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## Demography or Income Packaging: What Explains the Income Distribution of The Netherlands?

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## I. Introduction

This report examines the role of demographic, economic, and policy-related institutional factors which we term "income packaging" in accounting for income distribution differences between The Netherlands and seven other OECD countries. These countries have been chosen to represent a range in income inequality and in the nature of their income packaging characteristics. The question addressed is how much of the difference across these nations is due to demography (that is the age and household structures of The Netherlands), as compared to other factors which determine income packaging?

The influence of demographic factors is assessed in two ways: (1) by reweighting the other countries so that the distribution in a matrix of demographic (and earnings related) factors is the same as in The Netherlands and (2) by reversing the process to reweight The Netherlands so that its matrix of demographic factors is the same as in each of the other countries. Thus, we can examine three kinds of distributions:

> the actual distribution in each of the countries,
>
> the distribution of Dutch income reweighted to reflect the demography and earnings status of the other countries, and
>
> the distribution of other countries' income reweighted to reflect the demography of The Netherlands.

We compare the Dutch distribution in 1991 with the distribution in the following countries: Australia (1989), Belgium (1992), Denmark (1992), France (1984), Germany (1989), the United Kingdom (1986), and the United States (1991).

These countries reflect a wide range of national experiences. The income packaging institutions of each of the countries in this analysis includes all of the effects of market and social protection institutions. Income packaging is therefore, the residual component of income distribution after taking into account the effect of demographic factors and the number and type of incomes in each nation..

The data used in this analysis came from the Luxembourg Income Study (LIS) a collection of over 25 nations and 75 data sets spanning the period 1970 to 1995. These household microdata surveys are accessible via Internet from all over the world. They contain a wide range of national data sets spanning Central and Eastern Europe, Asia, Australia, North America and Europe. Here we have selected comparable data sets for Belgium, Denmark, France and Germany—all neighboring EC nations which have similar structures to The Netherlands institutional systems of economic and social welfare, but whose social policy institutions and age structures are somewhat different than are those in The Netherlands. We also include three Anglo-Saxon nations—one in the EC (United Kingdom), and two other larger nations: Australia and the United States.

Because these data have been used for similar purposes, we refer to other related uses of LIS data throughout this paper. Our results are presented in the same general format as in our recent study of income distribution in OECD countries. Because more recent data is available in all cases (except France and the United Kingdom), we have used that more recent data rather than the data from the mid 1980s that was used in the OECD study (Atkinson, Rainwater, and Smeeding 1995).

Most of the analysis deals with the distribution of equivalent disposable income as defined in the OECD study—that is, after tax, after transfer income adjusted for family size by an equivalence factor equal to the square root of family size. That is, equivalent disposable income (*EI*)

is equal to household disposable income (*DI*) divided by household size (*S*) raised to the power of .5. For example,

$$EI \quad DI / S^{.5}$$

The unit of analysis is the household: all persons related and unrelated sharing the same living facilities have their incomes pooled into one sum which is assumed to be equally shared among all members of the unit. The household definition, income definition and other parameters are the same across all eight nations examined here. All calculations are weighted by the number of persons in the household.

We first consider summary indicators of inequality—the Gini coefficient and the Atkinson coefficient. Then we characterize the distributions in more detail by presenting results on the percentile points of the distribution, the cumulative proportion of individuals with incomes below given percentages of median equivalent income and cumulative decile shares of the distribution.[1] Finally, we briefly consider the effectiveness of social protection institutions by examining the extent to which individuals who are poor on the basis of market income are also poor after the addition of taxes and transfers.

## II. Assessing Demographic and Income Packaging Effects by Reweighting

Separating one set of forces for another can be accomplished in many ways. This process is most often termed "decomposition" whereby one set of forces (demographic, economic, social policy-specific institutions, etc.) is separated from the others and allowed to vary across nations while all else, i.e., all other characteristics of the income distribution, are held constant. Microsimulation is a related technique whereby one imposing set of characteristics, e.g., a new structure of social policy programs, or an existing demographic and economic situation. These new

policies can be truly new or can involve the imposition of one nation's policy parameters on another nation's population. The Luxembourg Income Study (LIS) data base has been used to carry out both types of exercises, e.g., Smeeding (1997); Danziger and Jantti (1994); Jantti (1996), and Smeeding, Ross, and Rainwater (1996).

Here we follow a decomposition technique which involves reweighting to assess the impacts of one set of factors (demographic composition) versus all other factors (income packaging) on income distribution. After investigating several different possibilities for assessing the effects of demographic factors, we concluded that the most feasible method to achieve this objective was reweighting. We also believe that reweighting is probably the most straightforward way of determining the effects of demographic characteristics on distribution.[2]

For each country we have defined a demographic matrix involving five factors: head's earnings status; number of other earners; age group; family type; and number of children. The percentage distribution of each of these five categories is given in Table 1. The matrix of these five categories has 242 nonempty cells for The Netherlands. The reasons for separating type and number of earners was to account for social institutional and market forces regarding such elements as the number of disabled adults (which are large in The Netherlands compared to other nations), retirement ages, school leaving ages and patterns of living together. These differences are treated as demographic differences in this analysis.

The family type categories are perhaps not self-explanatory. The first two cover individuals who are the sole adult, the third a couple with no other adults. The other family types include other adults—two or more men, a female head and a man who is not living with her as a spouse, a couple with one or more additional men, a male head and a woman who is not living with him as a spouse, two or more women, and a couple with one or more additional women. We considered including

