

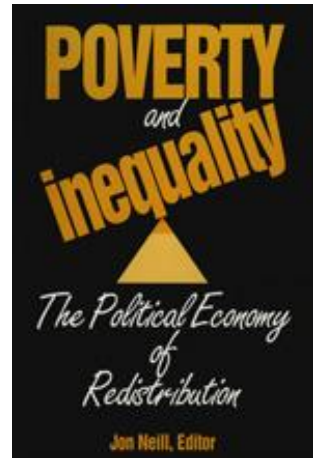
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# The International Evidence on Income Distribution in Modern Economics: Where Do We Stand?

Timothy M. Smeeding  
*Syracuse University*



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# The International Evidence on Income Distribution in Modern Economics

## Where Do We Stand?

Timothy M. Smeeding  
*Syracuse University*  
and  
*Luxembourg Income Study*

Interest in cross-national comparison of personal income distributions, low relative incomes, and income inequality in general has grown dramatically during the past several years. Interest in cross-national distribution research did not come about by accident; several factors helped propel this line of research in the 1980s and 1990s. First of all, income distributions in the United States, the United Kingdom, and in several other nations began to trend toward greater inequality. Second, the former socialist nations of Central and Eastern Europe (CEE) began a still-continuing process of economic and social adjustment and transition to a new socioeconomic order. While this transition is still underway, CEE nations have experienced large changes in both real income levels and in income distribution. Third, along with the rise in inequality, a growing interest in the question of “fairness pressures” was present in the national political debates of the late 1980s and early 1990s, thus making “income distribution” a legitimate realm of political inquiry.<sup>1</sup> Finally, the emergence of comparable cross-national data on distribution allowed for comparisons of similarities and differences across countries and over time. Similarities and differences in experiences may help us understand how market forces, demographic trends, and public policy affect the relative economic status of various groups in each nation.

This chapter summarizes and provides limited updates on a small part of what was learned in a large study undertaken for the OECD (Atkinson, Rainwater, and Smeeding 1995a), and a subsequent review article (Gottschalk and Smeeding 1996). It also adds recent material

for CEE nations (Torrey, Smeeding, and Bailey 1996) and for Taiwan (Republic of China).

The chapter starts from a position of caution as to what can be achieved by a summary of the empirical evidence. Due to space constraints, we are unable to enumerate all of the limitations of the data. However, we should note that the quality of the CEE datasets is questionable, since we have not been able to verify their data by comparing them with administrative records. On the other hand, the data for OECD nations is generally high quality. All of these data were generated by the Luxembourg Income Study, and those interested in this dataset should consult Atkinson, Rainwater, and Smeeding (1995a, chapters 2, 3, and appendices).

Of course, the quality of the data is not the only reason for exercising caution in drawing conclusions regarding recent trends in inequality. The problem of choosing a measure of inequality is also troublesome, as is the even more basic problem of measuring income. The section that follows contains an introduction to those measures of inequality most commonly taken, as well as definitions of income. Throughout this paper we concentrate our attention on inequality in only two measures of income: market income and disposable income.<sup>2</sup>

The degree of income inequality in the 1980s and early 1990s is then compared among twenty-five countries. These are the eighteen OECD nations, five eastern European nations, and Israel and Taiwan. One question to be asked is whether one can identify distinct groupings of countries with different degrees of inequality? A brief discussion of the trend in inequality in recent years follows, asking if there is a worldwide trend toward greater inequality or whether groups of countries have had similar experiences. Some of the factors that seem to have affected inequality are addressed, including differences in market incomes, demographic factors, and government intervention (direct taxes and transfers). The final section summarizes the chapter and offers suggestions for additional research.

## Choices and Measures

There are currently no international standards for income distribution that parallel the international standards used for systems of national income accounts.<sup>3</sup> Hence, researchers need to decide what they want to measure and how far they can measure it on a comparable basis. The Luxembourg Income Study offers the researcher many choices of perspective in terms of country, income measure, accounting unit, and time frame, but its relatively short time frame (1979-1993 for most nations, but 1968-1995 for five countries) and limited number of observation periods per country (three to five periods per country at present) currently limits its usefulness for studying longer term trends in income distribution. The purpose of this section of the paper is to explain the choices we have made in our use of the Luxembourg Income Study.

### *Choices: Inequality of What among Whom on What Terms?*

Our attention is focussed primarily on the distribution of *disposable money income*, that is income after direct taxes plus transfer payments. Several points should be noted:

1. Income rather than consumption is taken as the indicator of resources, although there may be both theoretical and empirical arguments favoring use of the latter.
2. The definition of income falls considerable short of the Haig-Simons comprehensive definition, typically excluding much of capital gains, imputed rents, home production, and most of income in-kind (with the exception of near-cash benefits).
3. No account is taken of indirect taxes or of the benefits from public spending (other than cash and near-cash transfers) such as health care, education, or most housing subsidies.
4. The period of income measurement is in general the calendar year, with income measured on an annual basis (although the United Kingdom evidence relates to weekly or monthly income).

