ThE Papers

Dpto. Teoría e Historia Económica
Universidad de Granada

Working Paper n. 15/02

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May, 2015

Assessing the impact of social transfer income packages on child poverty: A European cross-national perspective

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Abstract

Children are generally at a higher risk of poverty than the population as a whole, although the mechanisms that lead to their socioeconomic vulnerability vary widely across European countries. This paper assesses to what extent some general characteristics of social transfer systems explain the variation in levels of child poverty across 30 European countries. In contrast to previous studies that mainly focus on the redistributive impact of social transfers, we examine several indicators of the *generosity, efficiency* and *incidence* of social transfers. Using a multilevel framework, we find lower child poverty rates in countries with more generous and more efficient social transfer that focus to a larger degree on children, even after controlling for country living standard and labour market performance. We confirm previous results that find that the variation in child poverty is mainly due to contextual factors and to a lesser degree to individual factors.

Keywords: Child poverty, EU-SILC, European country, multilevel analysis, social transfers.

JEL: D31, I32, I38

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1. Introduction

Child poverty has currently become one of the most important topics requiring attention in today's Europe. There is an imperative need to reduce child poverty in order to reach the European Union (EU) headline poverty reduction target set out by the Europe 2020 strategy. It is well documented in the literature that, on average, around one out of every five children is living in poverty in the EU (see Atkinson and Marlier, 2010; TÁRKI, 2010, 2011; among others). This highlights the paradoxical reality of child poverty in the developed world, aggravated in recent years by a growing income inequality.

It can be stated in general that the extent to which child characteristics manifest themselves in high poverty rates mainly depends on the household and institutional settings in which those characteristics are experienced, revealing the need to combine individual and country factors in the study of poverty. Nevertheless, there are relatively few comparative studies that address both levels in the analysis of the potential impact of transfer policies on child poverty. Previous analyses have most often focused on macro relationships between institutions and outcomes, underlining the crucial role of family policy transfers in the alleviation of child poverty (Kangas and Palme, 2000). However, most of these studies have neglected the links between country-level factors and the micro-level characteristics of children.

In this context, it is a fact that the mechanisms that lead to the socioeconomic vulnerability of children vary widely across European countries, making child poverty rates differ. A substantial share of that variation is precisely due to cross-national diversity in core institutions, including labour market structures and especially transfer policies (Gornick and Jäntti, 2012). In this way, earlier research has particularly focused on the impact of child benefits on child poverty, feeding the debate on targeting versus universalism of child benefits in terms of poverty reduction (Van Lancker and Van Mechelen, 2015).

The purpose of this article is to address the potential impact of social transfer income packages on child poverty from a comparative perspective in order to assess to what extent social transfers explain European cross-national variations in child

poverty levels. To this end, we simultaneously combine demographic and socioeconomic characteristics of children and country-level factors related to social transfers, the labour market and country living standard.

We make use of internationally comparable micro-data on living conditions from the European Union Statistics on Income and Living Conditions (EU-SILC) for the 2012 wave, as well as some significant contextual variables from Eurostat for 30 European countries. This paper extends existing research on the identification and decomposition of the determinants of cross-national variations in child poverty by dealing with some of the shortcomings of earlier studies, mainly based on counterfactual analysis. In comparison with other recent studies, we adopt a more comprehensive framework to evaluate the effect of national social transfer systems in reducing child poverty and provide empirical evidence from a broader analysis in terms of countries, types of household, age range of the children examined and the variety of indicators to describe different aspects of the social transfer system. In particular, we introduce several output indicators of social transfers related to *generosity, efficiency* and *incidence* and test their significance even after taking into consideration labour market and overall economic performance in order to shed further light on significant characteristics of social transfer systems to reduce child poverty risk.

To facilitate an approach that integrates individual and contextual dimensions, we take advantage of multilevel techniques. Multilevel models provide a suitable framework for accounting for these different levels of variation, allowing us to tackle household, parent and country characteristics simultaneously. In doing so, our central research questions are: do output indicators of social transfers explain the variation in levels of child poverty among European countries? Does the previous answer hold if we control for indicators of labour market performance or for country living standard? Do demographic and socioeconomic characteristics of the parents and household composition explain variations in child poverty among European countries? Which of these factors contribute most to the variation in child poverty levels across nations? The value of providing an answer to these questions is, on the one hand, to offer further evidence of the features of social transfer policies that help

most in reducing child poverty rates and to identify the characteristics of parents or households that are highly correlated with high child poverty risk in order to increase support to them. On the other hand, the results can help policy makers determine the policy measures that might be implemented to reduce child poverty rates and to stimulate convergence in child poverty rates across European countries.

The remainder of the paper is as follows. Section 2 reviews the literature and summarises the main findings. Section 3 describes the data and explanatory variables used in this work. Section 4 presents the methodology. Section 5 discusses the results, and section 6 concludes.

2. Background

Previous literature has shown that poverty risk in general, and child poverty risk in particular, is shaped by the demographic and socioeconomic characteristics of household members. To begin with, it is very well documented that children are significantly more likely to be poor when they live with only one parent. It is the absence of a resident partner that leads to the lone parent bearing sole or primary responsibility for the well-being of children, although non-resident parents may still provide financial and emotional support to them (Heuveline and Weinshenker, 2008; Social Protection Committee, 2008; Tai and Pixley, 2008; Atkinson and Marlier, 2010; Chzhen and Bradshaw, 2012).

Chen and Corak (2008) found that the proportion of children in jobless households is strongly correlated with child poverty rates. Whiteford and Adema (2007) and TÁRKI (2010) also highlighted that the stronger the labour market attachment of household members, the lower the poverty risk of children.

