
CHILD POVERTY AND CHANGES IN CHILD POVERTY*

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This article offers a cross-country overview of child poverty, changes in child poverty, and the impact of public policy in North America and Europe. Levels and changes in child poverty rates in 12 Organisation for Economic Co-operation and Development (OECD) countries during the 1990s are documented using data from the Luxembourg Income Study project, and a decomposition analysis is used to uncover the relative role of demographic factors, labor markets, and income transfers from the state in determining the magnitude and direction of the changes. Child poverty rates fell noticeably in only three countries and rose in three others. In no country were demographic factors a force for higher child poverty rates, but these factors were also limited in their ability to cushion children from adverse shocks originating in the labor market or the government sector. Increases in the labor market engagement of mothers consistently lowered child poverty rates, while decreases in the employment rates and earnings of fathers were a force for higher rates. Finally, there is no single road to lower child poverty rates. Reforms to income transfers intended to increase labor supply may or may not end up lowering the child poverty rate.

Child poverty has gradually become a more and more important aspect of public policy discussions. During the 1990s, a number of countries in both North America and Europe—including the United Kingdom, Ireland, Norway, and Canada—set explicit targets for the reduction of child poverty. In some cases, these reflected explicit commitments made under the *Convention on the Rights of the Child*, which covers most every aspect of the rights and well-being of children and which came into force in 1990. But reducing child poverty has been an important aspect of social policy even in countries less explicit about their goals. This, for example, is as true in the United States, where child poverty rates have historically been among the highest relative to other rich countries, as it is in Sweden, where they have been among the lowest. In this context, it is relevant to ask how things have changed. Have child poverty rates fallen? If not, why? And what role has government policy played?

These questions motivate the research summarized in this article. In particular, our concern is with understanding the nature of and reasons for changes in child poverty rates over the course of the 1990s. We focus on 12 Organisation for Economic Co-operation and Development (OECD) countries, a relatively rich group but one whose members nonetheless faced a wide range of starting points and challenges. This said, the research does not deal with the experiences of children and child poverty in the less rich countries. Changes in poverty in the developing countries are summarized in Besley and Burgess

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(2003) and UNICEF (2004). It is clear that the challenges in these countries are very different from those in the OECD.

The article begins with a discussion of the definition of *child poverty* that we use. The analysis deals with income poverty. This is a partial perspective since, as Sen (1999) made clear, poverty is much more than just low income. We adopt an income-based approach because we are interested in international comparability. Other indicators of material deprivation surely vary from country to country and are beyond the information sources available to us.

Further, our analysis uses a fixed poverty line. In a growing economy, a fixed poverty line focuses on the least challenging standard by which to judge progress. As such, our research asks the following: given the income standards that prevailed in about 1990, has the child low-income rate decreased or increased during the subsequent decade; if so, why; and what role have income transfers played? At the same time, it is important to acknowledge that this indicator cannot offer a complete picture if poverty is a concept related to being able to function normally in society. It needs to be used in conjunction with a poverty line that changes through time.

The next section also presents the child poverty rates and changes in them that motivate the analysis. The main objective of the analytical part of the article is the development of a counterfactual poverty rate that can be used to assess the role of public policy in isolation of other influences. We divide all the possible influences on the child poverty rate into three broad sets—the family, the labor market, and income transfers from the state—and present a series of estimates of the change in child poverty due to each of these forces. We also check the sensitivity of our findings to a number of methodological issues. The analysis offers a set of country-specific results, but also attempts to draw general lessons, which are summarized and discussed in the concluding section of the article.

DEFINITION AND MEASUREMENT OF CHILD POVERTY

Three issues need to be addressed in establishing a poverty indicator.¹ These are in part technical, but they also inherently involve value judgments. The first concerns the definition, measurement, and sharing of the resources related to material well-being. Our analysis uses annual income measured at the household level with representative national surveys and assumed to be shared equally among the individuals within the household. Annual income is a central aspect of the material well-being of individuals living in market economies, but it is not complete.²

But annual income is at the core of available fungible resources and offers a basis for international comparisons that may not be possible with other indicators. In addition, its use puts the focus of our attention on just one aspect of public policy: income transfers. We also follow a wide literature on international comparisons of income and poverty by using the individual as the unit of analysis. This is necessary if we are to address the plight of children—whom we define to be persons younger than 18 years of age—but it also requires assumptions about the economies of living in a household with more than one person and how resources are shared within the household. Our use of the square root of household

1. The source of the following discussion is Corak (2006), where these issues are discussed in more detail.

2. The use of annual income as a measure of material well-being can certainly be questioned on both theoretical and practical grounds (e.g., Sen 1999). Further, a rights perspective, as evidenced, for example, in Article 27 of the *Convention on the Rights of the Child*, would also suggest the need for other indicators. This article states that governments “recognize the right of every child to a standard of living adequate for the child’s physical, mental, spiritual, moral and social development.” It states that parents or others responsible for the child “have the primary responsibility to secure . . . the conditions of living necessary for the child’s development,” but also that governments shall take appropriate measures to assist them “to implement this right and shall in case of need provide material assistance and support programmes, particularly with regard to nutrition, clothing and housing.” See UNICEF (2002).

size as the equivalence scale to account for these economies follows the approach of the Luxembourg Income Study (LIS) project, the data bank of nationally representative household surveys that forms the information source for our analysis, and the report of the Expert Group on Household Income Statistics (2001).³ Assuming that household resources are equally shared among its members is also an international convention. In assuming that children obtain an equal share of available annual resources, we are charting a middle road between the deprivation they may be subject to if parents consume a disproportionate share, and the extra protection they might receive if parents make extra sacrifices to ensure children do not go without.⁴