**Table 1. Distribution of Demographic Categories**

| Category | NL91 | AS89 | BE92 | DK92 | GE89 | FR84 | UK86 | US91 |
|---|---|---|---|---|---|---|---|---|
| **Head's Earnings:** | | | | | | | | |
| None | 29.4 | 22.8 | 30.8 | 24.4 | 33.9 | 20.9 | 36.0 | 21.1 |
| Salary | 66.5 | 65.7 | 69.2[a] | 66.9 | 59.3 | 65.6 | 53.2 | 71.1 |
| Self-Employed | 4.1 | 11.5 | | 8.7 | 6.8 | 13.4 | 10.9 | 7.8 |
| **Other Earners:** | | | | | | | | |
| None | 49.5 | 41.8 | 50.8 | 41.4 | 50.6 | 56.6 | 54.8 | 38.7 |
| One | 42.9 | 45.8 | 43.6 | 49.5 | 36.1 | 43.1 | 36.4 | 46.9 |
| Two | 6.4 | 9.3 | 4.7 | 7.9 | 8.3 | 0.2 | 7.2 | 10.8 |
| Three + | 1.1 | 3.1 | 0.8 | 1.2 | 2.5 | 0.1 | 1.7 | 3.6 |
| **Age Group:** | | | | | | | | |
| Up to 35 | 24.9 | 29.0 | 24.2 | 26.9 | 16.9 | 25.2 | 26.2 | 28.1 |
| 35 to 44 | 31.4 | 29.5 | 27.2 | 24.6 | 29.6 | 26.2 | 26.6 | 28.3 |
| 45 to 54 | 18.1 | 18.6 | 18.7 | 20.1 | 21.1 | 20.6 | 17.9 | 18.4 |
| 55 to 64 | 12.0 | 11.1 | 14.0 | 11.6 | 15.7 | 14.6 | 13.0 | 11.0 |
| 65 and over | 13.7 | 11.7 | 15.9 | 16.8 | 16.8 | 13.5 | 16.3 | 14.2 |
| **Family Type:** | | | | | | | | |
| Man alone | 5.3 | 5.6 | 3.1 | 11.1 | 4.5 | 4.1 | 4.0 | 5.7 |
| Woman alone | 11.1 | 10.1 | 8.0 | 16.2 | 9.5 | 8.4 | 10.3 | 12.6 |
| Couple | 64.4 | 55.8 | 59.7 | 58.8 | 52.0 | 58.5 | 59.1 | 49.5 |
| Two plus man | 0.7 | 2.0 | 0.6 | 0.6 | 0.3 | 0.7 | 1.7 | 2.8 |
| Woman and man | 1.0 | 2.9 | 2.1 | 0.9 | 2.4 | 1.7 | 2.9 | 5.0 |
| Couple and man | 10.9 | 13.3 | 17.4 | 7.5 | 21.8 | 15.7 | 12.1 | 12.5 |
| Man and woman | 0.2 | 1.2 | 0.5 | 0.5 | 0.4 | 1.0 | 1.8 | 1.2 |
| Two plus woman | 0.8 | 2.3 | 1.4 | 0.7 | 0.9 | 1.4 | 2.0 | 3.6 |
| Couple plus woman | 5.5 | 6.7 | 7.2 | 3.8 | 8.3 | 8.6 | 6.2 | 7.1 |
| **Number of Children:** | | | | | | | | |
| None | 49.1 | 44.5 | 47.9 | 55.7 | 49.8 | 42.3 | 45.2 | 44.5 |
| One | 13.4 | 16.5 | 19.3 | 17.9 | 19.5 | 20.1 | 17.5 | 18.5 |
| Two | 24.5 | 22.1 | 19.3 | 19.3 | 17.9 | 21.7 | 22.7 | 20.7 |
| Three and over | 12.9 | 16.9 | 13.5 | 7.1 | 12.7 | 15.8 | 14.6 | 16.2 |

[a]The self employed are included among the salaried in the Belgium dataset.
Source: Authors' analysis of the LIS database.

a part-time/full-time distinction but definitions of this variable are so different across the LIS countries that the results would not be sufficiently comparable.

The other countries selected are all ones in which the family unit is defined in such a way that it can contain members other than a head, spouse, and minor children. For this reason we excluded Sweden and substituted Denmark because the Swedish data set defines the family as a tax unit and counts members other than head, spouse, and minor children as separate families. Thus, the effect of other earners cannot be assessed for the Swedish survey.

The reweighting was accomplished by calculating for each country the proportion of cases in each cell of the matrix formed by the five factors in Table 1. For the simulation of other countries' demography, the Dutch weight was multiplied by the ratio of the other country's cell proportion to that of The Netherlands for all cells in which the Dutch weight was greater than zero. If there were no cases in an other country's cell in which the Dutch weight was nonzero the other country's weight was recoded to one. (That is, weight of 1; the average weight was a much larger number.) For the simulation of Dutch demography on the other countries, the procedure was reversed—the country's weight was multiplied by the ratio of the Dutch cell proportion to the other country's proportion. If the Dutch weight was zero it was set to one.

We can summarize the counter factual being simulated as follows:

> **Simulated Dutch demography**: If the demographic matrix of another country were the same as that of The Netherlands without any changes in that country's income packaging institutions, the distribution of income would be as simulated; and,
>
> **Simulated demography of other countries**: If the Dutch demographic matrix were the same as the other country's with no change in Dutch income institutions, the distribution of income would be as simulated.

We can assess the relative impact of these various demographic characteristics on the income distribution by examining the regression of the logarithm of Dutch equivalent income on each of the demographic categories. The results of this Multiple Classification Analysis for The Netherlands are given in Table 2. We present both actual (unstandardized) and standardized (for other variables) coefficients and group betas. Here we discuss mainly the standardized coefficients. It should come as no surprise that the most important of the factors is that of head's earning status, particularly for non-earners. Number of children plays an important role—those with no children are quite a bit better off and those with two or more children are worse off. Age of head shows a roughly linear relationship with equivalent income. Interestingly, with the controls, the oldest age group is the best off. The number of earners other than the head seems to operate as a dichotomy—whether there is one, two, or three earners seems to have small effects on equivalent income. Family type has the least effect.

In this additive model the five factors account for 30 percent of the variance. A separate analysis finds that taking into account the full matrix of these demographic characteristics a little over half of the variance in equivalent income is between the cells of the matrix and a little less than half is within the cells. Thus, it appears that an additive model does not capture as much as two-thirds of the between variance. (Of course, some of the between variance of the full demographic matrix is error, particularly given the small sample size of our Dutch data set.)

Finally, it should be noted that we experimented with two simpler demographic matrices to reduce the number of sparse and empty cells. We collapsed salaried and self-employed into one category, two and three or more other earners into one category, two and three or more children into one category, and family type into three categories—couple, male, and female head. The simulated distributions showed much weaker effects of demography than the full demographic matrix. As we