Thus, variables measured may be less than ideal, and results may not be fully comparable across countries. For example, one country may help low-income families through money benefits (included in cash income), whereas another provides subsidized housing, child care, or education (which are not taken into account). While, a recent study (Smeeding et al. 1993) finds that the distribution of housing, education, and health care benefits reinforces the general differences in income distribution for a subset of the western nations examined here, there is no guarantee that these relationships hold for other countries or methods of accounting.<sup>4</sup> Still this study shows that countries that spend more for cash benefits tend also to spend more for noncash benefits. Because noncash benefits are more equally distributed than are cash benefits, levels of inequality within countries are lessened, but the same rank ordering of these countries with respect to inequality levels found here using cash alone persists when noncash benefits are added in.

*Market income*, which includes earned income from wages and salaries and self-employment, cash property income (but not capital gains or losses), and other private cash income transfers (occupational pensions, alimony, and child support) is the primary source of disposable income for most nonelderly families. To obtain disposable income, we first add public transfer payments (social retirement, family allowances, unemployment compensation, welfare benefits) and deduct personal income tax and social security contributions from market income. Then near-cash benefits—those that are virtually equivalent to cash (food stamps in the United States and housing allowances in the United Kingdom and Sweden)—are added in.<sup>5</sup> Thus, differences between disposable and market income capture the net effects of income redistribution.

The question of the distribution “amongst whom” is here given the simplest answer: amongst individuals. When assessing disposable income inequality, however, the unit of aggregation is the household: the incomes of all household members are aggregated and then divided by an equivalence scale to arrive at individual equivalent income. The choice of the household, rather than a narrower unit such as the spending unit or the family, is open to debate. It captures the economies of scale extant in shared living arrangements, but it assumes a degree of income-sharing within the household that may not be realized.<sup>6</sup>

### *Data Base*

The aim of the Luxembourg Income Study data used here is to increase the degree of cross-national comparability, but complete cross-national comparability is not possible, even if we were to administer our own surveys in each nation. Comparability is a matter of degree, and all that one can hope for is to reach an acceptably high level. It is left to the reader to decide if the level of comparability found in this study is acceptable. Many of the cross-national results provided here have been reviewed by a team of national experts—statisticians, social scientists, and policy analysts—prior to their publication by OECD and in other forums. This painstaking two-year process helped improve the quality of the analysis while also testing the mettle of both the analysts and the reviewers. In some nations, we only update OECD results to a later year using the same national database. Finally, our results for CEE nations have been reviewed by teams of country experts, but not by national authorities.

### **Income Inequality in Twenty-Five Nations**

The Luxembourg Income Study data sets have been used here to compare the distribution of disposable income in twenty-five nations over a five- to ten-year period.<sup>7</sup> The numbers presented are taken from the most recent LIS data and correspond generally to the results found in Atkinson, Rainwater, and Smeeding (1995a), which use earlier years' LIS data in most cases. Table 1 gives the incomes of high- and low-income persons as percentages of median income. High income (P90) is defined as the income of a person in the 90th percentile of the income distribution while low income is that of a person in the 10th percentile.<sup>8</sup> The ratio of high-to-low incomes (decile ratio) is also shown. For instance, the high-to-low ratio in Russia is 6.83, indicating that a person with an income at the 90th percentile enjoys almost seven times the income of a person at the 10th percentile. This is the highest decile ratio in our sample, followed by the United States (5.67) and Australia (4.26).

**Table 1. The Gap between Low- and High-Income Individuals  
(numbers given are percent in each nation)**

| Country                       | Low <sup>a</sup> | High <sup>b</sup> | Ratio of high to low <sup>c</sup> |
|-------------------------------|------------------|-------------------|-----------------------------------|
| Slovak Republic 1992          | 66               | 149               | 2.25                              |
| Czech Republic 1992           | 65               | 155               | 2.36                              |
| Finland 1991                  | 58               | 158               | 2.74                              |
| Belgium 1992                  | 59               | 163               | 2.76                              |
| Sweden 1992                   | 58               | 159               | 2.77                              |
| Norway 1991                   | 57               | 158               | 2.79                              |
| Denmark 1992                  | 55               | 155               | 2.84                              |
| Netherlands 1991              | 59               | 172               | 2.94                              |
| Germany 1984                  | 57               | 170               | 2.98                              |
| Luxembourg 1985               | 59               | 184               | 3.12                              |
| Italy 1991                    | 56               | 176               | 3.14                              |
| Austria 1987                  | 56               | 187               | 3.34                              |
| Switzerland 1982              | 54               | 185               | 3.43                              |
| Hungary 1991                  | 53               | 180               | 3.46                              |
| New Zealand 1987/88           | 54               | 187               | 3.46                              |
| France 1984                   | 55               | 193               | 3.51                              |
| Poland 1992                   | 51               | 192               | 3.76                              |
| United Kingdom 1986           | 51               | 194               | 3.80                              |
| Canada 1991                   | 47               | 183               | 3.86                              |
| Republic of China/Taiwan 1991 | 50               | 195               | 3.90                              |
| Spain 1990                    | 49               | 198               | 4.04                              |
| Ireland 1987                  | 50               | 209               | 4.18                              |
| Australia 1989                | 45               | 193               | 4.26                              |
| United States 1991            | 37               | 207               | 5.67                              |
| Russia 1992                   | 35               | 239               | 6.83                              |
| Average <sup>d</sup>          | 53               | 182               | 3.53                              |

SOURCE Author's tabulation of data in the Luxembourg Income Study

a. Relative income for individuals who are lower than 90 percent of the individuals in the country and higher than 10 percent of the individuals as a percent of national median.