Some studies have shown that child outcomes differ greatly at different stages of childhood. TÁRKI (2011) pointed that the incidence of poverty is highest among children aged 12–17. This result reflects different developmental stages and childcare arrangements.

Moreover, child poverty risk is greater for children living in rented and subsidised housing than for those whose parents are homeowners, since child well-being is

directly affected by the type and quality of the dwelling where the child lives and, presumably, owner occupied housing is of better quality than rented or subsidised housing (Cantó and Mercader-Prats, 2002; TÁRKI, 2011) and linked to more affluent households (Burrows, 2003).

Eurostat (2013) indicates that the risk of poverty is higher in thinly populated areas of the EU than in densely and intermediate populated ones, suggesting a strong location effect in the risk of poverty.

Furthermore, it has been shown that child poverty risk is significantly shaped by the demographic and socioeconomic characteristics of parents. Several authors advocate placing children at a somewhat higher risk of poverty depending on household's age composition (Rainwater and Smeeding, 2003; Chen and Corak, 2008; Chzhen and Bradshaw, 2012). Brady, Fullerton and Moren (2009) found that households headed by young or old people are particularly vulnerable to poverty. According to TÁRKI (2010), children with a young mother are slightly over-represented among those at risk of poverty.

Other studies indicate the importance of parents' education, concluding that children that live with parents with a lower level of education are more likely to be poor than those whose parents have a higher level, since household income is influenced by the educational level of its members (Chen and Corak, 2008; Chzhen and Bradshaw, 2012; Gornick and Jäntti, 2012). In turn, parents' labour market participation is a fundamental determinant of child poverty, given that employment-generated income is the most important source of the household budget (Ferrarini, 2006; Chen and Corak, 2008; Munzi and Smeeding, 2008; Gornick and Jäntti, 2012). In addition, TÁRKI (2010) showed that when the mother is employed full time, children face less than half the average risk of poverty.

According to Strelitz and Lister (2008) and Atkinson and Marlier (2010), there is a significant relationship between poverty and health status and disability such that the presence of individuals with bad health and/or disabilities in the household increases the level of necessary resources for a household to maintain its standard of living, since these households face extra costs.

There is also evidence of a greater risk of poverty among children whose parents are immigrants, especially if the parents were born outside the EU (TÁRKI, 2010). Specifically, TÁRKI (2011) emphasised the substantial gap between the situation of non-migrant children and those with parents born in non-EU countries.

In addition to the demographic and socioeconomic characteristics of households, some studies highlight to what extent structural and institutional aspects particular to each country go some way towards explaining the wide variation in child poverty levels among countries. Researchers have pointed out the importance of social policy, particularly financial assistance aimed at reducing the risk of child poverty (Bradbury and Jäntti, 2001; Oxley *et al.,* 2001; Kamerman *et al.*, 2003; Rainwater and Smeeding, 2003; Waddoups, 2004; Ferrarini, 2006; Misra *et al.,* 2007; Scott, 2008; Bäckman, 2009; Bäckman and Ferrarini, 2010; Chzhen and Bradshaw, 2012; Engster, 2012). In this sense, there is ample evidence that generous public support for families is significantly correlated to lower child poverty rates in countries where such policies are implemented (Ferrarini, 2006; Engster and Stensöta, 2011; Engster, 2012).

Other contextual factors having a particularly strong effect on child poverty are related to the labour market (Solera, 2001; Brady, 2006; Whiteford and Adema, 2007; Chen and Corak, 2008; Bäckman, 2009). In this context, countries with higher unemployment rates show higher child poverty rates.

It is worth noting that, in line with previous analyses such as Bradbury and Jäntti (2001), Rainwater and Smeeding (2003), Chen and Corak (2008) and Gornick and Jäntti (2012), the factors that matter within countries are not necessarily the same as those that matter across countries and the most important explanatory factors are institutional, not demographic.

Similarly to our work, although under a narrower framework, three studies have examined the impacts of social transfers on child poverty across countries, combining the micro and macro-economic perspectives through statistical multilevel modelling, namely Bäckman and Ferrarini (2010), Chzhen and Bradshaw (2012) and Chzhen (2014).

Bäckman and Ferrarini (2010) used the Luxembourg Income Study (LIS) database to analyse the role transfer policies play in families of 21 high- and middle-income countries. They restrict their analysis to pre-school children, as they argue that these children are most affected by transfer policies for families. Using a multilevel regression approach, their results indicate that greater generosity of all types of family policy transfers at the macro level can be linked to lower poverty risks of households with young children at the micro level. At the same time they put into context these results and point out that future research should also endeavour to connect transfers to other labour market aspects.

Chzhen and Bradshaw (2012) measured the risk of child poverty exclusively in lone parent families. They conclude that lone parent and household characteristics do not explain all of the variation in the risks of child poverty. Using a multilevel logistic regression framework, they found evidence of significant contextual country-level effects. The 24 countries studied differ in the extent to which their welfare states alleviate child poverty in lone parent families with out-of-work social transfers, although they do not control for labour market conditions.

In a recent study, Chzhen (2014) used separate multilevel models for the years 2008-2012 to analyse the effects of minimum income safety nets on children's poverty risks during the crisis, controlling for relevant household level and macroeconomic characteristics. The author found that children were significantly less likely to be poor in countries with more generous minimum income protection schemes in 2008-2012. However, once total social spending and working-age unemployment were accounted for, the effect of the minimum income protection indicator was no longer statistically significant.