The second issue that needs to be addressed concerns the minimum threshold of resources distinguishing the poor from the nonpoor. The poverty line must in some sense represent the level of resources below which it would be insufficient to participate normally in society. The standard in the LIS is to use 50% of median individual equivalent income, and we adopt a version of this approach. Using individual-level data from the LIS, we determine the median individual equivalent income for all persons in each country in 1990 or the year closest to 1990 that is available. We set the threshold at 50% of this median and do not update it through time, with the exception of taking inflation into account by using country-specific consumer price indices. As such, our comparison of poverty rates over the 1990s is in reference to the income levels at the beginning of the decade. In a growing economy with rising incomes, a fixed threshold of this sort will imply that poverty rates will unambiguously decline if the poor experience any income growth at all, while the rate based upon contemporaneous median incomes could very well be unchanged or higher. The opposite could occur in an economy that is in decline. Our use of a fixed threshold is not intended to offer a full portrait of poverty in the countries we study or a complete evaluation of public policy. But it does help to fix ideas on a backstop reflecting the conditions prevailing around the time the *Convention on the Rights of the Child* came into force.⁵

Finally, the third issue is the need to define a summary indicator or count of the poor. We use the so-called head count ratio, the number of children who are poor divided by the total number of children. As pointed out by numerous observers, this measure has its limitations. It gives equal weight to all individuals below the threshold and explicitly assumes that poverty is a discrete event associated with being above or below a given line. Someone just below the threshold is given the same consideration as someone at the very bottom of the income distribution. The appropriateness of this assumption will depend upon the theoretical perspective used. In our context, this choice could be motivated by a strict interpretation of the rights perspective. As Atkinson (1998) noted, a “right” is an either-or concept: it is either being respected, or it is being violated. In this sense, an indicator based upon a view that poverty is a discrete condition reflecting less than a minimum acceptable income might be viewed as appropriate.

Our choice of countries is determined by a decision to focus on the OECD and by the availability of a consistent set of individual-level survey data through the LIS at the beginning and end of the 1990s. The choice of years for our analysis reflects, on the one hand, the most recently available data, and on the other a desire to fix the starting point of

3. The LIS project is a cooperative research project that makes, among other things, individual-based household income surveys from about 30 countries available to researchers. For more information, see www.lisproject.org.

4. This is not to say that this assumption should be taken lightly. There is a growing and important literature on the sharing rules adopted by households, but it is not yet clear what generalities can be made. See, for example, Browning (1992); Browning et al. (1994); Lundberg, Pollack, and Wales (1997); and Phipps and Burton (1995).

5. The working paper version of our research offers an analysis that uses both a fixed and a moving poverty line and is available as IZA Discussion Paper No. 1574 at <http://www.iza.org/profile?key=83>. An alternative approach is to use a particular threshold across all countries. This, for example, was done by Garfinkel, Rainwater, and Smeeding (2006), who applied the U.S. official poverty measure to other countries in their comparative study.

Table 1. Child Poverty Rates in 12 OECD Countries During the 1990s

Country	Year		Child Poverty Rate		Change in Child Poverty Rate (5) = (4) - (3)
	<i>T</i> - 10 (1)	<i>T</i> (2)	Year <i>T</i> - 10 (3)	Year <i>T</i> (4)	
United Kingdom	1991	1999	18.5	7.8	-10.8
United States	1991	2000	24.3	17.0	-7.3
Norway	1991	2000	5.2	2.0	-3.2
Canada	1991	2000	15.3	14.0	-1.3
Sweden	1992	2000	3.0	2.8	-0.2
Luxembourg	1991	2000	5.0	5.1	0.1
Belgium	1988	1997	3.8	4.0	0.2
Netherlands	1991	1999	8.1	8.4	0.3
Finland	1991	2000	2.3	3.1	0.8
West Germany	1989	2000	4.1	7.8	3.7
Italy	1991	2000	14.0	18.1	4.1
Hungary	1991	1999	6.9	20.4	13.5

Note: Table entries are ranked by the magnitude of the percentage point change in the child poverty rate, as presented in column 5. Standard errors vary across countries and survey years, but generally the 95% interval is plus or minus 1 percentage point. *T* refers to the reference year of available data closest to 2000; *T* - 10 refers to the reference year approximately a decade earlier.

Source: Calculations by authors using data from the Luxembourg Income Study.

the analysis on 1990 or the year of available data closest to 1990. These criteria imply that certain countries are not part of our analysis.⁶

The information in Table 1 illustrates the rates of child poverty prevailing in the countries under study and how they have changed since the late 1980s or early 1990s. The rates differ markedly, by a factor of 10 or more. This was the case both at the beginning of the 1990s and at the end, though there were significant changes in the situations of particular countries. At one extreme, Italy, Canada, the United Kingdom, and the United States all had child poverty rates substantially above 10%; at the other extreme, Finland, Sweden, Belgium, and West Germany all had rates lower than 5%. There is no simple story concerning how the risk of low income among children changed over this decade, with some countries experiencing significant declines, others significant increases, and still others experiencing no major changes.

The child poverty rate fell by more than 1 percentage point in four countries, essentially remained unchanged in five others, and increased in three. The United Kingdom and the United States stand out as having experienced the largest declines, though starting from

6. There are two important exceptions to this rule: the United Kingdom and Canada. In both these cases, the surveys provided to the LIS did change over the period of interest. These countries are still part of our analysis, but as a check, we also conducted our analysis using a consistent instrument: the British Household Panel Survey for the United Kingdom and the Canadian Census. This did not overturn the general conclusions reached using the LIS information. It should also be noted that Denmark did meet these criteria, but data quality concerns expressed by the LIS suggested that it not be included in the analysis. Finally, we also focus on West Germany rather than the entire country because of the desire to use information from before the *Convention on the Rights of the Child* came into force—Corak, Fertig, and Tamm (forthcoming) offered a detailed analysis of Germany—and we exclude Mexico, which is also an OECD country, because of the very different level of economic development there.

among the highest levels. The child poverty rate fell by over 10 percentage points in the United Kingdom and by over 7 percentage points in the United States. Norway also experienced an important decline of about 3 percentage points, and it is the only country with a low child poverty rate that was significantly reduced. At the other extreme, in Hungary, the child poverty rate rose over 13 percentage points, signaling a significant decline in the living standards of children. Over this period, Hungary went from having a child poverty rate of about 7% to over 20%. Italy is the only country with high rates at the beginning of the period that went even higher, while West Germany is the only country with a low child poverty rate that experienced a noticeable increase. In West Germany, this amounted to 3.7 percentage points, or an almost doubling. The magnitude of this change is influenced by our choice of 1989 as the first year of analysis. Corak et al. (forthcoming) noted that in previous years, the child poverty rate in Germany hovered between 6% and 8% after falling significantly to 4.1% in 1989. Afterward, it rose sharply and continued to drift upward during the 1990s. If we had used a different year as a starting point, the magnitude of the change would not be so great, but its direction would be the same.⁷

THE DETERMINANTS OF CHILD POVERTY

In all countries, the well-being of children is determined by three broad sets of factors, what we refer to as demographics, labor markets, and government policy: the family, the market, and the state.

