

How Income Growth Differs with Children in Spain: a Comparative European Perspective

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Abstract The Great Recession has notably affected household income in most European countries, but not in the same way for all types of household. This note aims to discuss whether significant differences exist in income growth between households with and without children. The study focuses on Spain, finding that Spanish households with children benefited less from income growth in the period 2004–2008 and experienced more decay in income in the period 2008–2012. We compare patterns of income growth for households with and without children in several European countries, as well as evaluate the uneven impact of the crisis and the policies adopted after the crisis in both types of household across different countries.

Keywords Household income · Children · Growth incidence curve · EU-SILC

JEL Classification D31 · O15 · J13

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1 Introduction

As a result of the financial and economic crisis, household income has fallen in most European countries since 2008 due essentially to higher unemployment and lower real wages. Given that the crisis has made a more emphatic impact on children than on others, it has significantly worsened the problem of children living in low-income households in Europe (TÁRKI 2010; López-Vilaplana 2013; UNICEF 2014). In this sense, Spain is a paradigmatic case. The exceptionally high unemployment and the fiscal consolidation efforts made since 2010 have reduced incomes, thus increasing poverty and inequality in a context of economic difficulties (OECD 2014a). In particular, with respect to children living in low-income households, Spain was the third country in the EU with the highest child at-risk-of-poverty rate in 2012, after Romania and Bulgaria (Eurostat 2015). According to UNICEF (2014), a calculation of the impact of the crisis on the median income of households with children suggests that between 2008 and 2012 Spanish families lost the equivalent of a full decade, while in Italy and the United Kingdom the loss was equivalent to 8 and 6 years, respectively.

To describe the distributional effects of growth following Ravallion and Chen (2003), growth incidence curves (GICs) have been widely used in recent years with diverse variants and under different circumstances (Nissanov and Silber 2011; Bourguignon 2011; Berenger and Bresson 2012, among others). To the best of our knowledge, this paper is a first attempt that takes advantage of GICs to assess to what extent the incidence of income growth by income groups differs among households with and without children. In this regard, the experience of Spain is analyzed and compared with that of France, Germany, Italy and the United Kingdom in the 4-year period preceding the crisis (2004–2008) and the 4-year period 2008–2012 in the context of the Great Recession.

2 Data and Methodology

We use the European Union Statistics on Income and Living Conditions (EU-SILC) data set to examine whether there are substantive differences regarding the distribution of economic growth by income groups among households with and without children. We conduct the analysis at different moments in time using the 2004, 2008 and 2012 waves for Spain, as well as France, Germany, Italy and the United Kingdom for comparability purposes.¹ We work with around 10,000 household observations for France and the United Kingdom, around 13,000 for Spain and Germany, and around 21,000 for Italy, from which about one third are household with children.

The variable used as an indicator of household economic position is disposable household income defined as the sum, for all household members, of gross personal income plus gross income at the household level minus regular taxes on wealth and income, social insurance contributions and regular inter-household transfers paid. Disposable household income refers to the year preceding the survey for all countries except the United Kingdom, for which the income reference period is the current year. This variable is adjusted for each household using the modified Organization for

¹ As Germany and the United Kingdom have no data for 2004, we use data from 2005.

Economic Co-operation and Development (OECD) equivalence scale.² The unit of analysis is the individual as each individual is assigned the equivalent household income. All income values are expressed in 2005 euros using the harmonized index of consumer prices provided by EUROSTAT.

In order to analyze the distributive effect of economic growth in households with and without children, we construct GICs by income percentiles as proposed by Ravallion and Chen (2003). GICs provide valuable insight about the distributional impact of economic growth that cannot be derived from the study of inequality and poverty measures.

Let $F_t(y)$ be the cumulative distribution function of income. By inverting the function in the p th percentile, the corresponding income is obtained:

$$y_t(p) = F_t^{-1}(p) = L'_t(p)\mu_t$$

where $L_t(p)$ is the Lorenz curve (with slope $L'_t(p)$) and μ_t is the mean income. Note that $(y'_t(p) > 0)$. The GIC can be estimated using the change in income for each percentile at two periods, t and $(t - 1)$,

$$g_t(p) = (y_t(p)/y_{t-1}(p)) - 1 = \left(L'_t(p)/L'_{t-1}(p) \right) (\gamma_t + 1) - 1$$

where $\gamma_t = (\mu_t/\mu_{t-1}) - 1$ is the growth rate in μ_t . If the Lorenz curve does not change between t and $(t - 1)$, $g_t(p) = \gamma_t$. If $g_t(p)$ is a decreasing function for all p , then inequality falls over time for all inequality measures, thus satisfying the Pigou-Dalton transfer principle. Due to the availability of data, in this paper we estimate the annual growth rate as we consider a first period in Germany and United Kingdom (2005–2008) that is distinct from Spain, France and Italy (2004–2008).