Other studies do not explicitly combine the micro and macro perspectives in the analysis of variations in child poverty across countries. These studies have found that both national labour market patterns and social policy factors matter substantially, with this influence occurring via complex and interacting mechanisms (Bradbury and Jäntti, 2001; Rainwater and Smeeding, 2003; Chen and Corak, 2008). Chen and Corak (2008, p. 552) summed this up with a cautionary note to policy makers: "there is no single road to lower child poverty rates. The conduct of social

policy needs to be thought through in conjunction with the nature of labour markets".

In essence, we can conclude that comparative studies mainly investigate macro relationships and thereby have less developed macro-to-micro perspectives that integrate individual and contextual dimensions. In this paper we develop a macro-to-micro perspective that takes into consideration various indicators of social policy effects to describe a wider set of aspects of the social transfer system than previous studies. In addition, our study is broader in term of countries, types of household, and the age range of the children analysed than preceding works. We jointly examine the effect of households' demographic and socioeconomic characteristics and a number of contextual factors on child poverty risk, evaluating the effect of social transfer systems and verifying this effect even when we control for other key country-level factors related to country standard of living and labour market performance.

3. Data and variables

3.1. Data

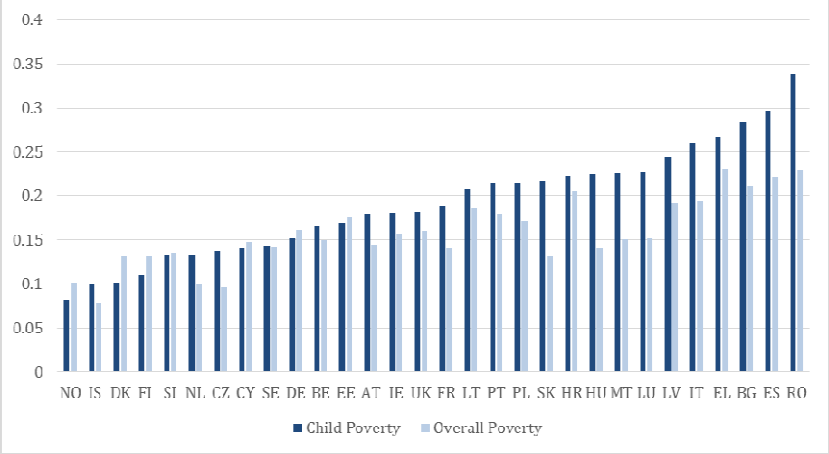
In this paper we use the EU-SILC data set, which is an instrument aimed at collecting timely and comparable cross-sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions. Contextual data stem from statistics collected by Eurostat for the countries involved in the analysis.

We conduct an original analysis with the 2012 wave dataset for 30 European countries (EU-28 plus Iceland and Norway). Our analysis is confined to children, defined as those under 18 years old living in the household unit (see Chen and Corak, 2008; Chzhen and Bradshaw, 2012; Gornick and Jäntti, 2012; among others). The analysis pools the data from the 30 countries into one merged file that contains 66,895 households with 112,982 children. Following Eurostat, our poverty measure

is based on annual disposable household income.[2] To adjust for household size we use the modified Organisation for Economic Co-operation and Development (OECD) equivalence scale.[3] The unit of analysis is the child and the unit of measurement is the household, as a child is classified as poor if he/she lives in a household with disposable household equivalent income below 60 per cent of the contemporary median equivalent income of the country where the household is located (poverty line recommended by Eurostat).

Figure 1 displays child poverty rates for the 30 countries. We observe a significant variation in child poverty rates across countries in 2011 that range from 8.18% to 33.88%. Romania, Spain and Bulgaria display the highest child poverty rates, while the lowest ones are found in Norway, Iceland and Denmark. As a group, 19.11% of all children in these countries are poor.

Figure 1 Child poverty rates



Note: AT: Austria; BE: Belgium; BG: Bulgaria; CY: Cyprus; CZ: Czech Republic; DE: Germany; DK: Denmark; EE: Estonia; EL: Greece; ES: Spain; FI: Finland; FR: France; HR:

[2] Disposable household income is defined as the sum, for all household members, of gross personal income components plus gross income components at the household level minus regular taxes on wealth and income, social insurance contributions and regular inter-household transfers paid. Income data correspond to the year prior to the survey for all countries except the UK and Ireland.

[3] A value of 1 to the first adult in the household, 0.5 to each remaining adult, and 0.3 to each member younger than 14.

Croatia; HU: Hungary; IE: Ireland; IS: Iceland; IT: Italy; LT: Lithuania; LU: Luxembourg; LV: Latvia; NL: The Netherlands; NO: Norway; PL: Poland; PT: Portugal; RO: Romania; SE: Sweden; SI: Slovenia; SK: Slovakia; UK: United Kingdom. Source: EU-SILC (cross-sectional version 2012-1). Sorted by child poverty rate.

We observe that most of the countries display a higher poverty rate for children than the overall population, with the remarkable exceptions of Denmark, Finland and Norway. In general, there is a significant positive correlation between child poverty rates and overall poverty rates. We also find that countries with higher child poverty rates present a large gap between child and overall poverty rates.