By demographic or family factors, we have in mind four influences: the average age of parents, the education of parents, the number of children per household, and family structure as indicated by whether the child is living with a single parent or not. As a first approximation, these are independent of government income transfer policies, though this could also vary from country to country. Older parents are more likely to be better situated to care for their children, if for no other reason than that more labor market experience implies higher earnings. We capture these life cycle effects by measuring the average age of parents. In a similar vein, more-educated parents are likely to have better labor-market skills, lower chances of unemployment, and higher earnings when employed. We measure this by using an indicator of whether the father had a university degree and another indicator of whether the mother had a degree.⁸ Children living in households with fewer siblings are likely to have a higher material living standard, while those living with a single parent are likely to have a lower standard. With fewer siblings, the household's resources need not be spread as thinly, and we capture this by measuring the number of children in the home. This could change in response to the fertility decisions of parents or to the home-leaving age of children. Finally, with both parents present, children are more likely to be in a household in which at least one adult is working or to be in a household with an overall higher wealth. To measure this, we use a binary indicator of whether the child lives in a single-parent household.

The impact of the labor market on changes in child poverty rates is measured by two variables: binary variables indicating whether the parents are working, and the annual earnings they each obtain. These are influenced by broader forces determining employment growth and the distribution of income and will vary a good deal across the 12 countries. Business cycle and structural influences on the demand for labor associated with technical change and globalization certainly play a role in all places. But some countries, Hungary and Germany for example, also experienced important changes associated with the transition to market economies. Many of these factors are also independent of government transfers, but there could certainly be important interactions between the structure of social policy and labor supply, particularly among the lower paid.

7. For the country as a whole, the increase was 1.2 percentage points using 1991 as the base year.

8. The use of a university degree—as opposed, for example, to the attainment of high school certification—as the indicator of parental education reflects an attempt to maximize the comparability across the countries.

These labor market variables are measured for fathers and mothers separately, since patterns of labor market participation vary considerably across gender and since in some countries, child well-being may depend differently upon the labor-market success of mothers than of fathers. The greater the employment rate among fathers and mothers, the less likely children will live in poverty, but this will also depend upon the amount of money they actually earn. Changes in annual earnings reflect changes in wage rates, hours worked per week, and number of weeks worked per year, but our analysis does not distinguish between these influences.

Finally, the impact of the state is measured by changes in the amount of transfer income received by the household. All other things equal, the higher the likelihood of eligibility for government transfers and the greater the average amount of income support, the lower the chances of child poverty. However, the average amount of cash transfers may not fully reflect the extent of social support from the state if households are in receipt of noncash benefits, either in the form of targeted benefits or through the provision of other public goods. For example, Garfinkel et al. (2006) attempted a valuation of these benefits in a number of countries by using the LIS data in order to illustrate their impact on the income distribution. A strictly income-based analysis does not necessarily account for the value of these benefits, which may vary considerably across countries. Their analysis suggests that noncash benefits may be particularly important in the United States. If these were given cash value and assigned to household income, the child poverty rate would be considerably lower.

ANALYTICAL METHODS

The analysis is intended to uncover the relative influences of these factors on the overall change in child poverty rates. In particular, in order to assess the impact of government transfers, we need to estimate what the child poverty rate would have been if no other factors had changed. Therefore, we begin with the development of a counterfactual income distribution that is based on all influences other than government transfers being constant. This standardized income distribution allows us to derive the child poverty rate that would have prevailed at the end of the period if labor markets and demographics had remained unchanged. The difference between this poverty rate and the actual child poverty rate represents a starting point for understanding the role of the tax-transfer system. We create a standardized income distribution for each country by combining two methods, what we refer to as *reweighting* and *rank-preserving exchange*.

The reweighting procedure is described by DiNardo, Fortin, and Lemieux (1996) and has been used by, among others, Chiquiar and Hanson (2005) and Daly and Valletta (2006) to examine issues similar to ours. The DiNardo, Fortin, and Lemieux (DFL) method allows the entire conditional distribution to be analyzed and in effect is a generalization of some commonly used direct methods of standardization for discrete distributions as discussed by, for example, Shryock et al. (1976:241–43), who addressed standardization on a single factor, and also by Das Gupta (1993), who dealt with multiple factors. The DFL method not only permits standardization with multiple factors but also is not restricted to averages. The method allows the whole counterfactual distribution or density to be constructed and analyzed. Estimated conditional weights are combined with sampling survey weights to produce a standardized distribution, which can then be used to examine issues associated with changes at different points in the income distribution and, in particular, the change in the poverty rate.

This involves using kernel density estimates of the income distribution:

$$\hat{f}(y) = \frac{1}{n} \sum_{i=1}^n \frac{\theta_i}{h} K\left(\frac{y - Y_i}{h}\right) \quad (1)$$

Eq. (1) is an estimate of a kernel density based on a random sample $(Y_1 \dots Y_n)$ with sampling weights $(\theta_1 \dots \theta_n)$ using a bandwidth h and a weighting function—the kernel— K .⁹ The summation is a weighted count of the fraction of observations within $h/2$ of y , and it is divided by h to obtain a density.