b. Relative income for individuals who are higher than 90 percent of the individuals in the country and lower than 10 percent of the individuals as a percent of national median

c. Ratio of 90th to 10th percentiles, or decile ratio

d. Simple 25-nation average

Looking at the low column in table 1, we see that the three countries with the highest decile ratio are characterized by low P10 values. In Russia, the United States, and Australia, the relative incomes of persons in the 10th percentile are 35, 37, and 45 respectively. These are the lowest values in our sample, and contrast with values ranging from 52 to 60 for countries with a below-average decile ratio. However, countries with above-average decile ratios also tend to have high incomes substantially greater than average. In fact, though Russia, the United States, and Australia are distinguished by high incomes well above the average for the sample, other high-decile ratio countries—such as Ireland, Spain, and Taiwan—have very respectable low-income levels (50, 49, 50).

While percentile ratios have some obvious appeal (e.g., insensitivity to top coding, ease of understanding), they have the disadvantage of focusing on only a few points in the distribution and lack a normative basis. Table 2 presents an alternative Lorenz-based summary measure of inequality, the Gini coefficient, with countries grouped according to type (OECD, CEE, Taiwan, Israel).<sup>9</sup>

Among the OECD nations, the lowest Gini is found in Finland, followed by most but not all of the Scandinavian nations. Austria's coefficients must be treated with caution because of their exclusion of self-employment income, but they and those of the smallest Benelux nations come next, followed by West Germany, Italy, and the Netherlands. There is then a gap of 0.15 points to Canada and France. The United Kingdom, Spain, and Australia are next, with another gap of 0.14 to Switzerland, Ireland, and finally the United States. As measured by these Ginis, the range of inequality across OECD nations runs from 0.223 (Finland) to 0.343 (United States), or by as much as 54 percent.

Turning to the CEE nations, income inequality in the Czech and Slovak Republics is most similar to that found in the Scandinavian economies, while Hungary and Poland are similar to France, Canada, Australia, and the United Kingdom. Russia had the highest Gini as well as the highest rich-to-poor ratio of all countries for which we have LIS data in the 1990s. This is partially the result of some very high incomes, since the Gini changes by a large fraction when we impose a top code of 10 times the median adjusted income in Russia, while other nations' estimates change little, if at all. But even when income is top-



**Table 2. Measures of Inequality in OECD Countries, in Transition Economies, and in Taiwan and Israel**

| Country                            | Year | Gini (1) <sup>a</sup> | Gini (2) <sup>b</sup> |
|------------------------------------|------|-----------------------|-----------------------|
| Finland                            | 1991 | 0.223                 | 0.223                 |
| Austria <sup>c</sup>               | 1987 | 0.227                 | 0.227                 |
| Sweden                             | 1992 | 0.229                 | 0.229                 |
| Belgium                            | 1992 | 0.230                 | 0.230                 |
| Norway                             | 1991 | 0.233                 | 0.233                 |
| Luxembourg                         | 1985 | 0.238                 | 0.238                 |
| Denmark                            | 1992 | 0.240                 | 0.239                 |
| Germany (West)                     | 1984 | 0.250                 | 0.249                 |
| Italy                              | 1991 | 0.255                 | 0.255                 |
| The Netherlands                    | 1991 | 0.271                 | 0.268                 |
| Canada                             | 1991 | 0.286                 | 0.285                 |
| France                             | 1984 | 0.295                 | 0.294                 |
| United Kingdom                     | 1986 | 0.304                 | 0.303                 |
| Spain                              | 1990 | 0.308                 | 0.306                 |
| Australia                          | 1989 | 0.309                 | 0.308                 |
| <b>A. OECD Countries</b>           |      |                       |                       |
| Switzerland                        | 1982 | 0.323                 | 0.311                 |
| Ireland                            | 1987 | 0.330                 | 0.328                 |
| United States                      | 1991 | 0.343                 | 0.343                 |
| <b>B. CEE Transition Countries</b> |      |                       |                       |
| Slovak Republic                    | 1992 | 0.189                 | 0.189                 |
| Czech Republic                     | 1992 | 0.208                 | 0.207                 |
| Hungary                            | 1991 | 0.289                 | 0.289                 |
| Poland                             | 1992 | 0.291                 | 0.290                 |

| Country                     | Year | Gini (1) <sup>a</sup> | Gini (2) <sup>b</sup> |
|-----------------------------|------|-----------------------|-----------------------|
| Russia                      | 1992 | 0.437                 | 0.393                 |
| <b>C. Taiwan and Israel</b> |      |                       |                       |
| Republic of China/Taiwan    | 1991 | 0.302                 | 0.300                 |
| Israel                      | 1992 | 0.305                 | 0.305                 |

SOURCE. Authors' tabulation of data in the Luxembourg Income Study

a. Gini (1) = Gini coefficient for equivalent disposable income (EI) where  $EI = DPI/S^E$  S = family size, E = 0.5, person weighted, bottom-coded at 1 percent mean DPI.

b. Gini (2) = Gini (1) top-coded at 10 times median disposable income

c. Austria excludes the self-employed

coded, Russia still has the highest Gini and the ranking of nations is unaffected.