**Table 2. Regression Coefficients of Demographic Categories for Log Equivalent Income in the Netherlands Based on Multiple Classification Analysis (Grand Mean = 10.19; multiple $R^2$ = 0.301)**

| Category | Unstandardized | Standardized |
|---|---|---|
| **Head's Earnings:** | | |
| None | -0.26 | -0.40 |
| Salary | 0.10 | 0.15 |
| Self-Employed | 0.13 | 0.17 |
| BETA | 0.33 | 0.49 |
| **Other Earners:** | | |
| None | -0.14 | -0.10 |
| One | 0.18 | 0.13 |
| Two | 0.24 | 0.19 |
| Three plus | 0.28 | 0.15 |
| BETA | 0.32 | 0.24 |
| **Age Group:** | | |
| Up to 35 | -0.05 | -0.19 |
| 35 to 44 | -0.02 | -0.02 |
| 45 to 54 | 0.16 | 0.07 |
| 55 to 64 | 0.08 | 0.13 |
| 65 and over | -0.14 | 0.19 |
| BETA | 0.19 | 0.26 |
| **Family Type:** | | |
| Man alone | -0.03 | 0.02 |
| Woman alone | -0.31 | -0.09 |
| Couple | 0.01 | 0.04 |
| Two plus man | 0.35 | 0.19 |
| Woman and man | 0.12 | 0.07 |
| Couple and man | 0.15 | -0.14 |
| Man and woman | 0.24 | 0.15 |
| Two plus woman | 0.09 | 0.03 |
| Couple plus woman | 0.12 | -0.14 |
| BETA | 0.25 | 0.15 |
| **Number of Children:** | | |
| None | 0.08 | 0.14 |
| One | 0.03 | -0.02 |
| Two | -0.08 | -0.16 |
| Three and over | -0.17 | -0.22 |
| BETA | 0.18 | 0.30 |

Source: Authors' calculations based on the LIS dataset.

will see, the effects of even this full matrix do not suggest that demographic factors have a major impact on national differences in distribution. We can conclude then that the effects we will see in the sections which follow represent the largest likely effects of demographic differences on the income distribution in these eight countries.

## III. Summary Measures of Inequality

The results for the Gini and Atkinson measures of inequality are presented in Table 3. The Ginis are presented in the European style expressed as a percentage and ranging from 0 to 100.0 percent of equality. The first column gives the actual coefficients for each countries data set using its own weights. The second column gives results for each country's data set weighted to simulate the Dutch demography. The third simulated column gives results for the Dutch data set weighted to simulate the demography of each of the other countries.

We see that according to the Gini coefficient, The Netherlands is grouped with three other countries (Belgium, Denmark, and Germany) with quite low coefficients compared to France, the United Kingdom, and Australia with somewhat larger coefficients, and the United States with the largest coefficient indicating the highest degree of inequality. Roughly, this same pattern of overall inequality is observed in other LIS-based analyses of inequality (see Smeeding 1997; Gottschalk and Smeeding 1997a, 1997b; Atkinson, Rainwater, and Smeeding 1995).

Imposing Dutch demography on these distributions does not change the readings very much. In five of the countries the difference is about one percentage point or less—in Denmark and the United Kingdom the change is less than two points. The range between the least and most equal nations (United States and Denmark in the simulated column; United States and Belgium in the actual column) remains at about 12.0 percentage points or about 40 percent of median inequality.

**Table 3. Inequality Coefficients of Actual and Simulated Distributions of Equivalent Income[a]**

| Country | Actual | Simulated | |
|---|---|---|---|
| | | Dutch Demography and Own Income Packaging | Dutch Income Packaging and Own Demography |
| **Gini Coefficients** | | | |
| The Netherlands | 25.9 | 25.9 | 25.9 |
| Australia | 30.7 | 30.0 | 27.5 |
| Belgium | 22.4 | 22.9 | 25.7 |
| Denmark | 23.6 | 21.7 | 28.4 |
| France | 29.1 | 29.3 | 26.0 |
| Germany | 26.8 | 25.6 | 28.4 |
| United Kingdom | 29.6 | 27.8 | 28.8 |
| United States | 34.0 | 33.6 | 27.5 |
| **Atkinson Coefficients** | | | |
| The Netherlands | 5.9 | 5.9 | 5.9 |
| Australia | 7.9 | 7.5 | 6.7 |
| Belgium | 4.1 | 4.3 | 6.1 |
| Denmark | 5.1 | 4.2 | 7.2 |
| France | 7.2 | 7.4 | 5.9 |
| Germany | 6.7 | 6.1 | 7.4 |
| United Kingdom | 7.3 | 6.4 | 7.4 |
| United States | 9.6 | 9.4 | 6.7 |

[a]Demography includes age of family head, family type, number of earners, number of children, earning status of head as shown in Table 2. Equivalent income is after-tax, after-transfer income adjusted for family size. For the Atkinson coefficient epsilon is 0.5

Source: Authors' calculations based on the LIS dataset.

From the perspective of The Netherlands, the imposition of other demography results in some very interesting changes in both the level and range in inequality using the Gini measures in the final column of Table 3. From other nations perspective, the final column is akin to imposing the Dutch income package in their nation. Inequality drops by 6.5 points (or 19 percent) in the United States and by over 3.0 points (about 10 percent) in Australia and France. In contrast, Danish and Belgium inequality rises by 4.8 points (20 percent) and 3.3 (15 percent) respectively. In Germany and in the United Kingdom the changes are much smaller. The net result is to reduce the range of inequality across countries from 12.0 points to 3.1 points, or from over 40 percent to only 11 percent! It therefore appears that the Dutch system of income packaging has a much stronger effect on the level and range of overall inequality, as measured by the Gini than does Dutch demography.

Much the same pattern seems to the evident in the results for the Atkinson coefficients although the impact seems to be even greater. This is to be expected given that the Atkinson coefficient (with an epsilon of .5) is more sensitive than the Gini to inequality at the lower end of the distribution, and given that the Dutch have a strong safety net. Dutch demography has a relatively large impact only in Denmark (a decline of .9 or 18 percent) and in the United Kingdom (a decline of .9 or 12 percent). We find that another nation's demography and the Dutch income package, would increase the country's Atkinson by 2.0 points or almost 50 percent in the case of Belgium and by 2.1 points or about 40 percent in Denmark. The Atkinson in the United States would fall by 2.9 points or 30 percent and by 15 percent or more in Australia and France. Again, the Dutch income package reduces the range of inequality across these nations from a 5.5 point actual difference, in Atkinson's coefficients, to a 1.5 point simulated difference. In contrast, the Dutch demography reduces the range only to 5.2 points.

## IV. Demographic and Income Packaging Effects on Percentile Points

A more detailed picture of the changes in the income distribution come from examining differences in the percentiles of the distribution (given percentile point as a percentage of the median equivalent income.) The detailed percentile points of the distribution are given in Table 5 while Table 4 shows results for two percentiles at the bottom and top of the distribution—the 10th and the 90th percentile. That is, it shows the income of the 10th and 90th person out of 100 persons as a percentage of the median or 50th percentile.[3] We see quite clearly here both the far greater impact on distribution of income packaging compared to demography and the place where the impact is the largest (i.e., $P_{40}$ versus $P_{90}$).