3.2. Explanatory variables

Literature shows that children's poverty is determined by the demographic and socioeconomic characteristics of the household as a whole and of their parents, as well as by certain contextual factors. As all children in the same household share the same particular characteristics of the household, we use data from households – stored in the household file – combined with data on the characteristics of fathers and mothers of children, recorded in the individual file.[4]

We consider the following explanatory variables related to the household as a whole. The variable *lone-parent*, which takes the value 1 if the household is a single parent household with one or more dependent children in order to capture the effect of lone parenthood on child poverty risk. The variable *jobless* identifies those households where no one works. The number and age of children within the household is captured through four variables that contain the number of children in the household within a range of years: younger than three years old, *Nch_2*; between three and five years old, *Nch_3_5;* between six and eleven years old, *Nch_6_11*; and between twelve and seventeen years old, *Nch_12_17*. We include the variable

[4] To avoid methodological problems arising from the fact that children living in the same household are not statistically independent observations, we switch from the individual to the household level for the regression analyses.

owner, that takes the value 1 if the outright owner of the accommodation is a member of the household (i.e., if the owner has paid off the mortgage on the main dwelling). Finally, the variable *thinly populated*, which takes the value 0 if clusters of contiguous grid cells of 1 km^2 have a density of at least 300 inhabitants per km^2 and a minimum population of 5,000, and 1 otherwise.

Besides household variables, researchers suggest that the characteristics of fathers and mothers are very relevant in explaining child poverty rates. We classify children as living with a *young father/mother* if the father/mother is 30 years old at most, and as living with *old father/mother* if the father/mother is older than 65 years old. Secondly, we consider the variable *secondary father*, which takes the value 1 if the father has completed secondary or post-secondary education,[5] and equivalently for *secondary mother*. We also introduce the variable *tertiary father*, which takes the value 1 if the father has completed the first or second stage of tertiary education, and equivalently for *tertiary mother*. Thirdly, parents' labour market participation is considered through the binary variables *father/mother working* full-time. We also incorporate the binary variables *chronic father/mother* in order to indicate if the father or mother suffers from any chronic (long-standing) illness or condition. Finally, we categorise children as living with *EU immigrant father/mother* and *non-EU immigrant father/mother* even though these categories appear to be far too large and heterogeneous, since the sample sizes would need to be much higher to produce a more detailed breakdown.

Our main focus is to analyse the effect of social transfers. We present a set of contextual variables related to social transfers, as well as labour market and country's mean income, whose influence can be significant in child poverty rates according to the literature. All these variables introduced in the model are for 2011, which is the reference period for the household income.

Note that to examine the role of transfers in reducing poverty among children, we consider transfers other than old-age and survivor's benefits.[6] There are other ways

[5] This includes lower, upper or post-secondary non-tertiary education.

[6] Social transfers (excluding pensions) cover unemployment benefits, sickness benefits, disability benefits, education-related allowances, family- or child-related allowances, housing

to assess the generosity of social transfer in the EU, such as the model family method (Van Mechelen *et al*., 2011; SaMiP in Nelson, 2007, 2010). As discussed in Eardley *et al.* (1996), there are a number of problems with this method; the main one being that it works with a limited number of family types which vary greatly across countries and thus a representative sample for one country may not be representative of all of them. Moreover, data on the model family method is not available for the whole set of countries under consideration in this study. Consequently, we introduce social transfers and, in order to overcome some of the limitations of social transfers discussed in the literature, the influence of demographic and macroeconomic circumstances on poverty are controlled for using multilevel regression models.

It is worth stressing that in all countries except Greece, Spain and Poland, more than 60 per cent of families with children receive social transfers. These numbers are smaller if we refer to the proportion of overall families that receive transfers, although the same three countries have the smallest values. In all countries, child poverty rates would be higher if there were no transfers (Figure 2), although this analysis disregards any behavioural consequences of withdrawing them. These transfers appear to be most effective in reducing poverty in Norway, Iceland, Finland, Ireland, the UK, Denmark and Sweden, lowering child poverty by 55 per cent or more. Overall, social transfers make more difference to child poverty rates in the older EU member states, with the exception of Greece, Italy and Spain, whose transfers are some of the least effective. This is not surprising as social transfers reach fewer children in these countries.[7]

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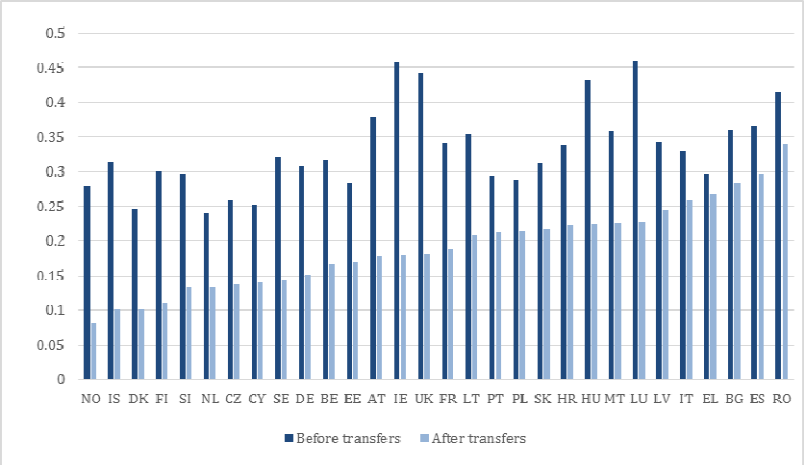
allowances and other social assistance benefits not classified elsewhere. They do not capture the impact of the tax system. We will control for the rate of unemployment in the country to overcome the possible effect of the business cycle on the amount of social transfers.

[7] It should be remembered that social transfers include unemployment benefits, so they may appear to be most effective in countries where a larger share of parents is unemployed.

Figure 2 Child poverty rates before and after transfers



Source: EU-SILC (cross-sectional version 2012-1). Sorted by child poverty rate after transfers.