Based on these data, there is a wider range of disposable income inequality in the five CEE transition countries than in the major—and much richer—OECD nations. It is interesting that Russia, the CEE nation that experienced the most rapid transition to a market economy, has the highest level of inequality, while inequality is the least in the Czech and Slovak Republics where the transition to a market economy has been considerably slower (the “velvet revolution”). Finally, the Republic of China and Israel have inequality levels near the middle of the OECD range, with Ginis very similar to that found in the United Kingdom.

### The Comparative Trend in Income Inequality

In this section we lay out the facts of how income inequality has changed over the past fifteen to twenty-five years in major modern nations. Studies of the recent trends in income inequality in different nations are listed in table 3.<sup>10</sup> While the various studies surveyed use different income and inequality measures and cover different periods, they are sufficiently robust to paint a picture of overall changes in inequality during the 1980s and into the early 1990s in a large number of nations.<sup>11</sup> These series cover a reasonable time span and the data themselves are internally consistent over time. Therefore, they give an indi-

**Table 3. Changes in Market and Disposable Income Inequality**

| Country         | Source  | Period      | Market income inequality <sup>a</sup> | Disposable income inequality |
|-----------------|---|-------------|---------------------------------------|------------------------------|
| United Kingdom  | Goodman and Webb (1994)<br>Atkinson (1993)                                | 1981 - 1991 | +++                                   | ++++                         |
| United States   | Gottschalk and Danziger (1995)<br>U.S. Bureau of the Census (1995, 1995a) |             | +++                                   | +++                          |
| Sweden          | Gustafsson and Palmer (1993)  | 1980 - 1992 | +++                                   | +++                          |
| Hungary         | Torrey, Smeeding, and Bailey (1995)                                       | 1987 - 1992 | n.a.                                  | +++                          |
| Poland          | Torrey, Smeeding, and Bailey (1995)                                       | 1987 - 1992 | n.a.                                  | ++                           |
| Czech Republic  | Torrey, Smeeding, and Bailey (1995)                                       | 1987 - 1992 | n.a.                                  | ++                           |
| Australia       | Saunders (1994)   | 1980 - 1989 | ++                                    | ++                           |
| New Zealand     | Saunders (1994)   | 1981 - 1989 | +                                     | ++                           |
| Japan           | Tachabanaki and Yagi (1995)<br>Bauer and Mason (1992)                     | 1981 - 1990 | +                                     | ++                           |
| Denmark         | LIS (1996)  | 1987 - 1992 | ++                                    | ++                           |
| Slovak Republic | Torrey, Smeeding, and Bailey (1995)                                       | 1980 - 1992 | n.a.                                  | +                            |
| The Netherlands | Central Bureau of Statistics (1993)<br>Muffells and Nellison (1993)       | 1981 - 1989 | +                                     | +                            |
| Norway          | Epland (1992)   | 1982 - 1989 | +                                     | +                            |
| Belgium         | Cantillon, et al. (1994)  | 1985 - 1992 | +                                     | +                            |

|                   |   |             |      |    |
|-------------------|---|-------------|------|----|
| Canada            | Beach and Slottve (1994)<br>Statistics Canada               | 1980 - 1992 | +    | 0  |
| Israel            | LIS (1995)  | 1979 - 1992 | +    | 0  |
| Finland           | Uusitalo (1994)   | 1981 - 1992 | +++  | 0  |
| France            | Concialdi (1993)  | 1979 - 1989 | 0    | 0  |
| Republic of China | LIS (1995)  | 1981 - 1991 | 0    | 0  |
| Portugal          | Rodrigues (1993)  | 1980 - 1990 | 0    | 0  |
| Spain             | LIS (1995)  | 1980 - 1990 | n.a. | 0  |
| Ireland           | Callan and Nolan (1993)                                     | 1980 - 1987 | +    | 0  |
| West Germany      | Burkhauser and Poupore (1994)<br>Hauser and Becker (1993)   | 1983 - 1990 | +    | 0  |
| Italy             | Brandolini and Sestito (1993)<br>Erickson and Ichino (1992) | 1976 - 1991 | --   | -- |

NOTE See Smeeding and Gottschalk (1995, table A-1) for actual figures.

| Designation | Interpretation           | Range of change in Gini |
|-------------|--------------------------|-------------------------|
| --          | small decline            | -5 percent or more      |
| 0           | zero                     | -4 to +4 percent        |
| +           | small increase           | 5 to 10 percent         |
| ++          | Moderate increase        | 10 to 15 percent        |
| +++         | large increase           | 16 to 29 percent        |
| ++++        | extremely large increase | 30 percent or more      |

a Some studies show changes in overall earnings inequality, others show changes in market income inequality, and still others do not discuss market income changes at all

cation of the relative trends in different countries. Our evaluation of the magnitude and direction of these changes can be found in column five of table 3. These evaluations are based on the Gini coefficients that are used in all the studies reviewed here. Countries are listed in order of change in disposable income inequality from largest to smallest change. Where they are available from the same studies, we also present data on the trend in market income inequality in each nation.

Both the United Kingdom and the United States experienced a substantial rise in inequality during the 1980s, with the increase in the United Kingdom being much greater over this time period. Whereas trends in earnings inequality were similar in the United States and the United Kingdom, the time paths for changes in the distribution of family income were markedly different. In the United Kingdom, income inequality fell through the mid-1970s, but the Gini coefficient rose by more than 30 percent between 1978 and 1991. This is almost double the increase over two decades in the United States, and more than double the decline in the United Kingdom from 1949 to 1976.<sup>12</sup> In fact by 1991, the overall level of income inequality in the United Kingdom exceeded the level found in Canada, a much larger nation.

