20 out of the 31 countries considered.** The largest increase in bottom-end inequality took place in Greece and was very closely followed by Italy. On the other hand, the biggest absolute reduction in bottom-end child income inequality in Europe took place in the UK. Decreases in the relative income gap higher than 2 ppt also took place in the Czech Republic, Finland, Ireland, Lithuania, Luxembourg and Switzerland.

The analysis revealed the reasons for change in the relative income gap which allowed countries to be grouped according to their experience over the crisis and changes in child income levels. **In most European countries, child income levels of the poorest children improved at a disproportionately sluggish rate compared to income levels of 'average' children.** This illustrates that unequal growth rate in child income across the distribution is a factor contributing to the increase in bottom-end child income inequality. Between 2008-2013 only three countries – the Czech Republic, Finland, and Switzerland – have managed to decrease the relative income gap between the average and the poorest children as a result of the income of poor children rising more than the income of a child at the median. On the other hand, Latvia, Luxembourg and the UK decreased the relative gap mainly because the income of the average child fell and was lower in 2013 than prior to the crisis.

Evidence presented by this study recognises the role of social transfers in reducing income differentials among children within European countries. The relative income gap between a child from the poorest decile and the average is higher before accounting for social transfers.

The relative income gap before social transfers is lowest in Cyprus, the Czech Republic and Switzerland and is highest in Belgium, Bulgaria and the UK. This implies that social transfers are effective in lowering child income inequality in Europe, particularly in countries – such as Belgium and the UK – where pre-transfer income gaps are substantial. Children are also particularly prone to inequality driven by income without social transfers as the relative income gap for children is higher than for the total population with the exception of Denmark, Finland, Luxembourg, Netherlands, Norway and Switzerland.

The relative income gap in Europe is associated with child poverty rates and the child poverty gap. In countries with greater bottom-end income inequality among children, the relative distance between the first decile of children's equivalent income and the population-based poverty line (i.e. the poverty gap) tends to be larger. Indeed, the population captured by poverty statistics and income inequality analysis is overlapping but not identical. Hence there is a need to study poverty and inequality side by side. It also means that children in Europe are simultaneously exposed to the risk and impact of poverty and all the consequences of high bottom-end income inequality.

This analysis confirms the relevance of the macro-economic context for understanding between-country variations in the income inequality among children. The relative income gap in the lower half of the distribution is positively associated with national-level inequality expressed by the Gini coefficient. Hence, **the more unequal countries are, the higher their relative income gap for children**. Moreover, the countries with a high income gap between the average and poorest child are also those with the highest levels of material deprivation in Europe. Countries with higher income gaps tend to have lower levels of overall child well-being and vice-versa. The association between the relative income gap and the level of GDP which can be used as proxy of average standard of living in the country is not linear or straightforward and requires further investigation.

Risisng income inequality is one of the most pressing global concerns. The issues around the social divide are particularly troublesome when attention is focused on children and young people. The income gap between children at the very bottom of the income distribution and those who enjoy average living standards in a given society reflects the chances and opportunities of the most vulnerable children relative to the 'norm'. Adverse experiences, possibly deriving from income inequality and poverty in childhood, have long lasting and profound consequences, which not only last into adulthood but affect future generations. This study elucidates the need for wide-ranging debate on the dispersion of child income within the policy agenda of increasing social mobility and future productive growth of industrialized nations.

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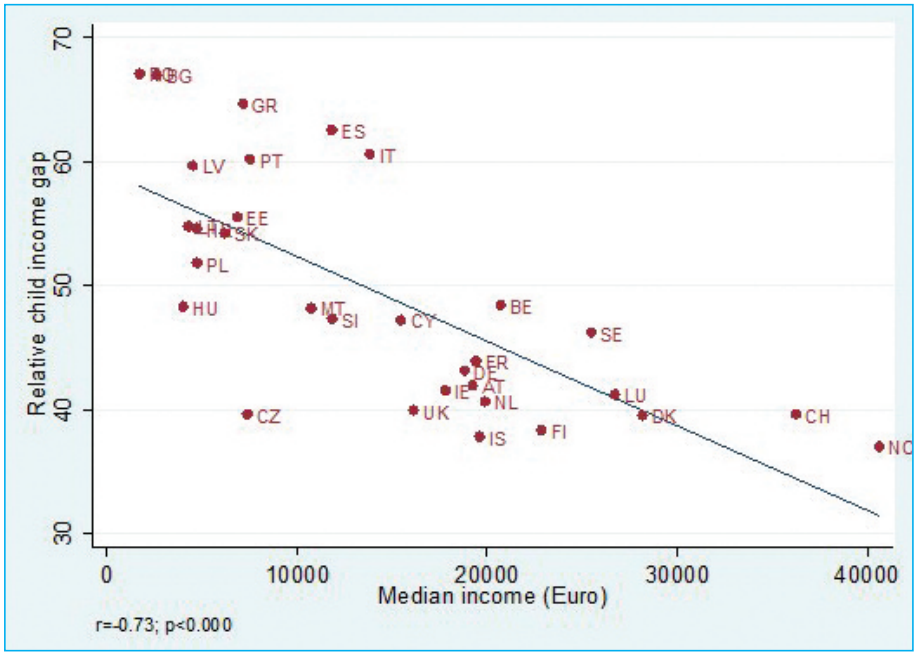
APPENDIX