Assessment of the effect of transfers can be based on many output indicators. Cash spending as a percentage of Gross Domestic Product (GDP) is the most widely used measure of how much "effort" is being made to directly redistribute income. Nevertheless, this is an imperfect indicator of policy intent and design. A high level of spending may result from very generous benefits flowing to small numbers of people, and not necessarily people at the bottom end of the distribution. That is why we complement this indicator with two others that capture efficiency and the children in poverty target. In particular, we consider the following indicators relative to transfers: *generosity,* which denotes the level of social transfers measured as total expenditure on transfers in relation to GDP as provided by Eurostat; *incidence* of transfers, which is estimated in the sample to measure the share of transfers received by children at risk of poverty relative to their proportion of all children and characterises the level of vertical redistribution towards children in low-income households in a country; and *efficiency*, which is calculated from Eurostat data to

measure the reduction in poverty achieved through transfers[8] per unit of expenditure in each country. We expect that children who live in countries with a social transfer system having a high level of generosity, incidence and efficiency are at a lower risk of poverty.

We also control for differences in the economic affluence of countries by introducing the variable GDP, which is the per capita GDP expressed in purchasing power standard as a percentage of the EU-28 average in order to control for country-level living standard effect on child poverty risk and to test the robustness of the negative effect of social transfers.

Other factors that have a particularly strong effect on child poverty, and are closely related to social transfers, are those referring to the labour market. Given that parental unemployment is one of the main determinants of child poverty, higher unemployment rates within countries are also likely to contribute to higher child poverty rates. Thus, if the negative effect of social transfers on child poverty is observed after controlling for country-level unemployment, it is a stronger test of the significance of social transfer packages in alleviating child poverty. The variable *unemployment* represents unemployed persons aged 15 to 74 as a percentage of the labour force (i.e., the total number of employed and unemployed people). We expect that children who live in countries with low unemployment rates are less likely to be poor.

However, despite the fact that living in a country with a low unemployment rate is an effective way to secure oneself against the risk of poverty, it is clearly borne out by the evidence that holding a job is not always sufficient to avoid poverty. The risk of poverty is conditioned more by work intensity and continuity in work than by having a job in itself. The in-work poor may owe their status to various labour market problems such as recurrent unemployment or unstable jobs, the inability to find full-time work or low wage rates, or to high needs. Along with the unemployment rate, the rate of in-work poverty in a country reflects the institutional

[8] This is estimated using the withdrawal-effect method. First, poverty rates including transfers are estimated and then poverty rates once transfers have been removed from total household income are calculated, and finally percentage point reduction is considered.

country-level setting of the labour market and welfare state-related polices. In this respect, we take into account not only the unemployment rate but also the share of individuals who are classified as employed and are poor (*in-work-poverty*) in order to get the net effect of social transfers. We expect that children living in a country with a high rate of working poor tend to have higher child poverty rates. In this way, if the negative effect of social transfers still remains even after controlling for the unemployment and in-work-poverty rate, it is a robust check of the significance of social transfers.

4. Methodology

Our main aim is to explain cross-national variations in child poverty levels by examining the macro-to-micro relationship and focusing on the effect of social transfers. We therefore account for a hierarchical data structure involving two levels: children (level 1) nested into countries (level 2). Because of the idea that children may be influenced by their social and political context, we might expect that two randomly selected children from the same country will tend to be more highly correlated than two children selected from different countries, and it is important to account for such unobserved country-level effects.

Conventional multivariate regression techniques may not be employed with hierarchical data since the standard errors of variables at higher levels will be underestimated given that the degrees of freedom are calculated as if they were at the first level. In order to capture the existing correlation between individuals at the same higher level, some alternative methodologies are not advisable in our study.[9] As country differences are of substantive interest in this paper, we need a model in which we can explore information beyond clustering. Thus, multilevel models are the appropriate alternative.

One of the main advantages when we use mixed or multilevel models is that we gain precision as compared to using aggregate (country-level) data only. In addition, the

[9] We cannot properly evaluate the effect of country-level variables in separate country regressions nor fixed effect models.

residual variation in multilevel modelling is treated as information that adds something to our understanding of the phenomenon in focus. Finally, it also permits controlling for country-level influences.

We use a random intercept model[10] in which the intercept is allowed to vary between countries.[11] In order to analyse the differences in child poverty risk across European countries, we first fit the null-model (Model A), where no explanatory variables are included. Model B includes household-level variables to test if international differences in the contribution of demographic and socioeconomic factors that place children in families with different poverty risks may have an effect on the international child poverty gap. We then add the three social transfer indicators (Model C) to check how much of the unexplained variation is due to differences in their levels. Model D adds the per capita GDP in the previous model to control for living standard effects. Finally, Model E controls for the labour market effect in order to test if the negative effect of social transfer remains after controlling for labour market differences and the country's mean income.

5. Results

In order to assess the convenience of using a multilevel model that captures the country effects (second level) on child poverty, we test the null hypothesis that there are no country differences in child poverty rates by comparing a standard logistic regression model (single-level model) to the multilevel logistic regression model. We present the results of the p-values of the likelihood ratio test in Table 1. We reject the null hypothesis of no differences in child poverty risk across countries and hence the multilevel model is preferred over the single-level model.

****Insert Table 1 around here****

[10] Regarding the exchangeability assumption required when treating cluster effects as random, we can assume it is satisfied as we include country-specific covariates.

[11] According to Bryan and Jenkins (2013), a minimum of 30 countries are necessary for non-linear multilevel models in order to obtain reliable results in relation to the contribution of the country effect. We fulfil this requirement.

