

Children and Household Income Packages: A Cross-National Analysis

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How does a household's economic situation vary with the number of children in it? The most recent papers in the cross-national literature on the effects of children on the economic status of households have had either of two preoccupations. One is child poverty, the topic of a recent major conference (Koen Vleminckx and Timothy Smeeding, 2001). The other concerns the impact of children on the earnings (both wages and hours) of mothers (e.g., Susan Harkness and Jane Waldfogel, 1999).

Our research approaches the problem of child and parental welfare by examining the effects of the presence and number of children on the components of the household's income package (Lee Rainwater and Timothy Smeeding, 1997). After examining the effect of children on age-adjusted disposable income in nine OECD countries, we decompose the effect in each country into a labor-market (earnings and self-employment income) component, a fiscal (tax/transfer) component, and a residual component. We find that cross-national differences in the effect of children on disposable income are determined largely by differences in the effect of children on household earnings, particularly the earnings of wives and single household heads. We also find that countries delivering a generous fiscal package to households with children are typically the countries for which the effect of children on earnings is most negative, and that the negative earnings effect often exceeds the size of the fiscal effect.

I. Technicalities

The data are from the Luxembourg Income Study (LIS), a database of household income

surveys.¹ We use data from the nine countries with LIS Wave IV surveys that contain a measure of gross earnings: Australia, 1994; Canada, 1994; Finland, 1995; Germany, 1994; the Netherlands, 1994; Norway, 1995; Sweden, 1995; the United Kingdom, 1995; and the United States, 1997.

The income variables we employ are all substantially standardized by LIS. Disposable income is basically what one would suppose: the sum of wage and salary income, self-employment income, cash property income, pensions (both public and private), and transfer payments of all sorts (including near-cash government transfers and private transfers such as alimony and child support) minus income tax and mandatory employee (or self-employed) payroll taxes. Similar to Gary Burtless (1990), we have deleted the top 1 percent of the factor income distribution in every country to address top-coding. We have recoded self-employment income and recalculated disposable income to treat reported losses from self-employment as zero. We employ the household rather than the family as the unit of account when the survey gives us the choice (Australia, Canada, and the United States), consistent with the Canberra Group (2001) recommendations. To the extent that the data permit, we call a household a "married couple household" when the household head has a spouse or cohabiting partner present, and a "single head household" otherwise.² The "number of children" in the household refers only to children under the age of 18.

Although we control for the age of the household head (and spouse if present), we are suspicious of using elderly childless households as part of the standard for comparison even after

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¹ Information on the LIS database is available online at (www.lisproject.org).

² Because the surveys differ in their conventions, the only way to tabulate the data comparably is to recode all "heads" of married couple households to be male.

that adjustment, so we discuss results only for households with working-age heads.³

II. Empirical Strategy

The first step in our empirical strategy is to regress disposable income on age of head (and of spouse if present), age squared, a dummy variable KIDZ for the presence of children under 18, and a variable KIDN giving the number of children in excess of 1 for households containing more than one child.⁴ Because larger families tend to be older families, we control for age. We have not controlled for anything except age, because our goal is to show how the (age-adjusted) income package is affected by the presence and number of children, *mutatis mutandis*.

The second step is to run the identical regressions for the following income package components: (i) the head's earnings, (ii) the spouse's earnings (for married-couple households), (iii) the sum of the head and spouse earnings plus household self-employment income, (iv) social transfers net of taxes, and (v) an "other" category that includes both property income and private transfers such as alimony and child support, defined to make the decomposition exhaustive. The coefficients from regressions (iii)–(v) add to the coefficients in the disposable income regression. Since all of these coefficients are measured in local currency, the third step is to normalize them by the median equivalized household income for a household of four in each country (and convert to a percentage).⁵

³ Results for all ages are found in appendix III of Sullivan and Todd (2001).

⁴ The KIDZ coefficients are statistically significant at the 5-percent level for eight of the nine countries for both married and single heads of households. The KIDN coefficients are usually, but less consistently, significant. We show detailed regression results in appendix II of Sullivan and Todd (2001).

⁵ "Equivalized income for a household of four" is calculated as $2DI/S^{0.5}$, where DI is disposable income and S is the size of the household. The use of the square-root equivalence scale is common. By doubling DI before employing the equivalence scale we are just centering the normalization on a household with four persons instead of one. The resulting normalized coefficients are similar in size to those from an alternative normalization by the mean household disposable income in the United States, converted at purchasing-power parity, as shown in appendix III of Sullivan and Todd (2001).