We are aware that the use of anonymous-GIC growth assessment is based on a cross-sectional comparison of the marginal distributions at the beginning and end of the time period considered, and it omits the issue of income mobility from the growth evaluation. We use anonymous-GICs due to data restrictions.³ Some other examples of the use of anonymous-GICs are Ravallion and Chen (2003), Kraay (2006), Ayala and Jurado (2011) and Ezzo (2012). This approach satisfies the symmetry axiom in the measurement of income inequality and poverty.

We classify households with children as all households with at least one dependent child. A dependent child is defined in EU-SILC as a household member aged 17 or less, or a household member aged between 18 and 24 who is economically inactive and living with at least one parent.⁴

² A value of 1 is assigned to the first adult in the household, 0.5 to each remaining adult, and 0.3 to each member younger than 14.

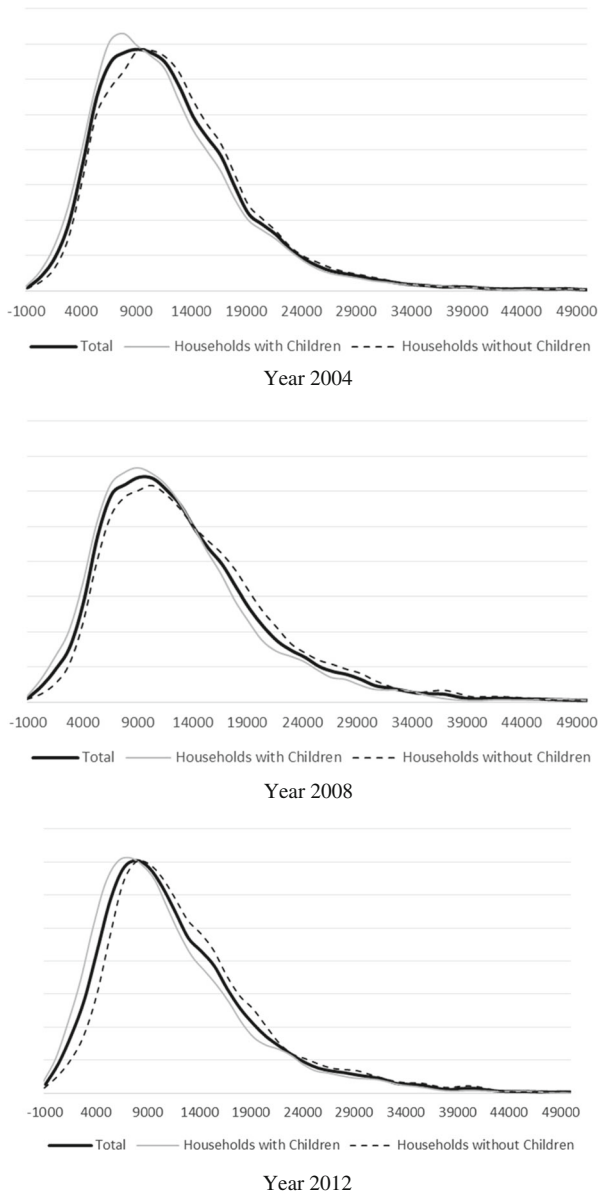
³ EU-SILC allows us to follow only individuals for solely 4 years, not the whole period (2004–2012). Moreover, as we are interested in the effects at the household level, we cannot follow a household as household is not a fixed unit over time (due to child birth, marriage dissolution, etc.).

⁴ Following the suggestion of the referees, we have considered two alternative definitions of households with children: first, restricting the study to single unit households with children, and second, only considering those with children aged under 18 and excluding those aged between 18 and 24 who are economically inactive. In both cases conclusions remain. These results are available upon request.

3 Income Growth for Households with and without Children in Spain

In this paper, we inquire as to whether income growth differs among percentiles of the distribution of households with and without children before and during the crisis. First of all, we start with the analysis of the incidence of households with and without children throughout the income distribution. Figure 1 shows estimates of separate income densities for both household types using an adaptive non-parametric kernel estimation for the equivalent income for years 2004, 2008 and 2012.