The simplest illustration of this method is the case of a discrete characteristic that can be summarized as a binary 0-1 variable. This is similar to often-used standardization techniques across groups with two different group-specific rates. One illustration would be whether a child lives with a single parent or not. Let S be a binary variable indicating the type of household a child lives in, with $S = 1$ meaning that the child lives with a single parent and $S = 0$ indicating otherwise. The density of year-2000-equivalent incomes can be expressed as the weighted sum of the densities of children living in a single-parent household and children living in other household types. That is,

$$f_{00}(y) = \Pr_{00}(S = 1)f_{00}(y | S = 1) + [1 - \Pr_{00}(S = 1)]f_{00}(y | S = 0). \quad (2)$$

As an example, let the proportion of children in single-parent households be 20%, and suppose this is an increase from 15% in 1990. Then the simplest way to impose the earlier distribution on the current family income distribution is to reweight each observation according to the percentage change in the share of each group over time, that is, to replace $\Pr_{00}(S = 1)$ in Eq. (2) with $\Pr_{90}(S = 1)$. In other words, to calculate what the distribution of incomes would have been in 2000 if the risk of living in a single-parent family had not changed, every single-parent child in 2000 should be down-weighted by 0.75 ($0.15 / 0.20$) since the possibility of being part of this group was lower, and every child in other household structures should be up-weighted by 1.0625 ($0.85 / 0.80$) because the chance of being in this group was higher. The counterfactual density of incomes is

$$f_{00}^*(y) = \lambda(S = 1)\Pr_{00}(S = 1)f_{00}(y | S = 1) + \lambda(S = 0)[1 - \Pr_{00}(S = 1)]f_{00}(y | S = 0). \quad (3)$$

In this equation, $\lambda(S = 1) = \Pr_{90}(S = 1) / \Pr_{00}(S = 1)$ and $\lambda(S = 0) = [1 - \Pr_{90}(S = 1)] / [1 - \Pr_{00}(S = 1)]$. At the individual level, we can imagine a person-specific adjustment, $\lambda_i = S_i \lambda(S = 1) + (1 - S_i) \lambda(S = 0)$, so that the counterfactual density can be expressed as $\hat{f}^*(y) = \sum_{i=1}^n (\theta_i \lambda_i / h) K(y - Y_i / h)$. The fraction of low-income children can then be calculated by imposing the low-income threshold on these hypothetical densities, and the impact of the changing risk on low income can be determined by comparing the resulting statistic with the actual low-income rate.

If there are other characteristics of relevance to incomes, then these will also need to be held constant. If they are discrete, then similar calculations can be performed for each distinct level of these characteristics, in effect conditioning the calculations on their levels. If they are multinomial, continuous, or if they become large in number, then the λ cannot be computed as sample proportions among all individuals, but they can be estimated using a probit or logit model by pooling the data from the two years under study. This reweighting method is the approach used to hold constant most of the influences on child incomes in our analysis—in particular, all of the demographic factors and some of the labor market factors.

This technique relies on the assumption that the distribution of the outcome variable does not depend upon the distribution of the characteristics. In other words, in reweighting, we assume that the distribution of incomes is influenced only by the change

9. The choice of h and K may be sensitive to the distribution and has been subject to many discussions in the literature. In our analysis, the “optimal bandwidth” according to Silverman (1986) and the Gaussian kernel function are used.

in the proportions of the groups, not through general equilibrium effects. This, in fact, may not be the case for some of the demographic variables. For example, the proportion of the population with a university degree not only changes the chances that those with a degree will have higher earnings but also determines the earnings distribution for all individuals. But this assumption is even more clearly not valid for characteristics like the earnings of fathers and mothers because these directly determine equivalent family income. In recognition of this, a separate approach—rank-preserving exchange—is used to hold the levels and distribution of earnings constant.

Basically, the rank-preserving exchange involves subtracting each child's equivalized earnings (be it from the mother or the father) from his or her total equivalent income and adding back the amounts that his or her rank in the 2000 earnings distribution would have implied in 1990. More specifically, the procedure first ranks children from lowest to highest according to the amount of equivalized earnings in each year. The samples in each year are then divided into 100 equally sized groups, taking household sampling weights into account. The median incomes within each of these percentiles in 1990 are calculated. Then, for each child, we subtract the equivalized earnings component from the equivalized family income in 2000 and replace it with the 1990 information for the same percentile rank in the equivalized earnings distribution. The resulting distribution of family income can therefore be regarded as a counterfactual, which holds constant (or preserves) the distribution of earnings at 1990 levels. This approach is adapted for children from an analysis of adults in Daly and Valleta (2006).

In order to account for the impact of each factor on the child poverty rate, we use an additive approach, taking the situation in 2000 as our starting point and changing one factor at a time: demographics first, then labor markets, and finally government transfers. We begin by estimating what the child poverty rate would have been if the age structure of parents had remained as it was in 1990. The resulting change in poverty is the estimated impact of the changing age structure of parents. We then estimate the child poverty rate with both age and university attainment set to their level in the earlier period. The estimated reweighting function holds both age and university attainment of parents to their 1990 levels. The resulting difference in the child poverty rate between this estimate and that from holding just age constant indicates the impact of changes in parental education. The impact of changes in number of children per family and changes in the proportion living with single parents is calculated in the same way.

To estimate the impact of changes in labor markets, we consider two components: (1) employment probabilities and (2) annual earnings. As noted, factors such as technological innovation, economic integration, macroeconomic policy, or exogenous shocks might result in substantial changes in market opportunities over time. The first component therefore preserves the employment conditions of earlier years; the second preserves the earnings structure. The use of annual earnings takes into account changes in both wage rates and hours worked per year. Models are estimated separately for fathers and mothers.

Finally, we estimate the effect of changes in government transfers. We subtract equivalized transfer income from each child's total equivalent income in the most recent year of available data and then add back the amount that a child with the same equivalized nontransfer income would have received in the first year of available data. In order to do this, we find for each child in the most recent data a child in the earlier data set with the same or closest lower nontransfer income as well as another child with the closest higher nontransfer income. Each child therefore has two counterparts in a data set for the early 1990s, and his or her transfer income is replaced by the average transfer income those counterparts received. This is not the only way to calculate the counterfactual level of government transfers. We also undertake an analysis based upon a rank-preserving exchange. This derivation is conditional on having received some amount of transfers and therefore does not fully recognize explicit changes in policies that may affect eligibility

for benefits. The contrast between these alternatives allows us to speak indirectly to the relative roles of program eligibility and program generosity in determining changes in child poverty rates.