This means that, even after introducing explanatory variables at both household and country levels, the random intercept picks up part of the variance due to country differences. The results of the estimations for the five logistic models with random intercept (A, B, C, D and E) are shown in Table 2.

****Insert Table 2 around here****

We first estimate Model A. We observe that approximately 9.1 per cent of variance in child poverty is attributable to differences among countries.

Secondly, the effects of household characteristics (Model B) are very similar across the four estimated models. Our results are in line with the literature: a child living with only one parent is more likely to be poor than one living with two parents. We confirm that children in households where no one works have about three and a half times higher odds of being poor than those living in households where at least one person is working. The odds of being poor increase by around 30 per cent with each additional child and even more if the child is between 12-17 years old. A child's odds of being poor are lower if he/she is living in a household that does not have to pay for the dwelling. In line with Eurostat (2013), we find significant evidence that thinly populated areas in European countries are at a higher risk of poverty.

Regarding parents' characteristics, our results are aligned with previous results. We find that children living with a younger parent, a less educated parent or an unemployed parent are more likely to be poor. Contrary to our expectations, children living with a parent that suffers from a chronic illness or condition, *chronic father/mother*, do not have a significantly higher risk of poverty. It is important to emphasise that this non-significant effect is net of other characteristics. In sensitivity analyses, we estimated a reduced form model – omitting the rest of variables – and found that the odds of being poor were significantly greater for children living with a chronically ill parent. Nonetheless, perhaps unsurprisingly, higher poverty among those suffering from health problems can be accounted for by other variables introduced in the model, such as labour status or age of parents. Finally, children with an EU immigrant father are more likely to be poor and even more in the case of EU immigrant mothers. As TÁRKI (2011), our outcomes also indicate that the risk

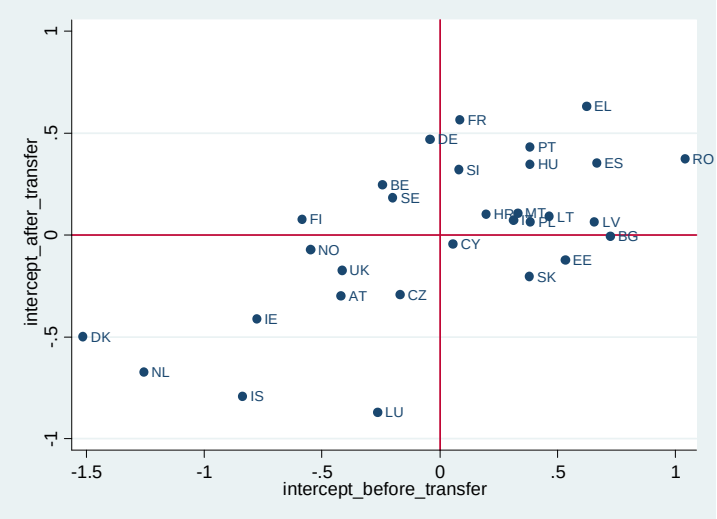
of child poverty in households with a non-EU immigrant father/mother is significantly higher than in the case of a EU immigrant father/mother, especially for fathers.

The variance partition coefficient (VPC) reveals that the participation of between-country variance in the risk of being a poor child increases by 7.7 per cent (from 9.1 to 9.8) when we control for individual variables. This finding highlights the fact that demographic and socioeconomic factors contribute relatively little to explain the variation in child poverty risk among countries.

As our objective is to analyse the effect of social transfers on differences in child poverty among countries in depth, we introduce the three output indicators of social transfers (*generosity, incidence* and *efficiency*) in Model C. As expected, the results show that there is a negative and statistically significant relationship between the indicators of social transfers and the child's likelihood of being poor. Adding the social transfer indicators to the model reduces the percentage of the residual variation in the risk of child poverty due to country effects (VPC) from 9.8 to 4.3 per cent, which represents a 56 per cent reduction in relative terms. This implies that variations in social transfers account for more than half of the unobserved country-level heterogeneity in child poverty outcomes, something that must be regarded as quite substantial.

In analysing the three indicators, we first get that all of them significantly correlate with lower child poverty levels. However, it is not the higher generosity, but the higher index of incidence and efficiency that affects the odds of being poor to a greater degree (a 50 per cent reduction *versus* 7.2 per cent when the index increases 1 point).

Figure 3 Predicted random intercepts (Model B *versus* Model C)



Source: Authors' estimations from EU-SILC data (cross-sectional version 2012-1).

Figure 3 shows the intercept residuals before controlling for the effect of transfers *versus* intercept residuals after transfers (Model B *versus* Model C). We observe that the countries at the bottom left of the graph, such as Denmark, The Netherlands, Iceland, and Ireland, have a clearly lower child poverty rate than the mean, both before and after including transfer indicators. In contrast, countries such as Greece, Romania, Spain, Portugal, Italy, Poland, Lithuania and Latvia, which according to TÁRKI (2010) belong to the group of countries with less-effective income support for families with children or with low levels of social transfers, are located at the top right of the graph.[12] It is worth mentioning that none of these countries provided benefits to children within a universal system (targeting within universalism), which

[12] France and Slovenia also belong to this quadrant. It is worth pointing out that although TÁRKI (2010) considers that both countries have good child poverty outcomes, our results show that child poverty before including transfer variables is slightly higher than the mean, while these countries present child poverty levels substantially higher than the mean after including social transfer indicators in the model. Social transfers in these countries may therefore be interpreted as not being successful enough in reducing poverty among children below the mean.

seems to be more effective in reducing poverty (Van Lancker and Van Mechelen, 2015). By contrast, all of them present either strictly universal or strictly selective systems, according to EU's Mutual Information System on Social Protection, MISSOC.[13]

In order to test the significance of social transfers, we control for per capita GDP in Model D and, additionally, for labour market outcome variables in Model E. We find that the effects of all the indicators of social transfers on child poverty risk are still statistically significant after controlling for contextual living standard effects, *GDP*. Even more, the importance of the *efficiency* of social transfers in the reduction of child poverty is accentuated, with a greater reduction effect than in the previous model. We also observe that the higher the per capita GDP of the country where the child is living, the slightly lower the risk of poverty, in line with the results of Cantillon (2009, 2011). Controlling for the differences in country's living standard (per capita GDP) reduces the VPC from 4.3 per cent to 2.5, indicating that the explanatory power increases somewhat further, and that the part of variance unexplained in the model attributable to country effect is very small.