TABLE 1—DECOMPOSITION OF THE EFFECTS OF CHILDREN ON DISPOSABLE INCOME (DPI) AND CROSS-NATIONAL CORRELATIONS FOR MARRIED-COUPLE HOUSEHOLDS, HEAD AGED 25–54

| Country ^a | DPI | Earnings | | | Transfers ^c | Other income |
|--|-------|----------|--------|--------------------|------------------------|--------------|
| | | Head | Spouse | + SEI ^b | | |
| <i>A. KIDZ Coefficients:^d</i> | | | | | | |
| FI | 4.1 | 5.9 | -1.4 | 6.8 | -2.2 | -0.5 |
| NO | 3.5 | 5.7 | -3.1 | 1.3 | 4.2 | -2.0 |
| SW | 5.2 | 3.0 | -9.5 | -6.2 | 10.4 | 1.0 |
| GE | -9.1 | 3.6 | -26.5 | -24.6 | 17.5 | -2.0 |
| NE | -11.0 | 2.2 | -22.1 | -20.5 | 10.4 | -0.9 |
| AU | -14.7 | -0.8 | -15.5 | -16.1 | 5.2 | -3.8 |
| UK | -14.7 | 2.4 | -25.8 | -23.6 | 12.3 | -3.4 |
| CA | -3.8 | 2.0 | -9.5 | -7.4 | 4.4 | -0.8 |
| USA | 2.2 | 5.9 | -7.7 | -1.6 | 3.2 | 0.7 |
| Correlation with | | | | | | |
| DPI: | | 0.758 | 0.843 | 0.880 | -0.518 | 0.769 |
| Correlation with | | | | | | |
| earnings + SEI: | | | | | -0.856 | 0.534 |
| <i>B. KIDN Coefficients:^e</i> | | | | | | |
| FI | 4.4 | 0.2 | -6.3 | -4.5 | 9.2 | -0.3 |
| NO | 0.4 | 0.0 | -8.1 | -5.8 | 7.1 | -0.9 |
| SW | 4.1 | -3.1 | -6.0 | -9.1 | 12.8 | 0.4 |
| GE | -1.0 | 3.3 | -8.9 | -7.9 | 9.0 | -2.0 |
| NE | 0.2 | 3.2 | -8.8 | -3.5 | 4.3 | -0.7 |
| AU | -5.9 | -1.7 | -9.7 | -10.9 | 8.0 | -3.1 |
| UK | -4.3 | -9.7 | -7.4 | -15.5 | 12.5 | -1.2 |
| CA | -2.2 | -0.4 | -6.8 | -6.1 | 4.5 | -0.6 |
| USA | -4.4 | -2.4 | -7.3 | -9.3 | 5.0 | 0.0 |
| Correlation with | | | | | | |
| DPI: | | 0.342 | 0.554 | 0.584 | 0.265 | 0.598 |
| Correlation with | | | | | | |
| earnings + SEI: | | | | | -0.598 | 0.301 |

Note: All values are estimated from regressions on ages of head and spouse, and their squares, normalized by national median equivalent income for a family of four and expressed as percentages.

^a Abbreviations: FI, Finland; NO, Norway; SW, Sweden; GE, Germany; NE, the Netherlands; AU, Australia; UK, United Kingdom; CA, Canada; USA, United States.

^b Earnings plus self-employment income (SEI).

^c Transfers net of taxes.

^d Presence of children in household.

^e Number of children in household in excess of 1.

III. Results

The results are shown in Table 1 (for married couple households) and Table 2 (for single head households). The metric for the coefficients in the tables is "percentage of median equivalized household income for a household of four" in each country.

Table 1A shows a clear pattern in the effect of the presence of children (KIDZ) on the in-

TABLE 2—DECOMPOSITION OF THE EFFECTS OF CHILDREN ON DISPOSABLE INCOME (DPI) AND CROSS-NATIONAL CORRELATIONS FOR HOUSEHOLDS WITH SINGLE HEADS, AGED 25–54

| Country ^a | DPI | Earnings | | Transfers ^c | Other income |
|---|-------|----------|--------------------|------------------------|--------------|
| | | Head | + SEI ^b | | |
| A. <i>KIDZ</i> Coefficients: ^d | | | | | |
| FI | 12.9 | -2.9 | -2.9 | 11.7 | 4.2 |
| NO | 10.6 | -11.7 | -13.9 | 18.5 | 6.0 |
| SW | 15.4 | -5.4 | -6.3 | 17.1 | 4.6 |
| GE | -10.0 | -23.7 | -29.4 | 18.3 | 1.1 |
| NE | -8.5 | -45.7 | -48.0 | 40.7 | -1.2 |
| AU | -10.0 | -38.0 | -43.0 | 29.7 | 3.3 |
| UK | -13.2 | -38.1 | -42.9 | 30.3 | -0.5 |
| CA | -0.7 | -18.6 | -20.1 | 15.2 | 4.2 |
| USA | -4.3 | -16.6 | -18.2 | 13.0 | 0.9 |
| Correlation with | | | | | |
| DPI: | | 0.871 | 0.893 | -0.597 | 0.786 |
| Correlation with | | | | | |
| earnings + SEI: | | | | -0.887 | 0.728 |
| B. <i>KIDN</i> Coefficients: ^e | | | | | |
| FI | 17.0 | -1.5 | 1.7 | 10.4 | 4.9 |
| NO | 6.0 | -5.1 | -6.2 | 8.8 | 3.4 |
| SW | 12.0 | -8.5 | -8.3 | 14.6 | 5.8 |
| GE | 10.4 | -14.4 | -8.7 | 15.0 | 4.2 |
| NE | 3.0 | -11.5 | -10.3 | 8.7 | 4.6 |
| AU | -1.5 | -7.2 | -7.7 | 7.1 | -0.9 |
| UK | 2.6 | -9.6 | -9.3 | 12.5 | -0.6 |
| CA | 1.5 | -5.3 | -5.8 | 7.2 | 0.1 |
| USA | -3.3 | -7.1 | -7.4 | 5.9 | -1.8 |
| Correlation with | | | | | |
| DPI: | | 0.156 | 0.542 | 0.687 | 0.845 |
| Correlation with | | | | | |
| earnings + SEI: | | | | -0.146 | 0.199 |