Fig. 1 Kernel densities for household income



We find that the density for households with children allocates a higher share of population at the bottom tail in all years and is characterized by having middle incomes more concentrated around a prominent mode, especially in 2004.⁵

The estimates of the GICs for the two periods and for households with and without children are presented in Fig. 2.⁶

As expected, we first find positive growth rates for the percentiles of the distribution of each type of household before the crisis once extreme percentiles are eliminated from the analysis, and negative growth rates along the income distribution for the percentiles of each type of household during the crisis.

Secondly, in the period 2004–2008, the growth rate varies little along the distribution for both types of household, although households with children experience less income growth than those without children. This shows that households with children benefited less from the income growth of this period.

The GICs for the period 2008–2012 generally show a positive slope, indicating that the overall experience was one of increasing inequality. There are, nevertheless, remarkable household type differences regarding both the intensity of income growth in the first percentiles and the slope of the GIC. Specifically, households with children in the first 70 percentiles experience a higher decrease in income than those without children, which is especially high in the lower end of the income distribution. In particular, real income growth rates for households with no children are similar from the 10th percentile to the 70th percentile, while for households with children the income growth is more negative the lower in the distribution. However, the trend in income growth rates are more similar for the remaining 30 percentiles, since for both types of household the change ranges between -3.6 and -1 %. This finding highlights that households with children were more affected by income decay during the crisis, especially those in the lower end of the distribution.

Overall, the main factors underlying this particular growth pattern in Spain during the crisis are the intensification of low earnings and low work intensity, as well as the relatively low distributive effect of the welfare state, particularly in relation to the most disadvantaged children (Rodríguez Cabrero 2014). Spain is a singular country among the old EU member states as it does not have universal cash benefits for families with children, but income-related cash benefits that are less generous and pro-poor than the EU average. According to TÀRKI (2010), the limited concentration of transfers on low-income families with children in Spain, combined with the low level of spending on transfers, means that such transfers serve to reduce the proportion of children at risk of poverty by less than a third of the EU average, which is – alongside Greece – the smallest amount of all member states. Moreover, during the crisis period, family-related benefits were reduced in Spain as result of demands for budgetary adjustment measures to decrease the public deficit. Specifically, unemployment benefits were tightened, childcare benefits for under-three children reduced and universal birth benefits eliminated. The share of the total social benefits spent on families and children declined from 6.3 to 5.4 % between 2008 and 2012 (Eurostat 2015).

⁵ We have also observed that the mean number of children by household is greater the lower in the income distribution.

⁶ Extreme percentiles are eliminated from the graph to increase the consistency of the comparison of the different GICs. Due to the possible contamination of data by outliers, truncation of the distribution is often used in comparisons of inequality, whether inter-temporal or spatial (Cowell et al. 1999).

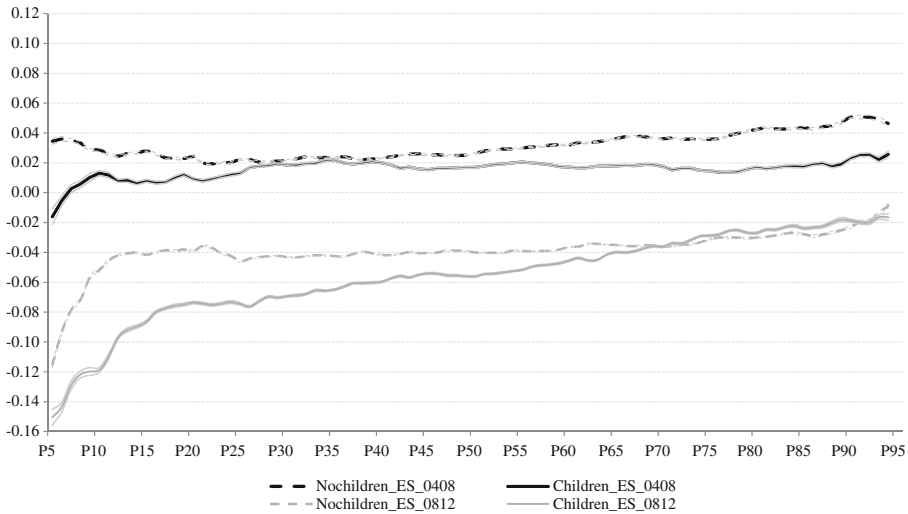


Fig. 2 GICs by household type for Spain, 2004–08 and 2008–12. *Note:* Confidence intervals are calculated at 95 % using the Delta method. *Source:* EU-SILC (2004, 2008, 2012)