Comparing The Netherlands to the other countries at the 10th percentile we find The Netherlands clustered closely with Belgium, Denmark, France, and Germany. The United Kingdom is a bit lower, followed by Australia and, finally, the United States. At the 90th percentile, Denmark and Belgium have the lowest values, followed by The Netherlands and Germany. Then came Australia, France and the United Kingdom with almost identical values, and then the United States with the biggest $P_{90}$ value.

Turning to simulations we find rather small differences between the actual distribution and the simulated distribution with Dutch demography. The average difference between the simulated amount and the amount for the actual distribution is only about 4 percent at the 10th percentile. The largest difference is with the Danish income packaging and that is less than three points (or 5.5 percent). At the 90th percentile we also find very small differences when applying the Dutch demography to other nation's packaging except perhaps in the case of the United Kingdom. The observed pattern, in the first column is changed hardly at all by simulating Dutch demography for each of the other countries. Only in the United Kingdom is there more than a very slight shift, and

**Table 4. Percentiles of Equivalent Income, $P_{10}$ and $P_{90}$, as a Percent of the Median[a]**

| Country | Actual | Simulated | |
|---|---|---|---|
| | | Dutch Demography and Income Packaging of: | Dutch Income Packaging and Demography of: |
| **10th Percentile ($P_{10}$)** | | | |
| The Netherlands | 58.6 | 58.6 | 58.6 |
| Australia | 45.4 | 48.4 | 57.3 |
| Belgium | 58.8 | 57.1 | 59.1 |
| Denmark | 54.5 | 57.4 | 54.5 |
| France | 55.9 | 55.0 | 61.4 |
| Germany | 53.7 | 56.6 | 56.6 |
| United Kingdom | 51.9 | 54.4 | 56.0 |
| United States | 36.6 | 37.9 | 56.7 |
| **90th Percentile ($P_{90}$)** | | | |
| The Netherlands | 172.2 | 172.2 | 172.2 |
| Australia | 193.3 | 194.0 | 177.2 |
| Belgium | 162.5 | 163.6 | 169.8 |
| Denmark | 154.7 | 152.1 | 175.2 |
| France | 192.4 | 191.4 | 176.7 |
| Germany | 171.9 | 173.6 | 164.8 |
| United Kingdom | 193.1 | 183.5 | 181.1 |
| United States | 207.4 | 208.5 | 175.0 |

[a]Demography includes age of family head, family type, number of earners, number of children, earning status of head as shown in Table 2. Equivalent income is after-tax, after-transfer income adjusted for family size.

Source: Authors' calculations based on the LIS dataset.

here it is less than ten points, about 5 percent of the 90th percentile point. The effect of differential demography as seen by comparing the first and second columns in Table 4 is therefore very small.

Now consider the third and final column in Table 4, Dutch income packaging and other nations' demography. Here changes at both the 10th and 90th percentile are rather large. At the 10th percentile, the United States gains 20.1 points or 55 percent, while the Australians gain 11.9 points or 26 percent. In fact, *every* nation's 10th percentile point ratio rises, comparing the first to the third column. The range in $P_{10}$ across the nations shrinks to less than seven points compared to an actual range of 22.2 points in the first column. Clearly the Dutch income package does a better job in protecting the incomes of the poor (those at $P_{10}$) than does any other package found in these nations.

The opposite case emerges at the 90th percentile in the bottom half of Table 4. Now the United States' 90th percentile falls from 207.4 to 175.0, a drop of 32.4 percentage points or 16 percent. Australian and French values also decrease while the Danish 90th percentile increases by 20.5 points or 13 percent. Again the simulated range of differences across nations is cut, from 52.7 percentage points to 21.3 points or from 34 to 6 percent!

Turning to Table 5, we begin by examining the top of the income distribution. The picture at the 95th percentile is very similar to that at the 90th percentile. Since there are relatively few cases at the extremes of the distribution we would expect more instability in the percentile points here. Given that, the results in Table 5 suggest not a great deal of effect of the simulated demography (compare top and second panels.) There are very small differences between the 95th percentile points of the actual distributions and the other countries simulated distributions using Dutch demography. But then, whichever country's demography we simulate with the Dutch income packaging the 95th percentile point is in the range of 191.3 (Germany) to 217.1 (United States), a range much smaller than the 248.5 (United States) to 186.4 (Belgium) range found in the actual

**Table 5. Percentages of the Median and Decile with Simulated Demography**

| | Percentiles | | | | | |
|---|---|---|---|---|---|---|
| | $P_{10}$ | $P_{25}$ | $P_{75}$ | $P_{90}$ | $P_{95}$ | $P_{90}/P_{10}$ |
| The Netherlands | 58.6 | 74.3 | 135.0 | 172.2 | 204.3 | 2.94 |
| **Actual** | | | | | | |
| Australia | 45.4 | 66.6 | 144.8 | 193.3 | 228.2 | 4.26 |
| Belgium | 58.8 | 74.6 | 130.8 | 162.5 | 186.4 | 2.76 |
| Denmark | 54.5 | 72.4 | 127.3 | 154.7 | 175.4 | 2.84 |
| France | 55.9 | 72.4 | 139.5 | 192.4 | 233.1 | 3.44 |
| Germany | 53.7 | 74.7 | 132.3 | 171.9 | 201.1 | 3.20 |
| United Kingdom | 51.9 | 68.0 | 143.9 | 193.1 | 231.3 | 3.72 |
| United States | 36.6 | 61.7 | 149.3 | 207.4 | 248.5 | 5.67 |
| **Dutch Demography and the Income Packaging of:** | | | | | | |
| Australia | 48.4 | 68.6 | 145.9 | 194.0 | 229.4 | 4.01 |
| Belgium | 57.1 | 73.7 | 131.5 | 163.6 | 190.8 | 2.87 |
| Denmark | 57.4 | 74.8 | 124.7 | 152.1 | 170.3 | 2.65 |
| France | 55.0 | 72.3 | 140.8 | 191.4 | 230.4 | 3.48 |
| Germany | 56.6 | 73.6 | 137.1 | 173.6 | 212.0 | 3.07 |
| United Kingdom | 54.4 | 70.3 | 140.0 | 183.5 | 223.8 | 3.38 |
| United States | 37.9 | 62.5 | 149.1 | 208.5 | 251.3 | 5.50 |
| **Dutch Income Packaging and the Demography of:** | | | | | | |
| Australia | 57.3 | 73.5 | 137.7 | 177.2 | 215.2 | 3.09 |
| Belgium | 59.1 | 75.0 | 134.3 | 169.8 | 200.3 | 2.88 |
| Denmark | 54.5 | 71.4 | 134.7 | 175.2 | 214.8 | 3.22 |
| France | 61.4 | 76.0 | 136.1 | 176.7 | 209.7 | 2.88 |
| Germany | 56.6 | 77.6 | 132.6 | 164.8 | 191.3 | 2.91 |
| United Kingdom | 56.0 | 71.8 | 140.4 | 181.1 | 217.0 | 3.23 |
| United States | 56.7 | 73.6 | 136.2 | 175.0 | 217.1 | 3.08 |

Source: Authors' calculations based on the LIS database.

distributions. Again, Dutch income packaging creates greater equality across countries than is actually observed, while demography makes little difference.