Note: All values are estimated from regressions on age of head of household and its square, normalized by national median equivalent income for a family of four and expressed as percentages.

^a Abbreviations are as defined in the notes for Table 1.

^b Earnings plus self-employment income (SEI).

^c Transfers net of taxes.

^d Presence of children in household.

^e Number of children in household in excess of 1.

come packages of couples. In the three Nordic countries, couples with children have higher age-adjusted disposable incomes than those without children. In the North American countries, the effect of the presence of children is small: small and positive in the United States; small and negative in Canada. In the remaining countries (Germany, the Netherlands, the United Kingdom, and Australia), the effect is negative and substantial, on the order of 10–15 percent (of median equivalized income).

The question is whether this pattern reflects the pattern of labor-market effects (earnings and self-employment) or the pattern of fiscal effects (social transfers net of taxes). The cross-national correlations show that the disposable income effects are positively correlated with the earnings effects, but negatively correlated with the fiscal effects.⁶ The effect of the presence of children on the earnings of spouses is negative in all nine countries; but the four countries in which children have a positive impact on disposable income are the countries in which children have the least negative impact on spouse earnings. Three of those four countries (Norway, Finland, and the United States) have the *smallest* fiscal effect of children. The three countries with the largest fiscal effects and the smallest labor-market (earnings plus self-employment) effects rank 6th, 7th, and 9th in the effect of children on disposable income. In general, the fiscal effects serve to cushion the impact of negative labor-market effects in countries where those negative effects are largest. Sweden sticks out as an exception, with a strong positive effect of children on disposable income delivered by balancing a small negative labor-market effect with a larger positive fiscal effect.

Table 2A, for single household heads, shows that the effect of the presence of children on a single head's earnings is negative everywhere. The effect of children on "other income," which includes alimony and child support, is more important for single-head households than for married-couple households, especially in the Nordic countries and in Canada. Despite some differences in detail, the basic story line is unchanged: countries in which the effect of children on disposable income is least negative are those countries that minimize the effects of children on the labor-market success of parents. Across countries, the fiscal effects are negatively correlated with the effects on disposable income and again serve to cushion the negative labor-market effects where they are largest.

Tables 1B and 2B look at the effect of the

⁶ The values in Tables 1 and 2 are simply correlations between the values shown in the respective columns. The tables in appendix III of Sullivan and Todd (2001) report rank correlations also.

number of children in excess of one (KIDN), rather than the presence of children (KIDZ). For married-couple households, the number of children has positive effects on disposable income in the Nordic countries, and negative effects in North America, Australia, and the United Kingdom. Additional children have a negative impact on total household earnings in all nine countries, though by rather different amounts. The correlation between the effects of children on disposable income and on labor-market earnings remains positive. There is again a negative cross-national correlation between the fiscal effect and the labor-market effect. The United States is an especially interesting case. Comparing the disposable-income impact in the upper panel of Table 1 to that in the lower panel, one discovers that the positive impact of the first child on disposable income is more than offset by the negative impact of the second. No other country "changes sign" in this way.

Table 2B, which shows the impacts of the number of children (KIDN) for single-head households, tells a more complicated story. While the impact of the presence of children (Table 2A) on disposable income was negative everywhere but the Nordic countries, the impact of the *number* of children is positive, except in Australia and the United States. Social transfers net of taxes, and sometimes also other income (the category that includes alimony and child support), seem to matter quite a lot in determining the effect of the number of children on disposable income of single-head households. The impact of additional children on a single head's earnings is negative in all nine countries, but these negative impacts are offset in most countries by the fiscal impacts, which are in this case positively correlated with the impacts on disposable income.

To summarize, the results support three conclusions:

- (i) The effects of children on (age-adjusted) household disposable income differ substantially and systematically across countries.
- (ii) Across countries, the effects of children on disposable income are highly correlated with the effects of children on household earnings, especially the earnings of wives and single parents.
- (iii) Across countries, the effects of children on the fiscal package are negatively correlated with the effects of children on household earnings.

The first conclusion suggests the need for further research using cross-nationally comparable data. The second conclusion is evidence that research on cross-national differences in the treatment of mothers in the workplace is relevant to the welfare of children as well as of the mothers themselves. The third conclusion requires further investigation to determine whether it is primarily a matter of behavior responding to policy incentives or of policy responding to behavioral preferences.

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