4 Comparing Spain with other European Countries

It is worth comparing household income growth in Spain to other European countries. To this end, we choose the other four large European economies⁷: France, Germany, Italy and the United Kingdom. Although some common trends can be observed, exposure to the crisis obviously differed in each country. Whereas Spain and Italy were two of the most affected countries, experiencing evident fiscal problems and market pressure during the European debt crisis, other countries, such as France, Germany and the United Kingdom, were also affected but to a lesser extent (Table 1). In this sense, although Germany's economic growth was initially hard hit by the global crisis, its unemployment rate has significantly decreased since 2009 while child poverty rates have barely increased, with at-risk-of-poverty rates for households with dependent children considerably lower than those for households without dependent children. France and the United Kingdom, on the other hand, have undergone appreciable increases in unemployment, although they have been more limited than other European countries. In terms of child poverty, nevertheless, these countries differ as the poverty rate for households with dependent children grew in France and decreased in the United Kingdom, as for households without dependent children. In the case of Italy, its economic problems have been more similar to Spain's during the crisis, although with more moderate increases in unemployment than in Spain, and both countries display increases in the at-risk-of-poverty rate for households with dependent children and decreases for households without dependent children.

Figures 3, 4, 5, and 6 present the GICs of France, Germany, Italy and the United Kingdom, respectively, for the period considered. We observe in Fig. 3 that income growth rates in France are positive for almost all percentiles in both periods and present

⁷ The analysis has been replicated for the EU-15 countries. For the sake of simplicity, however, we present the results of these four countries plus Spain. All results are available upon request.

Table 1 Economic growth, unemployment rate and at-risk-of-poverty rates for households with and without dependent children (2008–2012)

Country	Year	Real GDP growth rate	Unemployment rate	At-risk-of-poverty rate: households with dependent children	At-risk-of-poverty rate: households without dependent children
DE	2008	1.1	7.4	13.1	17.0
DE	2009	-5.6	7.6	13.0	17.4
DE	2010	4.1	7.0	14.6	16.5
DE	2011	3.6	5.8	13.7	17.5
DE	2012	0.4	5.4	13.5	18.0
ES	2008	1.1	11.3	24.2	17.1
ES	2009	-3.6	17.9	24.8	15.7
ES	2010	0.0	19.9	25.2	16.1
ES	2011	-0.6	21.4	23.8	17.3
ES	2012	-2.1	24.8	25.8	15.6
FR	2008	0.2	7.4	14.0	10.9
FR	2009	-2.9	9.1	14.8	10.6
FR	2010	2.0	9.3	15.7	10.6
FR	2011	2.1	9.1	16.6	11.0
FR	2012	0.2	9.8	16.8	11.3
IT	2008	-1.0	6.7	22.0	15.4
IT	2009	-5.5	7.7	21.8	15.1
IT	2010	1.7	8.4	22.6	13.9
IT	2011	0.6	8.4	24.3	15.0
IT	2012	-2.8	10.7	23.8	15.2
UK	2008	-0.3	5.6	20.3	18.0
UK	2009	-4.3	7.6	18.3	16.1
UK	2010	1.9	7.8	18.2	16.0
UK	2011	1.6	8.1	16.5	15.9
UK	2012	0.7	7.9	17.3	14.8

Source: Eurostat (2015)

a smooth U-shape for the period 2004–2008. We also note that households with children present higher income growth rates at the top of the distribution, while the opposite is true at the bottom. In the period 2008–2012, the GIC turns into an inverted and even smoother U-shape curve still having positive growth rates for all percentiles except the bottom and top 10 %. In this period, differences in growth rates for both household types are small.

In Germany, growth rates in the period 2005–2008 were inequality increasing, higher for households with children, and negative only in the lower tail of the distribution (Fig. 4). In the period 2008–2012, however, the GIC does not display a significant effect on inequality, except for the few first and last percentiles in households without children. Note that real income growth rates for this period are around zero and differences in income growth rates for households with and without children