The final result represents the distribution of equivalized family income holding all three categories—demographic, labor, and government factors—to 1990 levels. The difference between the calculated child poverty rates and the actual 1990 child poverty rate is the residual term, reflecting variables omitted from our analysis or the interaction effects of those we include. We suspect that the most important variable we are not able to take into account, because of limitations in data availability, is the immigrant status of the parents. Further, the particular ordering we use may play a role in determining the results. The introduction of demographic factors first offers them the opportunity to have the greatest impact. As such, this ordering is likely to lead to a conservative estimate of the impact of government transfers. We check the sensitivity of our findings by also calculating the standardization with a reversed ordering.

RESULTS

The results are presented in Tables 2, 3, and 4, respectively, for countries with decreases, little change (less than one percentage point), and increases in child poverty rates as measured by the LIS data. Panel 1 of the tables repeats information from Table 1 on the level and change in the child poverty rate, while Panel 2 offers the calculated impacts of each of the three sets of influences and their elements.

Countries Experiencing Declines in Child Poverty Rates

The information in Table 2 suggests that the significant fall in child poverty rates in the United Kingdom was due to changes in the amount of government support. When all other factors are accounted for, the child poverty rate would not have been much different than the actual rate, suggesting that labor markets offered at best only a mild push toward lowering the child poverty rate. All of the fall in child poverty is due to government transfers.

While the child poverty rates also fell significantly in the United States, this happened for very different reasons. Labor market changes are the dominant influence, while changes in government transfers would have implied, all other things remaining constant, higher child poverty rates. This involves important structural changes to social policy taking place during a period of extremely robust economic growth. This quite explicitly raises the important caveat about our method because it is unlikely that the impact of each factor is distinct and independent of the others. Many social benefits in the United States are closely linked with recipients' work status. The Earned Income Tax Credit and Temporary Assistance for Needy Families (TANF) are important cases in point. Welfare reform and the introduction of the TANF program in 1997 required recipients to work as soon as they were job ready or no later than two years after coming on assistance. There are also a host of other programs intended to increase the job readiness of potential beneficiaries. In other words, changes in social policy involved not only changes in benefit levels but also changes in the incentive to be engaged in the labor market.¹⁰ Average benefit levels may have fallen, but average incomes also rose as the employment rate increased. In fact, the results clearly show a strong influence of the annual earnings of mothers lowering the child poverty rate. Combined with their changes in employment rates, this implies a 3-percentage-point fall in the child poverty rate. If there is a strong interaction between the design of social policy and labor market status, then part of the impact of government transfers on the poverty rate is intermingled with labor market factors and cannot be distinguished clearly in our decompositions.

10. See Blank (2002) for a detailed overview of social policy changes in the United States and a review of their labor market impacts.

Table 2. Demographic, Labor Market, and Government Impacts on Changes in Child Poverty Rates: Countries Experiencing a Decrease of 1 Percentage Point or Greater in Child Poverty During the 1990s

	United Kingdom (1991,1999)	United States (1991,2000)	Norway (1991, 2000)	Canada (1991, 2000)
1. Child Poverty Rate Based on Fixed Poverty Line				
T based on $T-10$ poverty line	7.8	17.0	2.0	14.0
$T-10$	18.5	24.3	5.2	15.3
Change	-10.8	-7.3	-3.2	-1.3
2. Contribution to Change in Child Poverty Rate				
Demographic factors	0.1	-1.4	-0.6	-1.2
Average age of parents	-0.5	-0.7	-0.1	-1.0
Education of parents	— ^a	-1.0	-0.3	-0.4
Number of children	0.1	0.1	0.0	-0.3
Single parent	0.5	0.2	-0.2	0.5
Labor market factors	-0.8	-4.1	-0.6	-4.6
Proportion with fathers working	-0.3	-0.8	0.2	-0.5
Proportion with mothers working	-0.4	-0.7	-0.3	-0.5
Annual earnings of father	0.7	-0.4	-0.1	-1.8
Annual earnings of mother	-0.8	-2.2	-0.4	-1.8
Government transfers	-11.3	0.4	-3.8	2.9
Residual	1.2	-2.2	1.8	1.6

Source: Derivations by the authors using LIS data and methods described in the text.

^aInformation not available.

Social policy played a very different role in Norway and operated in a very different configuration of labor market forces. In Norway, children saw improvements in their situation relative to 1991, their low-income rate falling from 5.2% in that year to just 2.0% in 2000. Income transfers were important in minimizing the impact of an at best neutral labor market, and unambiguously reduced the risk of low income among children in Norway.

Labor markets during the early 1990s were particularly hostile in all of the Nordic countries. In Norway, the findings suggest that families adjusted on all possible fronts in ways beneficial to children—parents, on average, were older and better educated, and proportionately fewer children lived with a single parent—but this had a small impact on the child poverty rate. Over the span of the entire decade, labor market changes also had a small impact on the risk of low income among children. Social benefits as a fraction of GDP fell slightly in Norway over this period, from 24.7% to 23.0%, but benefits directed to families actually increased as a fraction of GDP.¹¹ Above and beyond anything else, this was the reason for the fall in child poverty in Norway, accounting for a large part of the decline in child poverty. These patterns are in sharp contrast with those in the United States.

11. The source for this information is the OECD Social Expenditure database, as reported in UNICEF (2005: figure 11).

In Canada, the fall in child poverty of 1.3 percentage points is made up of a 1.2-percentage-point fall due to demographics (mostly the aging of parents), a 4.6-percentage-point fall due to labor market developments (occurring in a manner that is of equal magnitude and direction for both fathers and mothers), and a 2.9-percentage-point increase due to changes in the amount of government transfers. These results may, however, reflect changes in the survey designs and questions rather than actual developments, the LIS information being based upon two different surveys over this period. A complementary analysis using the 1990 and 2000 Canadian Census reported in the working paper version of this article indicates the same pattern: a slight change in child poverty rates bordering on the margin of statistical significance. However, the reasons for the changes are slightly different, and as a result, we are reluctant to draw firm conclusions about the Canadian experience. The most accurate summary might be to suggest that there was no strong change in child poverty rates in Canada since the early 1990s, and no strong impact of government transfers either in a positive or negative way.

