Luxembourg Income Study Working Paper Series

Working Paper No. 58

International Comparisons of Earnings Inequality for Men in the 1980's

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October 1990

(scanned copy)

Luxembourg Income Study (LIS), asbl

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INTRODUCTION

Income earned in the labor market represents a large part of the total income received by a nation's population. In the United States(U.S.), for example, 65 percent of personal income in 1989 was in the form of wages and salaries or other labor income and another eight percent was obtained in the form of proprietors' income (Council of Economic Advisers, 1990). How this labor income, or earnings, is distributed across persons, families, and households plays an important part in determining the shape of a country's overall income distribution.

During the 1980's, changes in how earnings were distributed among workers became a topical issue. Researchers have since shown that earnings inequality in the U.S. did increase in that decade (e.g., Bluestone, 1990; Burtless, 1990; Ryscavage and Henle, 1990). Earnings were growing faster for workers at the upper end of the earnings distribution than they were for workers at the lower end. As might be expected, these findings provoked much discussion from the media and policymakers.

The reasons for the greater dispersion in labor income in the 1980's, however, have not been agreed upon. In general, most reasons advanced have been either demand-side or supply-side oriented. Regarding the former, industrial restructuring and the U.S.'s weakened international trading position have frequently been mentioned; regarding the latter, the emergence of the baby boom generation and the growing role of women in the labor force have often been suggested. More recently, the trend toward greater earnings inequality has been viewed as the result of a complex demand-supply adjustment process reflected by significant increases in the returns to formal education. But whatever the reason or reasons, the trend towards greater earnings inequality has implications for rising income inequality.

While this paper does not address the very challenging question of why earnings inequality became more acute in the 1980's, it does address a question that may prove useful in that inquiry. It examines the question of what has happened to the distribution of labor incomes in other developed countries. If indeed a pattern of growing earnings inequality is observed in many nations during the 1980's, it is likely that the same phenomena causing it in

these countries is responsible for it in the U.S. For example, technological changes associated with the computer age together with social and demographic changes may be common to many countries and produce more dispersion in market wages and earnings. Or if there had been no change in earnings inequality in these other countries, the reasons for growing earnings inequality in the U.S. may be due to problems unique to the U.S., such as our trade imbalance.

In this paper we present international comparisons of earnings inequality in the 1980's. The paper begins with a discussion of the Luxembourg Income Study (LIS), the source of the data for this analysis. In addititon, methodological issues surrounding the measurement of inequality are discussed. The next section presents the results of our comparisons. We first focus on how the various nations' earnings distributions compare with respect to earnings inequality during the mid-1980's. We then address the more interesting question of whether or not earnings inequality changed in some of these countries between the beginning of that decade and the mid-1980's. The final section summarizes the findings and discusses their implications.

DATA AND MEASUREMENT APPROACH

The LIS database is a multinational collection of microdata sets obtained from household surveys in various countries which can be accessed in Luxembourg via transoceanic telecommunication linkages (Coder, Rainwater, and Smeeding, 1988). To the extent possible, these microdata sets have been placed on a common foundation so that definitions of income sources and family and household characteristics are comparable across countries. This computerized data bank provides a unique opportunity for social scientists to investigate social and economic policy issues, such as earnings inequality, on an international basis.

Data now available from the LIS database cover two different time periods, what we have termed the early- and mid-1980's. The early period encompasses the years 1979-81 while the mid-1980 period refers to the span of 1984-87. For the earlier period, the database contained information concerning the wage and salary earnings levels only for household heads and spouses. For the later period, the database was restructured to include wage and salary earnings amounts for up to three adults within the household in addition to the amounts for the head and spouse.

As of July 1990 data for five countries were available for both reference periods. This group was made up of Australia, Canada, Sweden, the United States, and West Germany. In addition, data for the later period were available for three additional countries not included in the early period. These were Luxembourg, Italy, and Poland. Data from all eight countries were considered during our investigation. Table A summarizes the countries and specific reference years.[1] Shown in Appendix A is a brief description of the surveys used as the sources for the LIS database.

Table A. Countries and Reference Years Available from the LIS Database

	Mid-1980 Period	Early-1980 Period
Australia	1985	1981
Canada	1987	1981
Italy	1986	(NA)
Luxembourg	1985	(NA)
Poland	1986	(NA)
Sweden	1987	1981
United States	1986	1979
West Germany	1984	1981

NA - Not available.