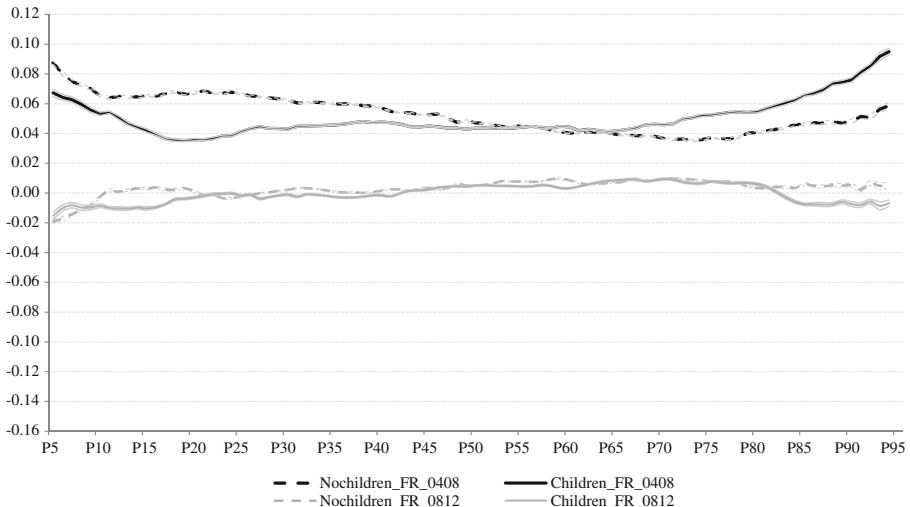


Fig. 3 GICs by household type for France, 2004–08 and 2008–12. *Note:* Confidence intervals are calculated at 95 % using the Delta method. *Source:* EU-SILC (2004, 2008, 2012)

are negligible. In summary, we can state that the effect of the crisis does not have as dissimilar effect for households with and without children as in Spain.

We observe that income growth in Italy before the crisis was inequality reducing, as income growth was higher for the lowest ten percentiles, and even more for households with children (Fig. 5). In the period 2008–2012, as in Spain, income decayed for all percentiles, which is more evident for households with children, and the income change was inequality increasing. As can be inferred from the above, households with children at the lower end of the distribution seem most sensitive to the economic cycles, as they display more growth before the crisis and more decay during it.

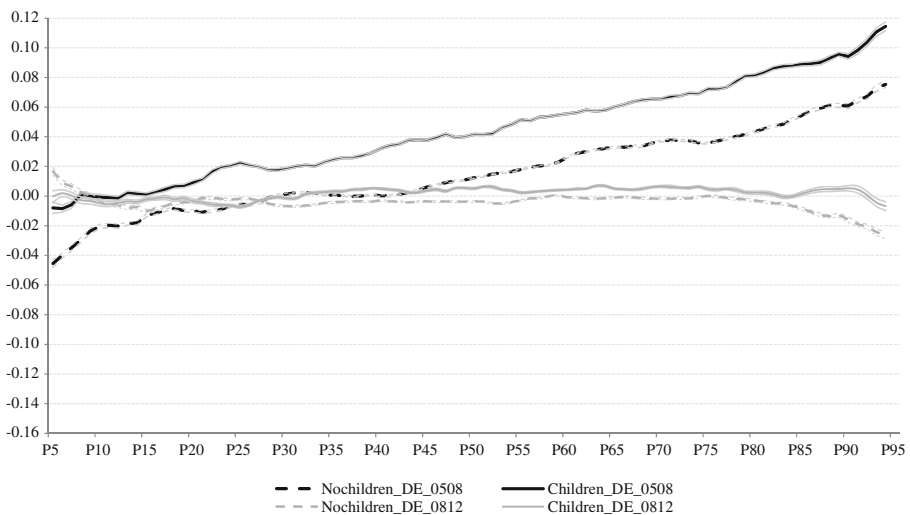


Fig. 4 GICs by household type for Germany, 2005–08 and 2008–12. *Note:* Confidence intervals are calculated at 95 % using the Delta method. *Source:* EU-SILC (2005, 2008, 2012)