Countries Experiencing Little Change

The Netherlands is a noteworthy example among countries experiencing little change in child poverty because, like in the United States, there were very significant changes to social policy intended to encourage labor market participation, yet, unlike in the United States, child poverty did not fall. These policy changes saw social expenditures as a proportion of GDP fall from about 28% at the beginning of the decade to below 22%, the largest percentage-point fall in the OECD.¹² While these changes implied significant declines in the share of family-related benefits, this may have been an unintended consequence because they were in the first instance directed to those of working age. Changes to unemployment insurance and to disability benefits were at the forefront, but policy changes also increased the incentive for women to work part time. This is reflected in the findings in Table 3 as the proportion of mothers working has a significant downward impact on child poverty. Indeed, these changes were associated with significant increases in employment and an increase in the median income of about 7% for the population as a whole. But the positive labor market impacts on children through the experience of mothers did not outweigh the declines in income support from the state. In other words, the induced incentive effects of the restructuring of social policy did not—in the context of the Dutch labor market—generate enough labor market income among low-income families to compensate for the decline in social support.

Countries Experiencing Increases in Child Poverty

While the very significant increase of child poverty in West Germany is associated with changes in government transfers, as shown in Table 4, our analysis does not do a very good job of explaining the changes in this country. The rather large residual term relative to the total change suggests that important factors have not been taken into account or that the underlying structure of the true model determining child incomes has changed. Corak et al. (forthcoming) suggested that an important factor in the upward trend in both West Germany and the country as a whole has to do with the situation of children in households headed by noncitizens, particularly for more recent arrivals to the country. The fact that we do not control for immigrant status could be one reason for the large unexplained component in the German results.

The rise in child poverty in Italy occurred in spite of demographic changes that together would have implied a 1-percentage-point lower rate. In particular, this was due to changes in the number of children per household and the level of parental education. Labor

12. The source for this information is the OECD Social Expenditure database, as reported in UNICEF (2005: figure 11).

Table 3. Demographic, Labor Market, and Government Impacts on Changes in Child Poverty Rates: Countries Experiencing a Change of Less Than 1 Percentage Point in Child Poverty During the 1990s

	Sweden (1992, 2000)	Luxembourg (1991, 2000)	Belgium (1988, 1997)	Netherlands (1991, 1999)	Finland (1991, 2000)
1. Child Poverty Rate					
Based on Fixed Line					
T based on $T-10$ poverty line	2.8	5.1	4.0	8.4	3.1
$T-10$	3.0	5.0	3.8	8.1	2.3
Change	-0.2	0.1	0.2	0.3	0.8
2. Contribution to Change in Child Poverty Rate					
Demographic factors					
Average age of parents	-0.3	0.0	-1.3	-0.4	-0.2
Education of parents	0.0	-0.6	0.1	-0.9	-0.2
Number of children	0.0	0.0	0.0	0.0	-0.1
Single parent	0.2	-0.2	0.2	-0.1	0.3
Labor market factors					
Proportion with fathers working	0.2	-0.9	2.1	1.0	0.3
Proportion with mothers working	0.0	-0.4	-0.3	-1.6	0.4
Annual earnings of father	-0.7	1.7	-0.1	0.9	-0.5
Annual earnings of mother	-0.5	-0.2	-0.2	-0.1	0.0
Government transfers					
	0.5	0.1	1.0	0.9	1.0
Residual	0.4	0.6	-1.3	0.6	-0.2

Source: Derivations by the authors using LIS data and methods described in the text.

market factors, particularly fathers' earnings, were a force increasing the child poverty rate. But this is muted by changes in mothers' employment rates. All this said, changes in government transfers over this period were a significant force implying higher child poverty rates. But as in the case of West Germany, up to one-half of the change in child poverty is unexplained in our model.

The major reason for the sharp rise of child poverty in Hungary has to do with the deterioration of the labor market, especially for fathers. The large impact on child poverty from the labor market is only partly countered by demographic changes, but strongly exacerbated—at least in the case of a fixed poverty line—by changes to government transfers.¹³

ALTERNATIVE SPECIFICATIONS

The two most important aspects of the standardization that may influence the results are the order in which it is carried out and the particular method of calculating counterfactual government benefits.

13. In Hungary, the 1999 child poverty rate based on 50% of the 1999 median income is only 8.8%, making the increase in child poverty rates, at 1.9 percentage points, much less than when the poverty line is fixed at 50% of the 1991 median income. This reflects the fact that median incomes declined significantly for the entire economy. Children lost ground relative to their standing in 1991, but so did everyone.

Table 4. Demographic, Labor Market, and Government Impacts on Changes in Child Poverty Rates: Countries Experiencing an Increase of 1 Percentage Point or Greater in Child Poverty During the 1990s

	West Germany (1989, 2000)	Italy (1991, 2000)	Hungary (1991, 1999)
1. Child Poverty Rate Based on Fixed Line			
<i>T</i> based on <i>T</i> – 10 poverty line	7.8	18.1	20.4
<i>T</i> – 10	4.1	14.0	6.9
Change	3.7	4.1	13.5
2. Contribution to Change in Child Poverty Rate			
Demographic factors	–0.2	–1.0	–1.5
Average age of parents	–0.6	0.0	0.0
Education of parents	–0.2	–0.4	–0.4
Number of children	0.0	–0.6	–0.2
Single parent	0.6	0.0	–0.9
Labor market factors	0.6	1.6	13.7
Proportion with fathers working	0.3	0.3	0.8
Proportion with mothers working	–0.7	–1.1	0.8
Annual earnings of father	1.1	2.2	10.3
Annual earnings of mother	–0.1	0.2	1.7
Government transfers	1.2	1.4	4.8
Residual	2.1	2.1	–3.5

Source: Derivations by the authors using LIS data and methods described in the text.