While starting from a much lower level of inequality, Sweden experienced a pattern of change in inequality similar to that in the United Kingdom, downward until 1981, then fairly level during the 1980s, with a sharp increase in the early 1990s. But though the Swedish Gini increased by about 20 percent from 1980 to 1992, the Swedish income distribution remained considerably more equal than either that of the United States or the United Kingdom.<sup>13, 14</sup>

The changes experienced by Hungary, the Czech Republic, and Poland—28, 14, and 12 percent respectively, over a shorter period (three and five years, respectively)—are closer to our expectations. While the Hungarian change is very large, the changes found in Poland and in the Czech Republic are not much different from that found in the United Kingdom over the 1986-1991 period or in Sweden from 1988 to 1993.

In Australia, Denmark, and Japan (and in Poland though over a shorter period), the upward trend over the 1980s is slightly less than that experienced in the United States and Sweden. The same is true in New Zealand, though all of the increases here came during the late 1980s (Saunders 1994).<sup>15</sup> In Belgium, the Netherlands, the Slovak

Republic, and Norway, the overall increase in inequality was about 5 percent from 1980 to 1990. In many nations—Canada, Ireland, Israel, Portugal, Taiwan, Finland, and France—there was little or no change in the 1980s and early 1990s. And income inequality actually declined slightly in Italy during the 1980s.<sup>16</sup>

It is also noteworthy that there appears to be no apparent relation between the *trend* over the 1980s and the *overall level* of inequality at the start of the period. Inequality has increased both in the United States, with a very high level of inequality even before the increase, and in Sweden, which started from a much lower level of inequality. Inequality has fallen in Italy, but risen greatly in the United Kingdom, with both countries occupying intermediate inequality positions in the mid-1980s (table 1).

Nor is there a consistent “group country” story. Among the Scandinavian nations, Sweden experienced a rapid rise in inequality in the early 1990s, while Finland did not. In Europe we find large secular increases in inequality in the United Kingdom, smaller increases in Denmark, Belgium, and the Netherlands, but stasis in Germany, Portugal, Ireland, and France, with secular decreases in Italy. Canada experienced only mild increases in inequality of family income while the United States experienced much larger increases despite similar market forces affecting market incomes in both countries (Hanratty and Blank 1993). And finally, if there is a regional pattern, it is to be found among the CEE nations, with inequality rising in Poland, Hungary, and the Czech Republic near the upper end of the range found in Western nations over similar periods.

### **Exploring Differences in Levels and Trends**

The story of why we observe these differences in levels and trends in inequality is necessarily incomplete because of the confluence of market, demographic, institutional, and policy changes. The inclusion of multiple income sources received by multiple individuals thwarts attempts to identify the causal links that lead to variations across countries and over time in the distribution of total post-tax and transfer family income. There is ample evidence that family members take account

of all sources of income available to the family in deciding not only how much each member might work in a market setting, but also how to structure living arrangements. Moreover, governments themselves react differently to market income changes via changes in redistribution (tax and transfer) policy, and via other policies (e.g., macroeconomic policy or micro policies such as government employment). This leads to decision-making processes that are much too complex to be treated in a unified causal framework at this time. We therefore limit ourselves to a simple descriptive exercise that focuses on the difference in inequality before and after government redistribution.

*Differences in the Level of Inequality of Market Income and Disposable Income*

Table 4 shows the Gini coefficient for market income (pre-tax and transfer), disposable income (post-tax and transfer) and the difference between these two measures of inequality. Since taxes and transfers affect economic behavior, this difference reflects the net effect of direct taxation (income and employee social security taxes) and government transfer benefits. Clearly, both coefficients vary substantially across countries. The differences between these two Ginis also fall in a wide range; the sample high of 0.245 (Sweden) is more than ten times the sample low of 0.023 (Taiwan).

Note that the disposable income Gini (DPI) is not closely related to the level of inequality in market income (MI). For example, with MI Ginis less than 0.34, Finland, Italy, and Taiwan have the least amount of inequality in market income. But, with DPI Ginis of 0.233 and 0.255 respectively, Finland and Italy have significantly less inequality in disposable income than Taiwan, whose DPI Gini (0.302) is not much less than its MI Gini (0.325). Similarly, Hungary, France, Poland, and Canada all have DPI Ginis in the 0.285 - 0.295 range, but MI Ginis that run from 0.415 to 0.470. The weak relationship between a country's DPI and MI Ginis is suggested by the scatter in figure 1 and confirmed by the low multiple correlation coefficient (0.282) of these two series.