For the most part, the sampling frames for each of the surveys covered the total noninstitutional population living in households. Members of the military living away from home are excluded from the universe and from our study. Military living with their families have been included as wage and salary workers (except for Poland). For West Germany, the survey covering 1981 excluded guest workers and all other non-Germans while the later survey included them. For Poland, the sample excluded the military and high-ranking officials of the government.

Annual earnings distributions of two groups of adult men from these eight countries were examined in this study (see Table A-1 of Appendix A for sample sizes for each universe). The first group was men, age 25 to 54 years, and the second was men who were heads of households, age 25 to 54 years, working year round, full time. In addition to the age restriction, all men receiving any type of social insurance pension or private pension were eliminated.

With the exception of Italy and Luxembourg the earnings definintion used was annual "gross" wage and salary earnings (income from self-employment is excluded). The universe included only men with wage and salary income during the reference year. Earnings for Italy and Luxembourg were annual "net" wage and salary income and exclude taxes and other mandatory deductions for social insurance, etc. Earnings for Poland were not subject to comparable income taxes and contributions for social insurance (i.e. the concept of gross and net did not exist). While we have decided to include data for the three countries with nonconforming earnings definitions we have excluded them from discussions of inter-country inequality comparisons.

An initial evaluation of the earnings distributions was made in an effort to identify obvious differences in the data that could significantly affect cross-country comparability. Based on this examination (see Appendix C) we decided to censor the distributions for the year-round, full-time universe to exclude the cases falling in the lowest and highest 1-

percentiles as it appeared that survey "noise" and differences in data collection and processing could be concentrated in these areas.

Since our analysis is based on annual rather than hourly earnings levels we must acknowledge concerns regarding the confounding effect of differences in annual hours worked on annual earnings. Many analyses of earnings inequality have focused on the distribution of labor income for a standard unit of labor input(e.g. an hourly wage rate). In this case, however, the data needed to compute such a measure were not available for most of the countries. By selecting all men between the ages of 25 and 54 receiving wage and salary earnings as the first universe to examine, we believe we minimize the differences in annual hours worked since labor force participation rates are typically highest for this group of workers compared to any other.

Male heads of households age 25 to 54 years who worked "year round, full time," our second universe of interest, represent a further attempt to minimize the variation in annual hours worked. In six of the countries such variables do exist and were used to limit the universe to year-round, full-time male heads of households, age 25 to 54.[2] For Italy and Poland no information was available that would allow identification of work experience status.

Numerous indicies exist for measuring the degree of inequality in an earnings distribution. They range from simple measures like the interquartile range, the coefficient of variation and the variance of the natural logarithm of earnings to more complex measures such as the Gini, Theil, Atkinson measures, and generalized entropy indices. All of these measures have different mathematical properties and may, therefore, lead to somewhat different assessments concerning the degree of inequality. Some of them, because of the way they are constructed, are more sensitive to changes in certain parts of the distribution. For example, while the Gini index is more sensitive to changes in the middle of the distribution, the coefficient of variation is more sensitive to changes in the upper end of the distribution (Osberg, 1984). For this reason as well as others to be described, we use multiple measures of earnings inequality as many economists have recently advised (e.g., Slottje, 1989; Braun, 1988).

Four different inequality indicies were calculated using the earnings data for each country.[3] The first is the variance of the natural logarithm of annual earnings. This is a popular measure among labor economists who have examined earnings inequality in the U.S. The second is the Gini index or coefficient, a measure that has been used widely by economists to measure the amount of inequality in both income and earnings distributions. The third is the Theil index, an index whose appeal is its property of decomposition. That is, it permits one to examine overall inequality in terms of the inequality existing both within and between groups comprising the distribution. The fourth and last measure is a series of Atkinson measures. The significant feature of the Atkinson measures is that they allow one to assume different degrees of sensitivity to inequality. That is, how averse one is to earnings inequality can be made an integral part of the measure. This sensitivity factor, or "weight," is denoted by an epsilon in the measure. Higher values of epsilon increase the measure's sensitivity to the lower end of the distribution. (The exact construction of these indicies is presented in Appendix B.)

DATA RESULTS

Our international comparison of earnings inequality in the 1980's is divided into two parts. The first part focuses on earnings inequality of men age 25 to 54 in five countries--Australia, Canada, Sweden, United States, and West Germany--in the mid-1980 reference period. The second part discusses what happened to earnings inequality between the 1979-81 period and the mid-1980's for these same five countries.