The estimated impacts rely on the assumption that the particular order for the standardization—first demographic factors, then labor market factors, then government transfers—is appropriate, and that these factors are independent of one another. We are assuming that changes in government transfers do not influence demographic and labor market factors, or that labor market factors do not influence demographic choices. This seems like the most reasonable way to proceed, but it may not always be the case. As stressed previously, if there is an interaction between policy changes and labor markets, then it is all attributed to labor markets. As such, our calculations should not be taken as a definitive description of the factors influencing the incomes of children, but rather as a starting point for a fuller discussion that also brings, when appropriate, other institutional knowledge to bear. In addition, even if there is no behavioral interaction between these two factors, our results could be misleading because of the focus on the headcount ratio. For example, beneficial labor market changes might improve the incomes of those below the poverty line and lower the poverty gap significantly but without necessarily lifting these children above the line and lowering the headcount ratio. In this case, a small increase in government transfers could then lead to significant declines in the headcount ratio by offering just enough income to get above the poverty line. In this scenario, our analysis would attribute the change in the poverty rate entirely to government transfers when, in fact, other factors played an important role.

To explore the sensitivity of the results in Tables 2, 3, and 4 to this choice of ordering, we redo the analysis with a reverse ordering: first government transfers, then labor markets, and finally demographics. Table 5 offers the estimated impacts of government transfers, repeating in the first column the results from the previous tables and contrasting them in the second column with the reverse ordering. For the most part, this alternative specification does not lead to significant changes. In every case, the direction of change is the same, and in most cases, the magnitudes are also similar. In particular, this is also the case for the United States and the Netherlands, two countries in which—given the nature of the social policy reforms undertaken during this period—it might have been reasonable to anticipate considerable interaction between the labor market and government factors.

The magnitude of the impact of government transfers, however, is different in the United Kingdom and significantly so in Hungary.¹⁴ In Hungary, introducing government transfers into the decomposition before labor market factors significantly increases the estimated impact, from less than 5 percentage points to almost 14. The fact that the transition to a market economy in Hungary had very much to do with a major restructuring of the labor market suggests that the original specification is probably closer to the truth, but the reverse ordering at the very least suggests that under neither specification did changes in income transfers mitigate the influence of the market.

The second important aspect of the standardization concerns the calculation of the counterfactual amount of government transfer payments. This is done conditional on nontransfer income in the most recent year of data. We replace government benefits with the amount that a child with the same level of nontransfer income would have received a year or so earlier. In other words, the counterfactual amount of transfers is determined according to both the eligibility rules and benefit schedules of the earlier period. Therefore, the total amount of transfers paid is demand-determined. This formulation captures the influence of any explicit policy changes, particularly those addressed to the income targeting of benefits through eligibility rule changes. This is, in fact, an important aspect of policy changes in some countries over the period under study (Bradshaw and Finch 2002). In order to check the robustness of this approach and to draw further insight into the workings of state support, we offer an alternative specification by conditioning on having received transfers in the most recent year. That is, we estimate the change in the amount of transfer income received by households in receipt of some transfers. In order to do this, we apply a rank-preserving exchange to the distribution of transfer payments, assigning to children the equalized transfer income that their rank in the most recent distribution would have implied in the earlier period. This abstracts from any changes in eligibility. If the incidence of receipt of government transfers does not change over time, then the difference in the estimated impact between this method and that used in our base case would reflect changes in the amount of benefits.

The estimated impact on the child poverty rate using the original ordering is presented in the last column of Table 5; it should be compared with the information in the first column. In most cases, the direction of change is the same under the two scenarios. Indeed, so are the magnitudes, with most of the estimates falling within 1 percentage point of one another. The direction of change differs in only three countries. Finland is one of these cases, but the magnitudes involved are only about 1 percentage point and therefore are on the margin of statistical significance. Luxembourg is also an example, but the alternative specification of government transfers leads to a very large residual and brings the validity of this specification into question.¹⁵ The most notable difference resulting from this alternative

14. In particular, the supplementary results for the United Kingdom from the British Household Panel Survey reported in the working paper version of this article suggest that the decline in the child poverty rate due to transfers, while still important, is less than half of that estimated from the LIS data.

15. The full set of results for all of the models upon which Table 5 is based is not reported but is available in the working paper version.

Table 5. Change in Child Poverty Rate Due to Government Transfers for Different Model Specifications (percentages)

	Counterfactual Government Transfers Conditional on Nontransfer Income		Counterfactual Government Transfers Conditional on Receipt of Some Transfer Income
	Base Case	Reverse Ordering	
1. Countries Experiencing a Decrease of 1 Percentage Point or Greater			
United Kingdom	-11.3	-8.7	-11.5
United States	0.4	0.2	0.7
Norway	-3.8	-0.5	-4.3
Canada	2.9	1.2	2.1
2. Countries Experiencing a Change of Less Than 1 Percentage Point			
Sweden	0.5	0.9	0.2
Luxembourg	0.1	1.2	-6.7
Belgium	1.0	1.3	0.1
Netherlands	0.9	1.3	2.1
Finland	1.0	0.7	-0.8
3. Countries Experiencing an Increase of 1 Percentage Point or Greater			
West Germany	1.2	0.8	-1.4
Italy	1.4	2.8	0.3
Hungary	4.8	13.9	5.2

Notes: Column 1, referred to as the *base case*, presents the impacts on child poverty rates attributed by the decomposition analysis to government transfers from Tables 2, 3, and 4. The factors are introduced into the decomposition analysis in the order presented in these tables: first demographic factors, then labor market factors, and then government transfers. Column 2, *reverse ordering*, refers to results from a decomposition in which government transfers are introduced first, followed by labor market factors, and then by demographic factors. In column 3, the ordering of the factors is the same as in column 1. The complete results from these models are available upon request.

specification of government transfers is, to a certain extent, in West Germany. But in sum, our base case estimates of the impact of government transfers do not seem to be sensitive to the particular ordering used in the composition analysis nor to the particular method of deriving the counterfactual.

CONCLUSION

Our analysis of child poverty in 12 OECD countries is intended to uncover the major factors that determine changes observed since the early 1990s. In 3 of the 12 countries we study—West Germany, Italy, and Hungary—child poverty rates actually increased during the 1990s, and in another 6—Canada, Sweden, Luxembourg, Belgium, the Netherlands, and Finland—there were not significant changes. In only three countries—the United Kingdom, the United States, and Norway—did child poverty rates fall noticeably. This is according to a poverty line fixed in the early 1990s, the least demanding standard by which to judge progress in a growing economy.