These data suggest that there is a wide variety of experiences underlying the relationship between inequality in market income and inequality in disposable income. And although differential behavioral responses to redistribution may contribute to the range of these DPI

**Table 4. Inequality in Disposable and Market Income in Twenty-Four Nations**

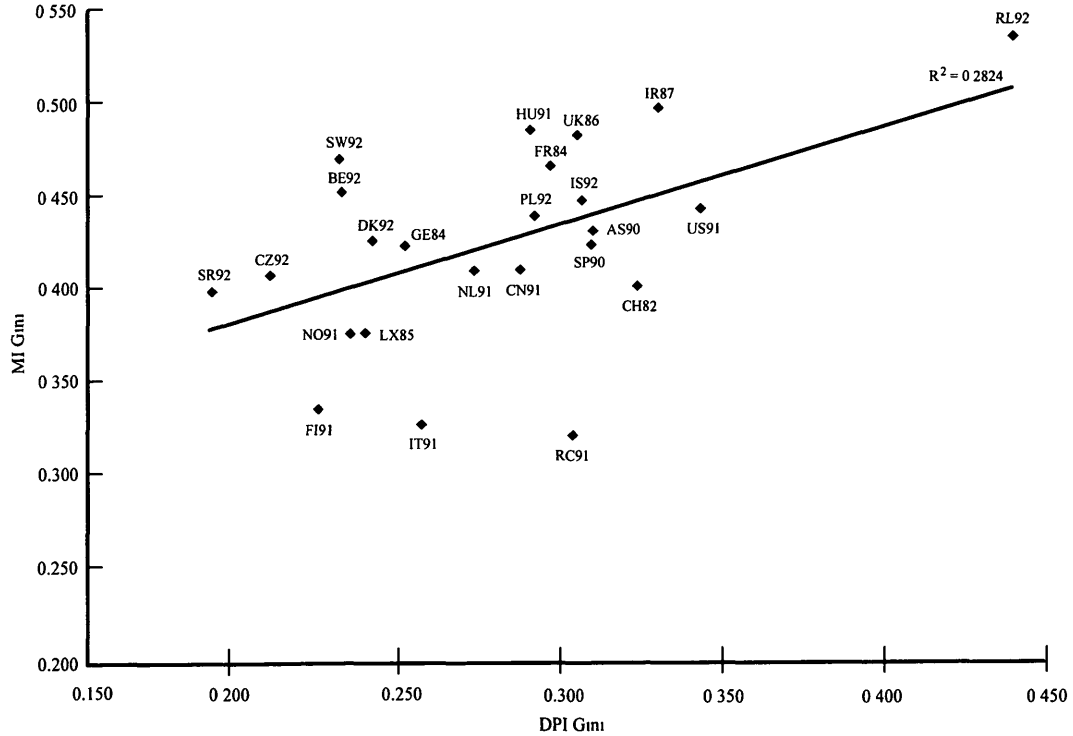
| Country         | Year | Abbreviation | DPI Gini | MI Gini | Difference |
|-----------------|------|--------------|----------|---------|------------|
| Slovak Republic | 1992 | SR92         | 0.189    | 0.402   | 0.213      |
| Czech Republic  | 1992 | CZ92         | 0.208    | 0.411   | 0.203      |
| Finland         | 1991 | FI91         | 0.233    | 0.337   | 0.114      |
| Sweden          | 1992 | SW92         | 0.229    | 0.474   | 0.245      |
| Belgium         | 1992 | BE92         | 0.230    | 0.456   | 0.226      |
| Norway          | 1991 | NO91         | 0.233    | 0.378   | 0.145      |
| Luxembourg      | 1985 | LX85         | 0.238    | 0.380   | 0.142      |
| Denmark         | 1992 | DK92         | 0.240    | 0.430   | 0.191      |
| Germany         | 1984 | GE84         | 0.250    | 0.428   | 0.178      |
| Italy           | 1991 | IT91         | 0.255    | 0.330   | 0.075      |
| The Netherlands | 1991 | NL91         | 0.271    | 0.414   | 0.143      |
| Canada          | 1991 | CN91         | 0.286    | 0.415   | 0.129      |
| Hungary         | 1991 | HU91         | 0.289    | 0.491   | 0.202      |
| Poland          | 1992 | PL92         | 0.291    | 0.444   | 0.154      |
| France          | 1984 | FR84         | 0.295    | 0.470   | 0.175      |
| Taiwan          | 1991 | RC91         | 0.302    | 0.325   | 0.023      |
| United Kingdom  | 1986 | UK86         | 0.304    | 0.488   | 0.185      |
| Israel          | 1992 | IS92         | 0.305    | 0.453   | 0.147      |
| Spain           | 1990 | SP90         | 0.308    | 0.429   | 0.121      |
| Australia       | 1990 | AS90         | 0.309    | 0.437   | 0.128      |
| Switzerland     | 1982 | CH82         | 0.323    | 0.406   | 0.083      |
| Ireland         | 1987 | IR87         | 0.330    | 0.503   | 0.174      |
| United States   | 1991 | US91         | 0.343    | 0.449   | 0.107      |
| Russia RLMS     | 1992 | RL92         | 0.440    | 0.542   | 0.102      |

SOURCE Author's tabulation of Luxembourg Income Study.

NOTE. Austria is omitted because MI cannot be computed in the LIS datasets.



**Figure 1. Market Income and Disposable Income Inequality**



SOURCE Author's tabulations of Luxembourg Income Study.

Ginis, we suspect that the difference between a country's MI and DPI Ginis is more likely to be a product of its redistributive policy. Ginis, we suspect that the difference between a country's MI and DPI Ginis is more likely to be a product of its redistributive policy.