These results are reinforced by comparing the actual (top panel) decile ratios ($P_{90}/P_{10}$) in the last column of Table 5 to the simulations based on the Dutch demography (middle panel). The range of actual values is from 5.67 (United States) to 2.76 (Belgium) or 2.91 points. The simulated values change by less than .4 or 40 percent of the median in every case and the top to bottom range remains about 2.85 points, from 5.50 in the United States to 2.65 in Denmark, or about 285 percent of the median. However, in the bottom panel, Dutch income packaging has a very large effect on the United States decile ratio, cutting it from 5.67 to 3.08 while also producing large changes in Australia and Denmark. The result is a set of decile ratios that have a range from 3.23 vs to 2.88 (Belgium or France), a difference of .35, only 35 percent of the median.

## V. The Effects of Demography and Packaging on Poverty and Low Income Rates and On Income Levels

The Netherlands has the lowest actual poverty rate of the countries considered here. Poverty is defined as having an equivalent disposable income less than half of the median equivalent disposable income. Low income is defined as having an income less than 70 percent of the median. We find in Table 6 that Belgium more or less shares the very low Dutch rate followed by Denmark and France at a slightly higher level and then Germany and the United Kingdom. Australia has a much higher rate and the United States has a rate over three times as high as the Dutch and Belgian poverty rates. The range for low income (poverty and near poverty rates combined) is not as great but the same clusters apply.

Imposing Dutch demography on other country's institutions produces very small shifts in poverty rates. The largest shift is for Denmark where Dutch demography produces a lower rate.

**Table 6. Poverty and Low Income Rates in The Netherlands with Simulated Demography[a]**

| Country | Actual | Simulated | |
|---|---|---|---|
| | | Dutch Demography and Income Packaging of: | Dutch Income Packaging and Demography of: |
| **Poverty[b]** | | | |
| The Netherlands | 4.9 | 4.9 | 4.9 |
| Australia | 13.0 | 11.1 | 5.8 |
| Belgium | 5.2 | 6.2 | 4.3 |
| Denmark | 7.1 | 4.8 | 6.3 |
| France | 7.0 | 7.8 | 3.2 |
| Germany | 8.1 | 6.2 | 5.8 |
| United Kingdom | 8.5 | 6.9 | 5.9 |
| United States | 17.9 | 17.1 | 5.7 |
| **Low Income** | | | |
| The Netherlands | 20.6 | 20.6 | 20.6 |
| Australia | 27.8 | 26.2 | 21.3 |
| Belgium | 19.8 | 21.5 | 20.2 |
| Denmark | 23.2 | 20.2 | 23.7 |
| France | 22.6 | 22.9 | 18.4 |
| Germany | 20.8 | 18.5 | 21.7 |
| United Kingdom | 26.8 | 24.8 | 23.3 |
| United States | 30.9 | 30.3 | 21.4 |

[a]Demography includes age of family head, family type, number of earners, number of children, earning status of head as shown in Table 2. Equivalent income is after-tax, after-transfer income adjusted for family size.

[b]Below 50 percent of median income

[c]Below 70 percent of median income.

Source: Authors' calculations based on the LIS dataset.

Other country's demography shifts the Dutch poverty rate by very little. In contrast, Dutch income packaging produces lower poverty rates in *every* nation examined. Every nation has a poverty rate of 6.3 percent or below, and as low as 3.2 percent in France. Still, with any demography the Dutch rate would be one of the lowest we have observed. Including the near poor to make an overall low income category we observe the same pattern. While one might be concerned with the effects of the Dutch income packaging scheme on economic efficiency (e.g., labor supply), it scores very high indeed on grounds of producing low overall poverty rates.

Table 7 provides information on high incomes as well as low incomes. The proportions of individuals whose incomes are 1.5 or twice the median seem little affected by simulated demography. The income package has a larger effect, but still not a terribly large impact on those with incomes at 150 percent of the median or more. Most of the impact we find is further down the distribution, below the median, where the 50th, 60th, 70th and even 80th percentile values are greatly affected by Dutch income packaging compared to Dutch demography.

## VI. The Effect of Demography and Income Packages on Decile Shares

The results for cumulative decile shares of the income distribution tell the same story as that of the other inequality measures. Table 8 shows that in general the differences between the actual distributions and simulated ones are quite small except for the effects of Dutch income packaging at the 10th and 20th percentiles. One simple way of seeing the very modest effects is to compare the shares at the 50th or 60th percentiles where the differences among distributions are largest. In no case is there a difference between actual and simulated larger than 2 percent. In contrast, the effects of Dutch income packaging are very large, producing much higher income shares for the United States and Australia at the 10th and 20th percentiles compared to the actual distribution.