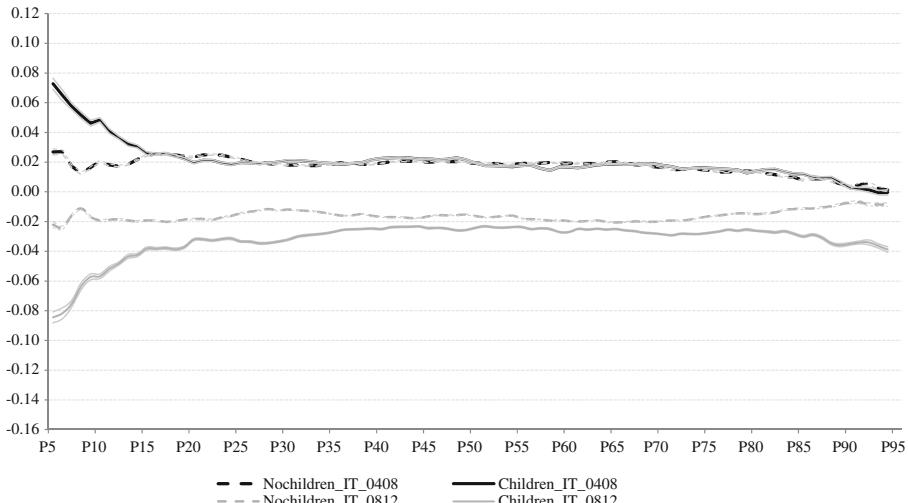


Fig. 5 GICs by household type for Italy, 2004–08 and 2008–12. *Note:* Confidence intervals are calculated at 95 % using the Delta method. *Source:* EU-SILC (2004, 2008, 2012)

Finally, we find that, in the period 2005–2008, households with children in the United Kingdom experienced a larger decrease in income along the distribution than households with no children (Fig. 6). As regards the latter type of household, we also observe that the income growth rate is positive at the bottom 10 percentiles. In both cases the income changes were inequality decreasing. In the period 2008–2012,⁸ income decreased for all types of household, and even more for those with children. In both types of household income growth rates were inequality reducing.

From the comparisons among countries, we observe that before the crisis Spain displayed lower income growth rates than France and Germany for both types of household, similar growth rates to Italy and higher growth rates than the United Kingdom. During the crisis, the decrease in income was found to be larger than any other country, especially for households with children. Additionally, the income changes experienced by Spanish households were inequality increasing, while in the rest of countries this is not so evident. We also notice that the differences before and during the crisis are more significant for the case of Spain, followed by Italy and France.

Apart from the differences in the severity of the crisis and its uneven consequences on each country's labor market, the disparities in social protection systems and changes that occurred during the crisis period – particularly concerning child benefits – are fundamental in explaining the contrasts observed in the patterns across countries.

In general, taking into account child poverty outcomes, children in jobless households, in-work poverty and effectiveness of income support, TÀRKI (2010) classifies France, Germany and United Kingdom among the most favored European countries, whilst Spain and Italy are among the countries with the worst performance, thus emphasizing the fact that children in the latter countries experience high levels of in-

⁸ Note that there was a break in series in 2012 for the United Kingdom, so the results for this country have to be interpreted with caution. We have made a sensitivity analysis to check for the robustness of results considering the period 2008–2011 and main conclusions remain.

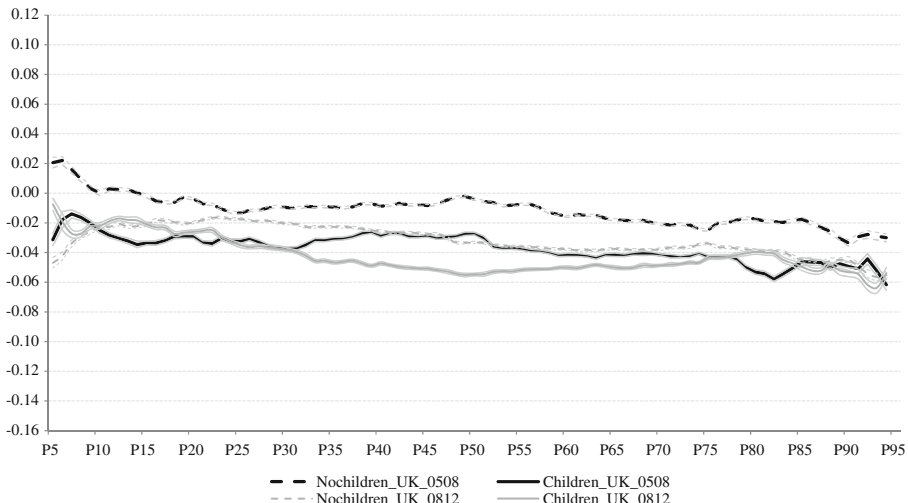


Fig. 6 GICs by household type for the United Kingdom, 2005–08 and 2008–12. *Note:* Confidence intervals are calculated at 95 % using the Delta method. *Source:* EU-SILC (2005, 2008, 2012)

work poverty combined with a low level of social transfers and a lack of affordable childcare provision.