### *Changes in Inequality Over Time*

In the nations studied here, changes in earned income inequality appear to be the prime force behind changes in market income inequality during the 1980s. With earnings roughly at or above 70 percent of market income in most modern nations, this is to be expected. Other market forces along with demographic and social developments also affected market income inequality, though to a lesser degree. However, while market income changes are dominant, they do not tell the whole story. By the mid-1980s, more than 25 percent of all households in major OECD nations depended on something other than earnings as the primary source of their incomes. In nations such as the United Kingdom, the Netherlands, and Sweden, this figure reached 30 percent (Atkinson, Rainwater, and Smeeding 1995b, table 8).

The crude evidence in table 3 indicates that the trends in disposable income inequality mirror the trends in market income inequality in most nations. In thirteen of the nineteen nations in which the changes in both market and disposable income inequality have been estimated, the change in both measures of inequality has the same sign. The link between changes in tax and transfer policy and changes in the distribution of disposable income is not very well understood at this time.<sup>17</sup> In countries with progressive tax and transfer systems, the effect of changes in taxes paid and transfers received would largely offset the effect of any changes in market income on the distribution of disposable income. In some countries, especially Finland, but also in Israel, Spain, Ireland, Canada, and Germany, there was no appreciable increase in the inequality of disposable income. Thus, the tax and transfer systems in place in these nations, or the redistributive policies adopted in the 1980s in response to increasing inequality in market incomes, were effective in preventing rising disposable income inequality. In contrast, in six nations inequality in disposable income kept pace with inequality in market income. That the United Kingdom, New Zealand, Denmark, and Japan experienced increases in disposable

income inequality that exceeded the increases in market income inequality begs the question of whether there were retrenchments in tax/transfer program progressivity over the relevant period.

Since in fifteen of the nineteen countries for which there are data, market income inequality increased during the 1980s, it seems that rising market income inequality was a problem confronted by most if not all industrialized economies. This suggests that some of the factors behind these developments are common to all these nations. Candidates for these factors might be the growing volume and importance of international trade and a more *laissez faire* approach to domestic economic policy.

### **Summary and Research Implications**

The literature on cross-national levels and trends in earning and income inequality is young but growing rapidly. Concerns about earnings inequality and joblessness have moved to the top of the social policy agenda in modern OECD nations. Over the past decade, new data resources have expanded to meet these interests. While some of these permit a broad-brush overview of the field, the growing research interest in this area has spawned a large number of collaborative efforts to examine a small number of nations in much greater detail. In this paper we attempted to briefly summarize both what can be learned from the new resources such as LIS and also from the growing literature on national and cross-national trends in inequality.

We find a wide range of levels of income inequality across the twenty-five nations studied here. The range of inequality among OECD nations is very large, and the range among CEE nations appears to be larger still. Government redistribution has a measurable effect on overall income inequality, reducing market income-based measures compared to disposable income measures in every nation. However, countries with very similar disposable income inequality often have very different inequality of market income and vice versa. These differences are yet to be fully explained.

Trends in overall income inequality diverge across nations in interesting ways. One finds large increases in inequality among very differ-

ent nations: two Anglo-Saxon nations (the United Kingdom and the United States), one Scandinavian nation (Sweden), and one CEE nation (Hungary) exhibit the largest increases in measured income inequality from roughly 1980 to 1992. In contrast, other Anglo-Saxon (e.g., Canada), European (several), and Scandinavian (e.g., Finland) nations have experienced a much smaller change in inequality while some nations have shown no measurable change in inequality.

In fact, the most distinctive changes in income distribution in modern OECD nations seem to have taken place in the United Kingdom and in the United States, where there has been a hollowing out of the middle of distribution, marked by an increasing fraction of the population both in upper and lower income groups relative to overall median income. Falling real wages for low-skill, low-income families and the growth in the number of females heading families juxtaposed against rising wages for well-educated men and women and assortative mating were the primary factors accounting for the increase in inequality in the United States.<sup>18</sup> In the United Kingdom, while real earnings still grew at the bottom of the earnings distribution, unemployment and rising numbers of single parents were important in building a large group at the bottom of the distribution. At the other end of the British income distribution, higher earnings for well-educated men and women, rising income from financial capital, and self-employment income all play a significant role in explaining the growing income share of high-income people. However, while the hollowing out or polarization of distributions in the United States and the United Kingdom is clear, these same patterns are not obvious in other OECD or LIS countries.<sup>19</sup>

Additional research is needed to further investigate the patterns found here to provide a better overall theory of income distribution. Comparisons of real income differences across countries are also instructive. Such comparisons as these, while difficult to make, can add a great deal in cases where one wishes to compare nations with similar overall levels of production and economic output (per capita GDP) to one another (see Smeeding and Gottschalk 1995). We also need to build better structural models of income distribution and redistribution that can be applied across and within nations. Atkinson's (1994) self-characterization of his review of the economic theory of income distribution is "a prospectus for a yet-unwritten book rather than a self-contained essay," a statement that I heartily endorse.

## NOTES

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1. In Scandinavia and Europe, the debate is about jobs and income support levels that are producing record budget deficits In the United States, United Kingdom, and Canada, the debate is about budget deficits and fairness.