**Table 7. Cumulative Proportions Below percentiles of Median with Simulated Demography**

| | Percent of Median | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **50** | **60** | **70** | **80** | **100** | **120** | **150** | **200** |
| **The Netherlands** | 4.9 | 11.2 | 20.6 | 30.7 | 50.0 | 65.9 | 82.5 | 94.5 |
| **Actual** | | | | | | | | |
| Australia | 13.0 | 19.9 | 27.8 | 35.9 | 50.0 | 62.4 | 77.3 | 91.4 |
| Belgium | 5.2 | 10.7 | 19.8 | 30.4 | 50.0 | 67.0 | 86.2 | 96.6 |
| Denmark | 7.1 | 14.6 | 23.2 | 31.7 | 50.0 | 69.1 | 88.8 | 97.7 |
| France | 7.0 | 12.8 | 22.6 | 32.1 | 50.0 | 65.2 | 79.2 | 91.3 |
| Germany | 8.1 | 13.4 | 20.8 | 30.0 | 50.0 | 67.1 | 83.5 | 95.0 |
| United Kingdom | 8.5 | 17.3 | 26.8 | 35.3 | 50.0 | 63.1 | 77.5 | 91.5 |
| United States | 17.9 | 24.0 | 30.9 | 37.7 | 50.0 | 61.4 | 75.4 | 89.0 |
| **Dutch Demography and the Income Packaging of**: | | | | | | | | |
| Australia | 11.1 | 18.7 | 26.2 | 34.4 | 50.0 | 62.5 | 77.0 | 91.1 |
| Belgium | 6.2 | 11.9 | 21.5 | 31.1 | 50.0 | 65.7 | 85.4 | 96.3 |
| Denmark | 4.8 | 12.1 | 20.2 | 29.4 | 50.0 | 71.8 | 89.0 | 97.6 |
| France | 7.8 | 13.2 | 22.9 | 32.4 | 50.0 | 65.7 | 78.7 | 91.4 |
| Germany | 5.8 | 12.8 | 21.7 | 31.6 | 50.0 | 65.7 | 82.6 | 93.7 |
| United Kingdom | 6.9 | 15.6 | 24.8 | 33.6 | 50.0 | 64.2 | 79.4 | 92.8 |
| United States | 17.1 | 23.5 | 30.3 | 37.2 | 50.0 | 61.0 | 75.3 | 88.8 |
| **Dutch Income Packaging and the Demography of:** | | | | | | | | |
| Australia | 5.8 | 12.2 | 21.3 | 31.1 | 50.0 | 65.0 | 81.3 | 93.4 |
| Belgium | 4.3 | 10.8 | 20.2 | 29.8 | 50.0 | 66.4 | 83.1 | 95.1 |
| Denmark | 6.3 | 15.7 | 23.7 | 33.1 | 50.0 | 65.7 | 82.1 | 93.8 |
| France | 3.2 | 8.8 | 18.4 | 29.2 | 50.0 | 65.6 | 81.2 | 93.6 |
| Germany | 6.2 | 12.2 | 18.5 | 27.0 | 50.0 | 66.6 | 83.7 | 95.9 |
| United Kingdom | 5.9 | 13.2 | 23.3 | 32.7 | 50.0 | 64.2 | 79.5 | 93.0 |
| United States | 5.7 | 13.2 | 21.4 | 31.9 | 50.0 | 65.0 | 81.6 | 93.7 |

Source: Authors' calculations based on the LIS database.

**Table 8. Cumulative Decile Shares with Simulated Demography**

| | Decile | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **10** | **20** | **30** | **40** | **50** | **60** | **70** | **80** | **90** | **95** |
| **The Netherlands** | 4.0 | 9.7 | 16.4 | 23.9 | 32.4 | 41.8 | 52.4 | 64.5 | 78.5 | 86.8 |
| **Actual:** | | | | | | | | | | |
| Australia | 2.8 | 7.5 | 13.4 | 20.4 | 28.6 | 38.2 | 49.2 | 62.1 | 77.5 | 86.7 |
| Belgium | 4.4 | 10.5 | 17.5 | 25.4 | 34.3 | 44.1 | 55.1 | 67.4 | 81.3 | 89.4 |
| Denmark | 3.8 | 9.6 | 16.5 | 24.6 | 33.7 | 43.8 | 54.9 | 67.0 | 80.7 | 88.5 |
| France | 3.5 | 8.9 | 15.1 | 22.3 | 30.4 | 39.5 | 49.9 | 61.9 | 76.5 | 85.5 |
| Germany | 3.1 | 8.8 | 15.5 | 23.3 | 31.9 | 41.5 | 52.2 | 64.3 | 78.4 | 86.8 |
| United Kingdom | 3.3 | 8.4 | 14.3 | 21.3 | 29.5 | 38.8 | 49.6 | 62.3 | 77.4 | 86.5 |
| United States | 2.1 | 6.1 | 11.5 | 18.2 | 26.2 | 35.8 | 47.0 | 60.1 | 76.2 | 86.1 |
| **Dutch Demography and the Income Packaging of:** | | | | | | | | | | |
| Australia | 3.1 | 7.9 | 13.9 | 21.0 | 29.1 | 38.6 | 49.5 | 62.3 | 77.6 | 86.8 |
| Belgium | 4.3 | 10.2 | 16.9 | 25.0 | 33.9 | 43.4 | 54.8 | 67.1 | 81.1 | 89.3 |
| Denmark | 4.3 | 10.4 | 17.7 | 25.6 | 35.0 | 45.0 | 55.9 | 67.9 | 81.5 | 89.1 |
| France | 3.3 | 8.6 | 14.9 | 22.0 | 30.2 | 39.4 | 49.8 | 62.0 | 76.7 | 85.8 |
| Germany | 3.9 | 9.3 | 15.6 | 22.9 | 31.0 | 40.2 | 50.6 | 62.2 | 76.1 | 84.3 |
| United Kingdom | 3.7 | 9.0 | 15.2 | 22.5 | 30.8 | 40.2 | 51.0 | 63.4 | 78.1 | 86.9 |
| United States | 2.2 | 6.3 | 11.7 | 18.5 | 26.5 | 36.0 | 47.2 | 60.3 | 76.2 | 86.2 |
| **Dutch Income Packaging and the Demography of:** | | | | | | | | | | |
| Australia | 3.9 | 9.3 | 15.8 | 23.1 | 31.4 | 40.7 | 51.2 | 63.2 | 77.2 | 85.7 |
| Belgium | 4.2 | 10.0 | 16.6 | 24.2 | 32.6 | 42.0 | 52.5 | 64.4 | 78.2 | 86.2 |
| Denmark | 3.7 | 9.0 | 15.3 | 22.6 | 30.8 | 40.2 | 50.7 | 62.6 | 76.6 | 85.1 |
| France | 4.4 | 10.2 | 16.8 | 24.2 | 32.4 | 41.6 | 51.9 | 63.8 | 77.9 | 86.1 |
| Germany | 3.6 | 9.5 | 16.3 | 24.2 | 32.7 | 42.3 | 52.9 | 64.9 | 78.7 | 86.7 |
| United Kingdom | 3.7 | 9.0 | 15.1 | 22.3 | 30.5 | 39.7 | 50.2 | 62.4 | 76.3 | 85.2 |
| United States | 3.8 | 9.3 | 15.7 | 23.0 | 31.4 | 40.8 | 51.3 | 63.3 | 77.2 | 85.8 |

Source: Authors' calculations based on the LIS dataset.