Model E provides a more demanding test by adding the effect of the labour market in the risk of child poverty. In particular, we include the unemployment rate and in-work poverty rate. Again, controlling for labour market effects does not alter our findings in what refers to generosity and efficiency. These two aspects of social transfers show, therefore, a high robustness to their effects on the risk of child poverty, whereas the effect of the incidence of transfers vanishes when variables relating to the labour market are also controlled for. According to TÁRKI (2010), at the European Union level, children in households with zero work intensity receive almost 2.5 times more transfers than their proportion of all children. This result, together with the fact that one of the most important components of social transfers are unemployment benefits (TÁRKI, 2010), means that when we control for labour market variables, the influence of the incidence of transfers (those which target

[13] Comparative data from MISSOC have been taken at midyear of 2011 since the income data used in the analysis correspond to this year.

children) descends significantly since the effect of unemployment benefits is included implicitly in this indicator.

Nonetheless, our results indicate that it is not the unemployment rate but the in-work poverty rate that more significantly affects child poverty risk. We find that the odds significantly increase by 4.5 per cent for each 1 per cent point increase in the working poor rate, while the unemployment rate is not statistically significant. This latter finding is unexpected and so we checked the effect of the labour market alone. In this case, there exists a statistically significant and negative effect of both the unemployment rate and the in-work poverty rate on the child's likelihood of being poor, but the effect of the in-work poverty rate is also higher than the effect of the unemployment rate.[14] This shows that the level of integration in the labour market is important, but also the quality of this integration as measured through the capacity to avoid poverty. The findings of Marx *et al*. (2015) support this result as they argue that the determining labour market factor which causes a child to live in poverty is mainly based on the income received by their parents from the labour market, whether it is because their parents work part time or because they earn low wages, rather than on the situation of being unemployed or not.

In summary, we may state that once the cross-country variations in demographic and socioeconomic characteristics are accounted for, child poverty risks are still significantly lower in countries with more generous and more efficient social transfer income packages that focus to a greater extent on children. The association persists, in general terms, even after controlling for the country standard of living and for the labour market capacity to generate quality employment. In this way, social transfer income packages seem to yield an important explanation of cross-country differences in child poverty risks.

6. Conclusion

This paper aims to analyse the differences in child risk of poverty among European countries and evaluate the effects of social transfer income packages on child

[14] The results are available from the authors upon request.

poverty. We find that the variation in child poverty outcomes across countries is mainly due to country factors, particularly related to social transfer systems, and to a lesser degree to individual factors related to the composition of households and characteristics of the parents. Child poverty levels are significantly lower in countries with social transfer income packages that are more generous, more efficient and that focus to a larger degree on children, even after controlling for country living standard and labour market performance.

In political terms, it is worth pointing out some considerations to reduce child poverty in European countries. Firstly, we stress the importance of social transfer policies in the context of industrialised countries, highlighting how the correct functioning of these policies improves the welfare of families living with scant economic resources. Nevertheless, the reduction in child poverty varies notably from country to country, as well as the output indicators of social transfers. Thus, it is crucial to jointly monitor the extent of these benefits, the effects produced in families receiving them, and to what extent these transfers are reaching the target beneficiaries with a view to reducing child poverty. Some countries achieve better efficiency and incidence through targeting low-income families and specially children in poverty. Furthermore, the size of the redistributive budget is strongly associated with higher levels of child poverty reduction. While in theory low or moderate levels of social spending could produce low child poverty rates if resources were well targeted, the reality remains that almost no advanced economy achieves a low poverty rate, or a high level of redistribution, with a low level of social spending. Marx *et al*. (2013, 2015) and Van Lancker and Van Mechelen (2015) have demonstrated that the strongest redistributive impact is achieved by countries that combine moderate to strong targeting with comparatively high levels of spending. This suggests that the most redistributive systems are characterised by what is called ‘targeting within universalism”, as systems in which many people receive benefits and the poorest get relatively more. Therefore, as we can conclude from our results, in order to strengthen future EU policy, programmes focused on children in low-income households that reinforce generous strategies of transfers

would be essential to support those families with limited economic resources and thus mitigate child poverty.

Secondly, we conclude that some aspects related to labour market performance have a close link with the fact of living in poverty, even though social transfers still remain significant. Nowadays, the trickle-down effect from growth and jobs is frequently assumed to be the main strategy against poverty based essentially on boosting labour market participation. However, we highlight that a high employment rate is clearly an insufficient condition for ensuring low poverty among the working-age population. Despite the fact that people may be working, in the current context of labour market deterioration (low-paid and precarious jobs) they could have a low standard of living due to excessively low wages and thus may find themselves below the poverty threshold and hence their children as well. In 2010, the majority of countries in the European Union had more than 20% of poor children living in households with all working-age members in employment (Van Mechelen and Bradshaw, 2013). In many countries child benefit packages fail to protect low-wage earners against poverty. Thus, on the basis of the targets proposed by the Europe 2020 strategy, means-tested benefits should not be exclusively aimed at people not in work, but also at those in work in low-paid jobs.