Focusing on social transfers and their connection with our previous results, it is evident that child benefits play an important role in low-income households with children, although they may be insufficient to protect low-income earners and their households against poverty. There are significant differences among the countries examined in this regard. According to Van Lancker and Van Mechelen (2015), France and the United Kingdom have universal cash child benefit systems in which means-tested benefit schemes supplement the universal benefits provided to low-income families with children (targeting within universalism). However, Spain and Italy provide benefits to children through a selective system in which eligibility is restricted to specific categories of households with children based on certain conditions, essentially having a low income. Along with Spain, Italy does not have universal cash benefits for families with children, but income-related cash benefit schemes.

The case of Germany differs somewhat. The majority of European countries combine cash benefits (within a mix of universal and targeted policies and programs) with tax benefits for households with children. Tax benefits include tax allowances and tax credits.⁹ Van Mechelen and Bradshaw (2013) emphasize that the child benefit package in Germany consists mainly of tax benefits. Germany replaced its universal cash benefit scheme in 1996. Families with children are presently taxed in the most favorable way by making use of the tax credit in most cases. In practice, this model is functionally very similar to the universal cash child benefit.

Overall, the volume of monetary funds for cash benefits with tax benefits for households with children is relatively high in Germany, although in policy terms it is

⁹ Tax allowances are deducted from taxable income while tax credits are subtracted from the amount of tax due. Tax credits may be wasteable (they are only used if tax liability is positive) or non-wasteable/refundable (they can be paid as cash transfers to the taxpayer whenever the benefit exceeds tax liability). Both cash and tax benefits usually vary according to the age and number of children (Marx et al. 2015).

argued, among other criticisms, that there does not exist a national integrated strategy against child poverty (Hanesch and Darmstadt 2014). According to our empirical evidence, the German system generally seems to provide comparatively better outcomes in income growth for households with children, particularly during the expansionary period.

To understand the differences in income growth of households across countries during the Great Recession it is important to examine the dissimilar policy reactions of governments. As a general tendency, European Union governments implemented stimulus fiscal packages in the early stages of the crisis that respected child and family policies – in some cases they even applied stimulus measures with noteworthy implications for children (see Martorano 2014) – though the worsening of economic conditions plus the pressures coming from financial markets pushed them into a process of fiscal consolidation in 2010–2011. Some governments preferred to increase taxes while others preferred to reduce public expenditure, including cutting benefits and services for children and their families. This shift from stimulus to consolidation contributed to increase inequality and worsen the living conditions of children in some European countries.¹⁰ In particular, the cuts affected some ‘working-age transfers’, such as child and family, unemployment and disability benefits, with old-age benefits being protected to a greater extent (OECD 2014b). In this line, UNICEF (2014) stresses that 2009 marked a turning point in family- and child-related spending as a share of total spending. While the contribution of overall social spending to public spending leveled off and then began to rise again, the share of that spending on families and children clearly declined in the OECD from 2010 onwards. Even though unemployment benefits increased, as well as other social protection spending that acts as an automatic fiscal stabilizer in times of recession, the decrease in spending on families and children in a context in which the contribution of overall social spending leveled off or even rose reveals that the share spent on family- and child-related needs were a lower priority in many countries.

According to Chzhen et al. (2014), there have been numerous changes in tax and benefit rules related to the presence of dependent children in the household since 2010. The overall trend is towards more narrowly targeted benefits with generosity levels maintained or even increased. If we examine the recent significant changes to family-related benefits (family, child, birth, childcare, tax credits and tax breaks), we observe that a number of EU countries implemented some wide-ranging family-related benefit cuts, among others, Spain (as pointed out above regarding universal birth benefits and childcare benefits) and the United Kingdom. In particular, the United Kingdom restricted child benefits (including the abolishment of the ‘Health in Pregnancy Grant’), tax credits and childcare benefits through several reforms over 2009–2013. However, the distributive impact of these measures may have been compensated by other circumstances, such as the increasing number of employed persons since 2010, so that the income growth rates for the United Kingdom do not differ much before and during crisis.

For the rest of the countries in our study, most family-related benefits were maintained or even increased. In particular, they were maintained in France until 2014, when

¹⁰ In Spain and Italy, through the Gini coefficient for households with children, we observe that transfers system help to mitigate the increment in inequality, but insufficiently to offset the more unequal distribution of incomes before transfers during the crisis.

some family benefits and child tax allowances were reduced, which may explain why income growth rates are not negative almost along the entire distribution even during the crisis period. In Italy, they have been preserved and in 2013–2014 childcare and family benefits were improved, since cash transfers to low-income income families were extended to both EU and non-EU migrants. The case of Germany is even more remarkable, where contrary to the trend in most European countries, more generous child benefits and child tax benefits were implemented in 2010 and more generous means-tested child allowances have been provided since 2014. Again this could allow us to interpret the positive income variation rates in both periods.