Note on the relationship between the relative income gap and the median

Across 31 European countries, inequality in the bottom half of the distribution tends to be lower in countries with higher median incomes (Figure A1). It is not immediately clear whether this relationship is driven by: a) economic growth, as median incomes are highly correlated with per capita GDP (r=0.85, p<0.001); b) more generous social transfers, as median incomes are higher in countries with higher spending on family benefits as a share of GDP (r=0.6; p<0.001); c) overall income inequality, as median incomes are higher in countries with lower Gini coefficients (r=-0.55; p<0.01); or d) an arithmetic artefact inherent in the measure of bottom-end inequality. Given the same absolute difference between the median and the 10th percentile, the ratio between the absolute gap and the median will always be lower in countries with higher medians.

Figure A1 – ***Relative income gap and child median income in Europe 2013***



To test whether the relationship between median incomes and the relative gap is only observed because an important macro-economic indicator has been omitted, covariates from a) to c) are added to median incomes in an ordinary least squares regression one by one (Table A1). Controlling for per capita GDP, which itself does not have a significant partial effect, median incomes are still negatively correlated with the relative income gap (Model 1). The same pattern is observed for spending on family benefits (Model 2) and income inequality, except that the Gini coefficient does have a significant effect on the relative gap (Model 3). Thus, there is not enough evidence to suggest that the observed negative relationship between median incomes and the relative gap is entirely spurious.

Neither is it purely an arithmetic artefact because there are no two countries in the analysis with the exact same absolute gap between the median and the first decile. In fact, holding the value of the 10th percentile constant, a 1000-Euro increase in the median value is associated with – on average – a significant 2.5ppt increase in the relative gap (Model 4). Thus, across countries with similar 10th percentiles, the relative gap is higher in countries with higher median incomes. Meanwhile, holding the median constant, a 1000-euro increase in the 10th percentile value is associated with – on average – a 5ppt decrease in the relative gap. A similar pattern is observed if the Gini coefficient is also controlled for (Model 5). Crucially, the median and 10th percentile value are extremely highly correlated across the 31 countries studied ($r=0.99$, $p<0.001$). The results are nearly identical if incomes are adjusted for differences in purchasing power.

Therefore, the relationship between the relative gap and the median cannot be viewed in isolation from the 10th percentile, which affects the relative gap to a much greater extent across the countries studied here. The indicator of bottom-end inequality used in this study is not a measure of dispersion around the mean or the median, but a relative measure showing how far the poorest children fall behind from the average in per cent terms. Countries with lower 10th percentiles (using a common scale, i.e. Euro) come out worse on this measure even though they also have lower medians and, therefore, lower absolute gaps between them. In countries at the bottom of the ranking in Table 1, children's 10th percentile incomes are lower than one-half of the median income. Meanwhile, countries whose poorest children have relatively high household incomes, even if the median is much higher in absolute terms, do well in the comparison. It is clear that children in countries with lower 10th percentiles fall further behind from the relative poverty line drawn at 60% of the population-median (see Figure 3a), while those with higher 10th percentiles are much closer to the poverty line (see Figure 3b). Since the relative poverty line is tied to each country's own income distribution (rather than the EU-wide distribution), countries with higher levels of bottom-end inequality do indeed let their poorest children fall far behind their own comparatively modest average standards.

Table A1 – ***Linear regression coefficients***

	Model 1	Model 2	Model 3	Model 4	Model 5
Median income (000'Euro)	-0.62*	-0.57***	-0.43***	2.50**	1.87*
GDP per capita (000'PPP)	-0.07				
Spending on family benefits (% GDP)		-2.11			
Gini coefficient			1.22***		0.91**
10th percentile (000' Euro)				-5.02***	-3.72**
Intercept	60.07***	61.91***	19.47	53.19***	25.16**
Adjusted R-squared	0.50	0.52	0.69	0.68	0.77

*p<0.05; **p<0.01; ***p<0.001.