Finally, concerning individual factors, we should specially stress the relevance of supporting jobless households, immigrant families, young parent households and single-parent families, as these groups are more socioeconomically vulnerable and exposed to a higher risk of child poverty.

Our findings provide new insight into the net effects of social transfer income packages on child poverty in accordance with some key output indicators of social transfers at the European level. These findings could be complemented by in-depth country studies in order to reveal configurations of social transfer policies and specific programmes of relevance for combatting child poverty across European countries.

Acknowledgements

Financial support from the Government of Spain through grant ECO2012-33993 to Elena Bárcena-Martín and the Spanish Institute for Fiscal Studies for all authors is gratefully acknowledged.

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Table 1. Likelihood ratio test for multilevel logistic estimation

Poor child	Model A	Model B	Model C	Model D	Model E
Chi^2 LR (multilevel vs. single-level model)	2049.05	1361.62	663.87	376.62	277.40
p-value	0.0000	0.0000	0.0000	0.0000	0.0000

Sources: EU-SILC (cross-sectional version; 2012-1), Eurostat.

Table 2. Odds ratio of child poverty (2012)

	Model A	Model B	Model C	Model D	Model E
Micro-variables					
lone-parent		1.240***	1.239***	1.242***	1.243***
		[0.052]	[0.052]	[0.052]	[0.052]
jobless		3.577***	3.576***	3.577***	3.574***
		[0.145]	[0.145]	[0.145]	[0.145]
Nch_2		1.291***	1.290***	1.290***	1.291***
		[0.039]	[0.039]	[0.039]	[0.039]
Nch_3_5		1.315***	1.314***	1.315***	1.315***
		[0.035]	[0.035]	[0.035]	[0.035]
Nch_6_11		1.269***	1.269***	1.269***	1.269***
		[0.023]	[0.023]	[0.023]	[0.023]
Nch_12_17		1.627***	1.627***	1.628***	1.628***
		[0.031]	[0.031]	[0.031]	[0.031]
owner		0.946*	0.943*	0.940**	0.940**
		[0.029]	[0.029]	[0.029]	[0.029]
thinly populated		1.390***	1.389***	1.391***	1.389***
		[0.038]	[0.038]	[0.038]	[0.038]
young father		1.354***	1.353***	1.353***	1.353***
		[0.088]	[0.087]	[0.087]	[0.088]
old father		0.316***	0.316***	0.316***	0.316***
		[0.026]	[0.026]	[0.026]	[0.026]
secondary father		0.869***	0.869***	0.868***	0.869***
		[0.031]	[0.031]	[0.031]	[0.031]
tertiary father		0.375***	0.376***	0.376***	0.376***
		[0.020]	[0.020]	[0.020]	[0.020]
work father		0.287***	0.287***	0.288***	0.288***
		[0.008]	[0.008]	[0.008]	[0.008]
chronic father		0.978	0.978	0.979	0.980
		[0.035]	[0.035]	[0.035]	[0.035]
EU immigrant father		1.441***	1.430***	1.445***	1.443***
		[0.113]	[0.112]	[0.113]	[0.113]
non-EU immigrant father		2.055***	2.056***	2.060***	2.061***
		[0.115]	[0.115]	[0.115]	[0.115]
young mother		1.552***	1.551***	1.550***	1.550***
		[0.074]	[0.073]	[0.073]	[0.073]
old mother		0.360***	0.360***	0.359***	0.359***
		[0.025]	[0.025]	[0.025]	[0.025]
secondary mother		0.705***	0.704***	0.703***	0.705***
		[0.026]	[0.026]	[0.026]	[0.026]
tertiary mother		0.322***	0.322***	0.322***	0.322***
		[0.016]	[0.016]	[0.016]	[0.016]
work mother		0.290***	0.290***	0.290***	0.290***
		[0.009]	[0.009]	[0.009]	[0.009]

chronic mother		0.977	0.977	0.977	0.977
		[0.031]	[0.031]	[0.031]	[0.031]
EU immigrant mother		1.704***	1.694***	1.707***	1.707***
		[0.114]	[0.113]	[0.114]	[0.114]
non-EU immigrant mother		1.768***	1.768***	1.771***	1.771***
		[0.086]	[0.086]	[0.087]	[0.087]
Macro-variables					
generosity			0.928***	0.922***	0.934***
			[0.021]	[0.016]	[0.016]
incidence			0.503***	0.600***	0.748
			[0.124]	[0.117]	[0.150]
efficiency			0.495*	0.269***	0.395***
			[0.192]	[0.089]	[0.134]
GDP				0.993***	0.994***
				[0.002]	[0.002]
unemployment					1.016
					[0.015]
in-work poverty					1.045**
					[0.022]
Constant	0.186***	0.334***	7.474***	23.830***	5.176*
	[0.020]	[0.041]	[5.677]	[15.364]	[4.451]
Var in intercept	0.330	0.359	0.148	0.086	0.070
VPC	0.091	0.098	0.043	0.025	0.020
Observations	66,895	66,895	66,895	66,895	66,895
Number of groups	30	30	30	30	30
Log likelihood	-29,260	-22,072	-22,059	-22,052	-22,049

Standard deviations in brackets
*** p<0.01, ** p<0.05, * p<0.1
Sources: EU-SILC (cross-sectional version; 2012-1), Eurostat.