## VII. Demography, Income Packaging, and the Effect of Transfers

Earlier (Table 5) we showed the effects of reweighting on poverty rates. It is also of interest to consider poverty rates based only on market income—that is, before taking into account taxes and transfers. Then we can ask what is the impact of simulated demographies and income packages on the proportions of the poor moved out of poverty by transfers and taxes?

In Table 9 the top panel shows the proportion of persons who would have been poor if they had received only market income and paid no taxes—this is pregovernment income. The range is much narrower than for post-government poverty in Table 5. Here the range is less than 10 points from The Netherlands at 21.7 percent to France at 31.3 percent, while the post tax and transfer rates ranged from 17.9 (United States) to 4.9 (The Netherlands) a difference of 13 points..

We see that imposing Dutch demography produces very little change in pretax and transfer poverty except in the United Kingdom where only 23 percent of persons would be poor with the Dutch demographic pattern, compared to the actual rate of 30.8 percent. Once again, the effect of the Dutch income package is stronger, creating a much narrower range across nations in the final column. The United Kingdom remains the outlier when we impose each countries' demography on the Dutch income package. The other nations' market-based poverty rates fall by a large amount, particularly in France where the simulated rate is only 17.6 percent compared to a 31.3 percent actual rate.

The bottom panel of Table 9 shows the percentage of persons moved out of pre-government poverty by taxes and transfers. The range here is very great—from more than three-quarters in Belgium, France, and The Netherlands and nearly that in Denmark and the United Kingdom to 44 percent in Australia and a mere 29 percent in the United States. Imposing Dutch demography on the other countries does not change this basic pattern very much—the same five countries show more

**Table 9. Pre-Government Poverty Rates and Percent Moved Out of Property by Taxes and Transfers[a]**

| Country | Actual | Simulated | |
|---|---|---|---|
| | | Dutch Demography and Income Packaging of: | Dutch Income Packaging and Demography of: |
| **Pre-Government Poverty Rate** | | | |
| The Netherlands | 21.7 | 21.7 | 21.7 |
| Australia | 23.1 | 23.9 | 20.0 |
| Belgium | 28.2 | 27.4 | 20.7 |
| Denmark | 26.8 | 26.9 | 22.8 |
| France | 31.3 | 32.7 | 17.6 |
| Germany | 23.7 | 20.8 | 23.9 |
| United Kingdom | 30.8 | 23.0 | 27.7 |
| United States | 25.3 | 26.0 | 19.0 |
| **Percent Moved from Poverty by Taxes and Transfers** | | | |
| The Netherlands | 77.4 | 77.4 | 77.4 |
| Australia | 43.7 | 53.6 | 71.0 |
| Belgium | 81.6 | 77.4 | 79.2 |
| Denmark | 73.5 | 82.2 | 72.4 |
| France | 77.6 | 76.1 | 81.8 |
| Germany | 65.8 | 70.2 | 75.7 |
| United Kingdom | 72.4 | 70.0 | 78.7 |
| United States | 29.2 | 34.2 | 70.0 |

[a]Post-Government Poverty Rates are shown in the top half of Table 5. Present government poverty rates are the percentage of all units with incomes below 50 percent of median equivalent income
Source: Authors' calculations based on the LIS dataset.

than 70 percent of the poor moved from poverty. The rate for the United States changes very little and that for Australia by a larger amount. Simulating the other countries' demography with the Dutch data set we find large increases in antipoverty effectiveness for the United States and Australia and a rather small range in the proportions moved from poverty—from 70.0 percent for the United States' demography to 82 percent for France compared to the Dutch figure of 77.4 percent.

Based on these figures, it seems that the Dutch income package also produces lower *pre*-government poverty rates than does the market income system in other nations. If the Dutch income package had large negative effects on economic efficiency by decreasing market incomes, we would expect that these pre government poverty rates would have increased rather than declined. Because they did fall, however, it appears that the Dutch income package produces high antipoverty impact with no greater, and perhaps lower, efficiency costs compared to those found in the other nations.

## VIII. Demographic Effects on Aggregate Amounts of Market and Transfer Income

Demographic differences among countries could affect the composition, as well as the distribution of income, and thereby affect the aggregate amounts of earnings, or transfers, or taxes. Table 10 shows the effect of imposing the demography of each of our comparison nations on the composition of national income in The Netherlands. We deal with four income sources:

> *Factor Income* includes earnings, self-employment, and asset income;
> *Pensions* include social retirement and disability pensions and occupational pensions;
> *Social Transfers* includes all government transfers other than pensions; and
> *Other Income* includes private transfers and miscellaneous income.

These total to gross income. Subtracting tax yields disposable income. (Tax includes only income tax, no employee contributions.)

**Table 10. Simulated Aggregate Income Amounts from Market and Transfer Sources**

| | Income Source | | | | | |
|---|---|---|---|---|---|---|
| | **Factor Income** | **Pensions** | **Social Transfers** | **Other Income** | **Taxes** | **Disposable Income** |
| **Percent of Gross Income:** | | | | | | |
| **The Netherlands** | 77.8 | 14.0 | 7.1 | 1.1 | 25.7 | 74.3 |
| **Simulated Demography of:** | | | | | | |
| Australia | 80.0 | 11.9 | 7.1 | 1.1 | 25.4 | 74.6 |
| Belgium | 74.7 | 17.6 | 6.6 | 1.1 | 25.2 | 74.8 |
| Denmark | 79.3 | 13.8 | 5.8 | 1.1 | 25.8 | 74.2 |
| France | 79.5 | 13.2 | 6.2 | 1.0 | 25.3 | 74.7 |
| Germany | 73.2 | 18.2 | 7.6 | 0.9 | 25.1 | 74.9 |
| United Kingdom | 72.9 | 17.8 | 8.2 | 1.0 | 24.9 | 75.1 |
| United States | 80.0 | 12.2 | 6.7 | 1.1 | 25.6 | 74.4 |
| **Ratio to Dutch Amount:** | | | | | | |
| **The Netherlands** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Simulated Demography of:** | | | | | | |
| Australia | 109.0 | 90.2 | 105.9 | 99.5 | 104.7 | 106.5 |
| Belgium | 97.3 | 127.7 | 94.0 | 97.0 | 99.4 | 102.0 |
| Denmark | 103.4 | 100.5 | 83.4 | 95.0 | 101.8 | 101.4 |
| France | 104.6 | 97.0 | 90.1 | 91.9 | 100.9 | 102.9 |
| Germany | 97.8 | 135.5 | 111.6 | 87.2 | 101.5 | 104.7 |
| United Kingdom | 91.8 | 125.1 | 113.2 | 88.5 | 95.2 | 98.9 |
| United States | 108.8 | 92.7 | 100.2 | 104.0 | 105.6 | 106.0 |

Source: Authors' calculations based on the LIS dataset.