2. In order to realize the full range of choices and their potential applications, the larger studies need to be consulted (Atkinson, Rainwater, and Smeeding 1995a, chapters 2, 3, and appendices 2-6; Gottschalk and Smeeding 1995). In order to expand the realm of inquiry to wealth or to consumption, other sources need to be consulted (e.g., Wolff 1994, 1995, Hagenaars, deVos, and Zaidi 1994, Deaton and Paxson 1994) Moreover, the range of nations studied is confined to those for which we have data that have attained a reasonable level of comparability Many CEE nations and Asian nations are not covered here For additional information on their experiences, see Milanovic (1995) and Birdsall, Ross, and Sabot (1995).

3. For a discussion of the problems of comparability across countries, see, among others, Atkinson, Rainwater, and Smeeding (1995a); Buhmann et al. (1988); Smeeding, Rainwater, and O'Higgins (1990). The issue of international standards for income distribution studies is also being addressed by the Luxembourg Income Study Project

4. Smeeding et al (1993) covers Australia, Canada, West Germany, United Kingdom, the Netherlands, and United States around 1980

5. In many CEE nations we have the option of adding production for own consumption (mainly among rural farm families), the value of goods produced and bartered, and in-kind transfers (food, appliances, etc.) received from outside the household However, these amounts are not included here.

6. Our comparisons of income distribution, and of the effect of taxes and transfers on inequality, use equivalence scales to adjust families for differences in economic need as reflected by family size These scales have been found to systematically affect the level of overall inequality, but not its pattern See Atkinson, Rainwater, and Smeeding (1995a, chapter 4) See also Buhmann et al (1988)

7. We compare incomes by considering household disposable income (or market income) per equivalent adult, using an "intermediate" equivalence scale of household size raised to the power of a half (or  $S^E$  where  $E = .5$ ) Thus, adjusted income equals unadjusted income divided by  $S^E$  Many recent cross-national studies of inequality and poverty have used this value for E (Atkinson, Rainwater, and Smeeding 1995; Hagenaars, deVos, and Zaidi 1994; Forster, 1993, 1994 )

8. Two sets of figures are presented, one bottom-coded at 1 percent of median disposable income, the other top-coded at 10 times median income

9. Atkinson, Rainwater, and Smeeding (1995a, chapter 4) also present alternative summary index measures of inequality (the Atkinson ratio), and measures of Lorenz-dominance

10. These trends are drawn from the primary studies shown in table 3 and summarized numerically in Smeeding and Gottschalk (1995, table A-1) Table A-1 also allows the reader to make longer-term comparisons of inequality for nations with such data

11 It should be emphasized that these figures are not comparable across countries. One can draw no conclusions from these estimates about the relative degree of inequality in different countries. In each case, the estimates are drawn from national studies of income inequality that are not designed for purposes of international comparison, and they are not necessarily based on the same concepts of income or method of calculation. See Smeeding and Gottschalk (1995, table A-1) for additional details. While we have used the LIS data for inequality comparisons across a subset of these nations where other national studies are not available, the LIS data are less complete in terms of years studied than are those from the other national studies cited here. Where LIS trend data is available, however, it supports the findings shown in table 3.

12. See Atkinson (1993, table 1) and also Goodman and Webb (1994), who report similar results.

13 We have several sources of information on the trend in Swedish income inequality, including Gustafsson and Palmer (1993) and Bjorklund and Freeman (1994). The former show large increases in the Gini, particularly in 1990 and 1991. The latter appear to show a smaller increase in inequality using data through 1992, but do not use Ginis and compute only subgroup inequality trends, excluding the aged and persons aged 18 and 19. Gini estimates provided directly by Kjell Jansson of Statistics Sweden indicate that the trend in overall inequality is similar to that shown in Gustafsson and Palmer (1993).

14 Were we to show not *percentage change* but *percentage point change* in inequality, Sweden may fare a bit better than shown here. A 15 percentage point change in the Swedish 1991 Gini of 0.229 or 0.034, is less than a 10 percent change in the U.S. 1991 Gini of 0.343.

15 While the Polish data are consistent from 1987 through 1992, it is not entirely clear that the Polish household budget survey has adequately captured changes in entrepreneurial incomes since 1990. Thus, the Polish results must be cautiously interpreted.

16 Gardiner (1993) goes back further than we, to the 1980s, noting a "U"-shaped pattern of inequality change in the United States, the United Kingdom, Japan, and the Netherlands, thus capturing the decrease in inequality that occurred in the 1960s and early 1970s in these nations.

17 This conclusion draws heavily on Gottschalk and Smeeding (1996), who in turn base their conclusions on material from Gottschalk, Gustafsson, and Palmer (1995), OECD (1994), Gardiner (1993), Ploug and Kvist (1994), Messere (1994), and Commission of the European Community (1993a, 1993b).

18 The extent to which real incomes have actually fallen among American families and the amount of that decrease depends on the measure and on the time period. Depending on the period chosen, the decrease has been large (e.g., substantial declines by 40 percent of persons from 1973 to 1994 according to Karoly 1995) or small (e.g., very small declines for less than 25 percent of persons from 1979 to 1989 according to Burkhauser et al. 1996). Still the large majority of the real income gains in America during the 1980s and 1990s have gone to those at or near the top of the income distribution.

19. See Beach and Slottsvé (1994) and Foster and Wolfson (1994) on Canada, for the United Kingdom see Jenkins (1994); and for the United States see U.S. Bureau of the Census (1995) and Duncan, Smeeding, and Rodgers (1994). Recent analyses using the LIS database also fail to find such a pattern in any other modern OECD nation through 1992.

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