The degree of inequality in the earnings distribution of adult men and the causes of it have been much researched in the U.S. and other countries. Mincer's (1974) classic study isolated the effects of human capital investments on the distribution of men's earnings in 1959 by showing that upwards of two-thirds of the variance in earnings was related to the distribution of education and experience. But clearly a significant amount of variance remained unexplained. Other factors, such as industrial composition, the extent of unionization, and the health of the economy have been used as explanatory variables as well.

In our comparative analysis of earnings inequality among adult men across countries we do not attempt to explain the differences observed. A variety of interrelated factors are probably at work, with perhaps human capital differences, as Mincer suggested, heading the list. We do provide, however, a brief description of the economic conditions under which these countries were operating during the 1980's.

Table 1 shows three indicators of economic activity for each of the countries as reported by the Organisation for Economic Co-operation and Development (OECD, 1990a) in the years corresponding to their inclusion in the LIS database. Economic growth in the 1984-87 period, as measured by the annual rate of change in real gross national product (GNP) or gross domestic product (GDP), was expanding within a range of from 2.7 percent in the United States to 5.3 percent in Australia. These countries' economies were still in the recovery phase of business cycle after the period of economic slowdown that affected them in the opening years of the 1980's.[4] Employment growth between 1978 and 1988 was stronger in the service sector than in the industrial sector in all of these countries (OECD, 1990b).

Inflation in the 1984-87 period, as measured by these countries private consumption deflator (an annual rate), ranged from a low of 2.4 percent in the United States to a high of 7.1 percent in Australia. Relative to the earlier years, it is apparent that inflationary pressures had moderated significantly by the mid-1980's. Unemployment ranged from a low of 1.9 percent in Sweden to a high of 8.8 percent in Canada during the mid-1980's. Although the unemployment rates for the mid-1980's are higher than for earlier years, this is misleading since the rates for the earlier years came before the trough of the recession was reached in those countries.

Table 1. Average Annual Percentage Changes in Gross National Product-Gross Domestic Product and Private Comsumption Deflators, and Unemployment Rates in the 1984-87 and 1979-81 Periods for Specified Countries

COUNTRY AND REFERENCE YEAR	REAL CHANGE IN GNP/GDP	CHANGE IN PC DEFLATOR	UNEMPLOYMENT RATE
Australia			
1985	5.3	7.1	8.2
1981	3.2	9.3	5.7
Canada			
1987	4.5	4.0	8.8
1981	3.7	11.2	7.5
Italy			
1986	2.5	5.8	10.5
Luxembourg			
1985	2.9	4.5	1.6
Poland			
1986	(NA)	(NA)	(NA)
Sweden			
1987	2.9	5.3	1.9
1981	-	12.4	2.5
United States			
1986	2.7	2.4	6.9
1979	2.5	9.2	5.8
West Germany			
1984	3.3	2.5	7.1
1981	-	6.2	4.4

- Represents zero. NA Not available.

Note: All unemployment rates with the exception of Luxembourg's have been standardized on the basis of the International Labor Organization and Organization of European Cooperation and Development guidelines and may differ from those published by the country.

EARNINGS INEQUALITY 1984-87

Decile Shares. Table 2 shows the share of aggregate wages and salaries received by men, age 25 to 54 years, at each decile of the earnings distributions for the eight countries. These data relate to different years in the 1984-87 period. The ordering of the countries in the table (from left to right) is based on a cursory assessment of the degree of earnings concentration in each country (that is, the extent to which earnings tend to be concentrated in the upper end of the earnings distribution).

The table shows significant differences in the earnings distributions for these countries. In 1986 men from the U.S. in the highest decile received almost 25 percent of aggregate wage and salary income, a larger share than in any of the other five countries. In the lowest decile, the U.S. men received only 1.5 percent of the aggregate, about the same share as seen for Canada and Sweden. In contrast to the U.S. distribution is the 1984 distribution of men from West Germany. Men with gross wage and salary earnings in the top decile received 20.0 percent of the aggregate and those in the lowest, 2.9 percent.

Table 3 narrows the focus to a universe consisting of men who were head of households, age 25 to 54, and working at year-round, full-time jobs. As might be expected, the share distributions for this universe are quite similar to those shown in Table 2. The earnings appear, however, to be somewhat less concentrated (more equally distributed) since tighter control has been applied to work experience. The U.S. continues to have the largest concentration of wages in the highest decile and appears similar to all countries except West Germany with regard to the share in the lowest decile.