We note first that in The Netherlands the actual distribution of gross income is as follows:

| | |
|---|---|
| Factor Income | 77.8 percent |
| Pension Income | 14.0 percent |
| Social Transfers | 7.1 percent |
| Other Income | 1.1 percent |

Taxes amount to 25.7 percent of gross income, leaving disposable income equal to 74.3 percent of gross income.

The top panel of Table 10 shows the shares of gross income each source would have if The Netherlands had the demography of each of our comparison nations. Factor income would have a slightly smaller role with the demography of Belgium, Germany, and the United Kingdom and Pensions would have a correspondingly larger share. Since Social Transfers are much smaller, the differences among nations are also quite small. Taxes, on the other hand, show remarkably little effect on these different demographies.

The bottom panel of Table 10 shows the effect of demography on the amounts of each source expressed as a percent of the Dutch amount. Thus, Australian demography produces a factor income aggregate that is 9 percent larger than the actual Dutch aggregate and the United States' demography produces an amount 8 percent higher. The differences for the other demographies are in the 3 or 4 percent range. With Pensions, however, we find rather larger effects—Belgium, German, and United Kingdom demographies produce much higher spending on pensions while Australian and United States demographic patterns would produce lower pension spending by 8 or 9 percent. The pattern for other Social Transfers shows greater impact of demography but of course the amounts of money are much smaller. Thus, Danish demography would reduce spending on social transfers by one-sixth, and that of France by 10 percent. German and United Kingdom demography would

increase spending by more than 10 percent. Demography seems to have much less impact on income taxes—the range here is from 5 percent less than the actual Dutch amount to 5 percent more.

Overall then, we might conclude that demography has more impact on the composition of income than on its distribution. In fact, that is one of the goals of social policy: to compensate for the effects of demography (family disruption, aging, birth of children) on factor income so that the effect on the distribution of disposable income is moderated.

## IX. Conclusion

We conclude that income packaging and social protection institutions have far stronger effects on the income distribution differences among the countries studied here than do demographic factors. Indeed, we may have exaggerated the effect of demographic factors by including head's earnings categories and other earners in our demographic matrix. To a considerable extent whether an individual has earnings or not, and the level of these earnings, is a product of the economic and social institutions of a society. The extent to which earnings are sufficient to offset poverty are in part a function of governments via minimum wage levels and collective wage agreements that prevent low market income poverty rates. This is particularly the case for the earning status of single mothers, or the young, and of people in the pre-retirement years. (In the United Kingdom, for example, one could argue that the high proportion of single mothers without earnings in the United Kingdom is a product of the emphasis on income support for that group, and the absence of an active labor market policy *vis a vis* these women.) When we introduce earning categories in our demographic reweighting we exaggerate the influence of demography and understate the influence of government.

These results, however, should not be taken to mean that demographic differences never play a role in income distribution differences. A country with a very different demographic profile from the countries studied here might well show a different pattern of income inequality as a result. But within the range in demographic characteristics of these eight countries we have found that demography plays a quite small role in the inequality differences among them. It is the Dutch income package, not its demography, which produces low rates of poverty and a small social distance between the top (90 percentile; 95th percentile) and the bottom (10th percentile) of the Dutch and other nations' income distributions.

**Appendix Table 1-A. LIS Sample Sizes**

| Country | Year | Sample Size |
|---|---|---|
| The Netherlands | 1991 | 4,378 |
| Australia | 1989 | 16,331 |
| Belgium | 1992 | 3,821 |
| Denmark | 1992 | 12,895 |
| France | 1984 | 12,693 |
| Germany | 1989 | 3,940 |
| United Kingdom | 1986 | 7,178 |
| United States | 1991 | 16,052 |

## Endnotes

1. The results for Ginis, Atkinsons, and other measures are different from those reported in our OECD report because we excluded cases with no income in all calculations. We did not do that in the OECD report, instead bottom coding the zero and negative incomes as indicated in the report. The report had to follow very conservative approaches to technical issues, but we feel that households with zero or negative income are a very diverse lot in terms of permanent income and more often products of the peculiarities of the surveys than of anything substantive. Therefore, in this report we exclude these cases.

2. The LIS computer system is not designed in such a way that an analysis can be carried out by programs other than SPSS and SAS. We were prevented from exploring other approaches suggested by Statistics Netherlands because of the limits of the LIS processing system. These suggestions are available by request from the authors.

3. Because of sampling and nonsampling errors, (e.g., coding, negative incomes due to business losses, etc.) which may distort measured income at the very top or bottom of the income distribution, the 10th and 90th percentiles and the ratio of the 90th to the 10th (the decile ratio) are robust measures of inequality across nations. These points are unaffected by changes in either tail whereas the Gini, Atkinson, and other summary statistics may be adversely affected by such changes.

## References


Atkinson, A., L. Rainwater, and T. Smeeding. 1995. *Income Distribution in OECD Countries, Evidence from the Luxembourg Income Study*. Social Policy Studies No. 17, Paris: OECD.

Danzinger, S. and M. Jantti. 1994. "Child Poverty in Sweden and the United States: the Effect of Social Transfers and Parental Labor Force Participation," *Industrial and Labor Relations Review,* Vol.48, No.1.

Gottschalk, P. and T. Smeeding. 1997a. "Cross-National Comparisons of Earning and Income Inequality," *Journal of Economic Literature*, 35: 633-686.

Gottschalk, P. and T. Smeeding. 1997b. "Empirical Evidence on Income Inequality in Industrialized Countries." In A.B. Atkinson and F. Bourgignoni (eds.), *Handbook of Income Distribution.* Elsevier-North Holland, in press.

Jantti, M. 1997. "Inequality in Five Countries in the 1980s: The Role of Demographic Shifts, Markets and Government Policies," *Economica*, in press.

Smeeding, T. 1997a. "Financial Poverty in Developed Countries: The Evidence from LIS." Final Report to the UNDP. LIS Working Paper #155. Luxembourg: Luxembourg Income Study, April.

Smeeding, T. 1997b. "American Income Inequality in a Cross-National Perspective: Why Are We So Different?" LIS Working Paper #157. Luxembourg: Luxembourg Income Study, April.

Smeeding, T., K. Ross, and L. Rainwater. 1996. "The Role of Population Aging in Income Inequality." Paper presented to Abo Akademi, Turku, Finland, August 16, 1997.