We now try to deepen the analysis of our data by estimating average transfers received per person in the countries and years analyzed, and by performing a study of the inequality in the distribution of transfers over the income distribution to check if the transfers have low-income persons as the main breadwinners. We also analyze the degree of concentration of transfers on households with children (Table 2).¹¹

We find that the United Kingdom, Germany and France are the countries with the highest mean social transfer per person, and the highest family/child-related allowances per person along the period analyzed, as suggested by TÄRKI (2010). In addition, social transfers received by households with children in relation to households without children are lower in Spain and Italy, showing less institutional sensitivity towards households with children. Moreover, social transfers received by the last quintile of households with children are higher than those received by the first quintile in these two countries, pointing out a higher concentration of social transfers in the upper part of the distribution. Additionally, in the Spanish case, apart from the low level of family/children-related benefits in Spain, these benefits in particular seem to be highly concentrated in the upper part of the distribution. The last quintile receives between 3.5 and 8 times more family-related allowances than the first quintile. This may partly explain why the decrease pattern in Spain for households with children is inequality increasing.

5 Concluding Remarks

This paper shows that income growth performance differs between households with and without children in both expansive and recessive periods. Generally speaking, Spanish households with children benefited to a lesser extent during the period of expansion and were affected to a greater degree by the economic crisis. In fact, they benefited less from income growth in the period 2004–2008 and experienced more income decay in the period 2008–2012. Moreover, the positive slope of the GIC for 2008–2012 seems to indicate that the overall experience has been one of increasing inequality in the last period, and even more for households with children. These findings corroborate that child-sensitive social protection policies in Spain were insufficient both before and during the crisis.

¹¹ Some values may differ from official figures published by Eurostat as we use EU-SILC data and there is no information on administrative cost of transfers.

Table 2 Social transfers

Country	Year	Social benefits			Family/children allowances	
		Mean	Child/No child	Child Q5/Q1	Mean	Child Q5/Q1
DE	2005	2072	2.03	0.49	1759	0.71
DE	2008	2046	1.93	0.53	1712	0.80
DE	2012	1950	2.16	0.66	1952	1.05
ES	2004	766	1.12	1.92	168	8.07
ES	2008	689	0.97	1.46	100	3.50
ES	2012	981	1.09	0.84	77	5.51
FR	2004	2033	1.67	0.51	1204	0.68
FR	2008	2111	2.00	0.54	1366	0.58
FR	2012	1930	1.94	0.44	1352	0.59
IT	2004	909	1.15	2.67	313	0.58
IT	2008	903	1.52	2.05	349	0.99
IT	2012	848	1.24	1.40	278	0.60
UK	2005	2405	2.53	0.34	1823	0.64
UK	2008	1991	2.42	0.31	na ^a	na ^a
UK	2012	2298	2.24	0.20	na ^a	na ^a

Social transfers are net of old-age and survivor's benefits, and family/children related allowances

^a *na* not available. The United Kingdom does not provide net family/children related allowances comparable to the rest of countries

Source: EU-SILC (2004, 2005, 2008, 2012)

The distributional effects on household income in Spain compared to those of France, Germany, Italy and the United Kingdom reveal significantly different patterns for households with children. Overall, we observe that Spain displayed lower income growth rates than France and Germany for both types of household before the crisis, while the decrease in income has been larger during the crisis than in any other country, especially for households with children. Additionally, the income changes in Spanish households are inequality increasing to a considerably greater extent than in other countries.

All in all, although the differences in household income growth across countries depend on a variety of socioeconomic and institutional factors, it seems obvious that the differences in social protection systems and their redistributive impacts, in particular those referring to family-related benefits as well as public policies to cope with the crisis, are key elements that should be taken into consideration. In this context, it is possible to argue that not only did the crisis itself affect the most vulnerable children, but also the policies implemented by the European countries. Furthermore, many countries with higher levels of child vulnerability, as is the case of Spain, should have strengthened their safety nets during the previous period of economic expansion and hence guarantee an appropriate balance between universal and targeted policies aimed at supporting the most disadvantaged children in order to reduce child poverty risk and its associated problems.

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