Table A2 – ***Bottom-end child total disposable income inequality***

Country	Income gap	Income gap (negative and zero incomes included)
Norway	37.0	37.0
Iceland	37.8	37.8
Finland	38.3	38.3
Denmark	39.5	41.1
Czech Republic	39.6	39.6
Switzerland	39.6	39.6
United Kingdom	39.9	40.7
Netherlands	40.6	40.6
Luxembourg	41.2	41.2
Ireland	41.5	41.5
Austria	41.9	41.9
Germany	43.1	43.5
France	43.9	44.4
Sweden	46.2	46.3
Cyprus	47.2	47.2
Slovenia	47.3	47.3
Malta	48.2	48.2
Hungary	48.3	48.3
Belgium	48.4	48.9
Poland	51.8	51.9
Slovak Republic	54.2	54.2
Croatia	54.6	55.2
Lithuania	54.8	54.8
Estonia	55.5	55.7
Latvia	59.7	59.7
Portugal	60.2	60.2
Italy	60.6	62.5
Spain	62.6	63.7
Greece	64.7	66.4
Bulgaria	67.0	67.4
Romania	67.1	67.1

Note: sorted from smallest to largest by relative gap, based on EU-SILC 2013
All values expressed as % of median

Table A3 – ***Changes in the real income for households with children at the 10th percentile and 50th percentile (median)***

Country	Median 2008 (local currency)	10th percentile 2008	Median 2013 (2008 prices)	10th percentile 2013	Change in 10th percentile	Change in the median
Switzerland	38064.0	21909.6	43038.8	25976.7	0.19	0.13
Poland	14311.3	7056.8	16502.0	7961.0	0.13	0.15
Norway	246362.1	156306.7	275939.6	173851.1	0.11	0.12
Finland	19250.8	11455.9	19979.3	12320.2	0.08	0.04
Czech Republic	158717.8	91863.7	161951.2	97793.7	0.06	0.02
Slovakia	4428.2	2384.3	5429.7	2486.2	0.04	0.23
Sweden	179699.5	105365.8	201990.3	108608.9	0.03	0.12
Belgium	17811.7	9280.7	18288.7	9435.2	0.02	0.03
United Kingdom	13441.3	6973.5	11801.2	7088.1	0.02	-0.12
Malta	8918.8	4771.4	9340.8	4837.6	0.01	0.05
Austria	17273.2	9905.0	17197.2	9997.5	0.01	0.00
Denmark	182836.7	112452.5	186367.7	112685.5	0.00	0.02
Romania	5526.5	1900.0	5768.8	1898.9	0.00	0.04
Germany	17224.3	9880.0	17275.1	9827.4	-0.01	0.00
Netherlands	18234.8	11047.8	18140.2	10767.2	-0.03	-0.01
Bulgaria	4072.3	1395.1	4117.8	1358.7	-0.03	0.01
France	17550.0	10280.0	17669.5	9904.4	-0.04	0.01
Estonia	5596.8	2649.4	5502.2	2445.9	-0.08	-0.02
Ireland	21507.4	11471.7	17774.0	10398.7	-0.09	-0.17
Lithuania	13840.7	5961.9	11775.8	5321.2	-0.11	-0.15
Luxembourg	28405.2	15468.6	23413.5	13765.8	-0.11	-0.18
Slovenia	10658.7	6323.0	10395.1	5479.0	-0.13	-0.02
Hungary	971623.9	557598.1	915045.7	472682.6	-0.15	-0.06
Cyprus	15289.2	8808.5	13525.4	7142.6	-0.19	-0.12
Portugal	7567.7	3423.6	6862.1	2733.0	-0.20	-0.09
Latvia	4671.0	1825.3	3611.3	1456.7	-0.20	-0.23
Spain	11244.0	4960.4	10575.6	3952.8	-0.20	-0.06
Iceland	2666104.0	1620182.0	2026287.3	1261218.4	-0.22	-0.24
Italy	13894.0	6579.6	12292.8	4838.2	-0.26	-0.12
Greece	10568.0	4688.9	6230.4	2199.7	-0.53	-0.41

Source: Authors' calculations based on EU-SILC 2008 and 2013; inflation rates taken from EUROSTAT, sorted by the highest increase in 10th percentile.