In addition to offering a detailed analysis of the reasons for changes in each country, we draw, at the most general level, three lessons. First, family and demographic forces

evolve only gradually and are limited in their ability to cushion children from detrimental shocks originating in the labor market or in the government sector. In 11 of 12 countries, the changes in parental characteristics over the 1990s were a force that lowered child poverty, and in the remaining case, they were neutral. In other words, in no country were demographic characteristics, as a whole, a force implying higher child poverty rates. Rather, changes in labor markets and the government sector are the major causes of changes in child poverty.

Second, in almost all of the countries under study (9 out of 12), the increased labor market engagement of mothers was consistently a force for lower child poverty rates. At the same time, decreases in the employment rates and earnings of fathers were a force for higher child poverty rates: in 8 of 12 cases, changes in labor market participation of fathers raised child poverty rates, and in 6 of 12, changes in earnings did the same. This said, in countries facing major structural changes—most notably Hungary—a sharp downturn in the labor market of fathers led to increases in child poverty rates that could not be compensated for by increased maternal labor supply. It also does not appear that the amount of income transfers from the state increased in a way to cushion children from these changes.

Third, 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 labor markets. Reforms to income transfers intended to increase labor supply and labor market engagement may or may not end up lowering the child poverty rate. In the United States, important structural changes to income support policies are closely wrapped up with significant economic growth in a labor market with a large service sector and are associated with a significant fall in child poverty in a country that had a very high rate at the beginning of the period. In the Netherlands, on the other hand, structural changes to income support policies contributed to a rise in child poverty. At the same time, increases in the level of support have also been shown to be a central ingredient in lowering the child poverty rate both when it is very high and when it is already quite low. In the United Kingdom and Norway, changes in income transfers are a major reason for declines in child poverty rates, the former beginning the period with a high rate and the latter with a low one.

Our research should not be taken as a full assessment of the extent to which governments have met their commitments to children. There are certain limitations in the analytical approach. Though our results appear to be robust to at least two important aspects of our analytical method, we employ a descriptive tool that does not fully recognize the behavioral interactions between the various influences on incomes. But just as importantly, income poverty needs to be supplemented with other direct measures of deprivation and capabilities, and attention needs to be paid to a much broader set of countries than those in the OECD. Nonetheless, our analysis might be considered useful as a starting point for discussions of the extent to which children in some relatively rich countries have experienced changes in the risk of living in low income.

REFERENCES

- Atkinson, A.B. 1998. *Poverty in Europe*. Oxford: Blackwell Publishers.
- Besley, T. and R. Burgess. 2003. "Halving Global Poverty." *Journal of Economic Perspectives* 17:3–22.
- Blank, R. 2002. "Evaluating Welfare Reform in the United States." *Journal of Economic Literature* 40:1105–66.
- Bradshaw, J. and N. Finch. 2002. "A Comparison of Child Benefit Packages in 22 Countries." Department of Work and Pensions Research Report No. 174. CDS, London.
- Browning, M. 1992. "Children and Household Economic Behavior." *Journal of Economic Literature* 30:1434–75.
- Browning, M., F. Bourguignon, P.-A. Chiappori, and V. Lechene. 1994. "Incomes and Outcomes: A Structural Model of Intrahousehold Allocation." *Journal of Political Economy* 102:1067–98.

- Chiquiar, D. and G.H. Hanson. 2005. "International Migration, Self-Selection, and the Distribution of Wages: Evidence From Mexico and the United States." *Journal of Political Economy* 113:239–81.
- Corak, M. 2006. "Principles and Practicalities in Measuring Child Poverty." *International Social Security Review* 59:3–31.
- Corak, M., M. Fertig, and M. Tamm. Forthcoming. "A Portrait of Child Poverty in Germany." *Review of Income and Wealth*.
- Daly, M.C. and R.G. Valletta. 2006. "Inequality and Poverty in the United States: The Effects of Rising Dispersion of Men's Earnings and Changing Family Behavior." *Economica* 73:75–98.
- Das Gupta, P. 1993. *Standardization and Decomposition of Rates: A User's Manual*. Current Population Reports, Series P23-186. Washington, DC: U.S. Department of the Commerce, Bureau of the Census.
- DiNardo, J., N.M. Fortin, and T. Lemieux. 1996. "Labor Market Institutions and the Distribution of Wages, 1973–1992: A Semiparametric Approach." *Econometrica* 64:1001–44.
- Expert Group on Household Income Statistics, The Canberra Group. 2001. *Final Report and Recommendations*. Ottawa: The Canberra Group.
- Garfinkel, I., L. Rainwater, and T.M. Smeeding. 2006. "A Reexamination of Welfare State and Inequality in Rich Nations: How In-Kind Transfers and Indirect Taxes Change the Story." *Journal of Policy Analysis and Management* 25:855–919.
- Lundberg, S., R. Pollack, and T. Wales. 1997. "Do Husbands and Wives Pool their Resources? Evidence From the UK Child Benefit." *Journal of Human Resources* 32:463–80.
- Phipps, S. and P. Burton. 1995. "Sharing Within Families: Implications for the Measurement of Poverty Among Individuals in Canada." *Canadian Journal of Economics* 28:177–204.
- Sen, A. 1999. *Development as Freedom*. New York: Random House.
- Shryock, H.S., J.S. Siegel, and Associates. 1976. *The Methods and Materials of Demography*. Condensed ed. by E.G. Stockwell. New York: Academic Press.
- Silverman, B.W. 1986. *Density Estimation for Statistics and Data Analysis*. London: Chapman and Hall.
- UNICEF. 2002. *A World Fit for Children*. New York: The United Nations Children's Fund.
- . 2004. *The State of the World's Children, 2005*. New York: The United Nations Children's Fund.
- . 2005. *Child Poverty in Rich Countries, 2005*. Innocenti Report Card No.6. Florence: UNICEF Innocenti Research Centre.