Lorenz Curves. Perhaps the most common method for graphically representing income and earnings distributions in the context of measuring inequality is construction of the Lorenz curve. The Lorenz curves depict the cumulative percentage of earners ranked from lowest to highest on the horizontal axis plotted against the cumulative percentage of aggregate earnings received by these earners on the vertical axis. If earnings were distributed equally the Lorenz curve would be represented by a diagonal line emanating from the origin of the graph. But as we have seen, earnings (or income) are rarely distributed equally and similar proportions of earners typically receive dissimilar proportions of aggregate earnings. In Figure 1 we show the Lorenz curves for all men age 25 to 54 in the U.S. and West Germany, and in Figure 2 the Lorenz curves for the same two countries for household heads working year round, full time. Lorenz curves for the other countries would lie roughly within the range of these two curves but in some instances touch and intersect.[5]

Lorenz curves are directly related to the Gini index or coefficient, a frequently used measure of inequality. The Gini index can be computed as the ratio of 1) the area between the diagonal line of equality and the Lorenz curve to 2) the total area under the diagonal line. The smaller the area between the diagonal and curve, the closer the index approaches zero, or perfect equality; the larger the area the closer the Gini index approaches 1.0, or perfect inequality. For the most part, "unambiguous" rankings of distributions with respect to the Gini (and Theil index as well) can be made only when the Lorenz curves for the distributions being compared do not intersect, i.e. a situation of Lorenz curve dominance.

Table 2. Percentage Share of Aggregate Wage and Salary Income Received by All Men, Age 25 to 54 Years, With Wage and Salary Income by Decile for Countries for the Mid-1980 Reference Period

	COUNTRY							
DECILE	US	CN	SW	AS	WG	IT	PL	LX
LOWEST	1.5	1.3	1.8	2.2	2.9	3.6	4.7	5.3
SECOND	3.9	3.9	5.4	6.0	6.0	6.7	6.6	6.6
THIRD	5.3	6.2	7.5	7.2	7.4	8.1	7.3	7.4
FOURTH	6.9	7.1	8.5	8.2	7.9	8.6	8.1	8.1
FIFTH	8.1	8.8	9.1	9.1	9.1	9.1	8.8	8.7
SIXTH	9.5	10.1	9.9	9.9	9.6	9.8	9.5	9.7
SEVENTH	11.1	11.6	10.8	11.0	10.7	10.4	10.4	10.6
EIGHTH	13.0	13.1	11.9	12.3	12.1	11.6	11.5	11.9
NINTH	15.8	15.3	14.1	13.9	14.3	13.2	13.3	13.7
HIGHEST	24.9	22.6	21.0	20.2	20.0	18.9	19.8	18.0

Wage and salary income for Italy, Poland, and Luxembourg are net of income and payroll taxes. Wages and salary for all other countries are gross amounts before deductions.

NOTE: AS = Australia 1985; CN = Canada 1987; IT = Italy 1986; LX = Luxembourg 1985; PL = Poland 1986; SW = Sweden 1987; US = United States 1986; WG = West Germany 1984;

Shaded area indicates noncomparable earnings definition.

Indeed, when examining the data presented in this study one finds that Lorenz curve dominance does exist for some pairs of country distributions.[6]

Inequality Indices. We now turn to an examination of the inequality measures. Our approach to evaluating differences in inequality between countries was based on first ranking each country separately based on each inequality measure and then summarizing these ranking into overall rank frequency scores. Table 4 presents the values for six different measures of earnings inequality for the universe of all men age 25 to 54 years. They are presented by rank order from most unequal to least unequal.

Perhaps the first aspect of the table that stands out is that, as expected, the rankings differ depending on the measure chosen. For example, the variance of the natural logarithm, or Ln Y measure, and the Atkinson(1.5) indicate that the Swedish earnings distribution contains the greatest amount of inequality, while the Gini, Theil, and Atkinson(0.5) and Atkinson(0.8) all suggest the U.S. distribution is the most unequal. West Germany, on the other hand, ranks as the most equal distribution for all indices.

A second interesting aspect of the table is that each earnings inequality measure produces a somewhat different range of values (from the country with the least unequal distribution to the one with the most unequal). For example, in terms of the variance measure, Ln Y, the highest ranking distribution, Sweden, exhibits a variance that is nearly three times larger than that for the lowest ranking distribution, West Germany; but in terms of the Gini measure, the U.S. distribution is only 1.4 times larger than that for the lowest ranking country.

If one computes the rank that each country occupies over all six possible indices, the results are suggestive as to which country has the most unequal distribution of wage and salary earnings for men age 25 to 54 and which the most equal. The text table below presents these rank frequency scores. It appears that the U.S. had the most unequal distribtution of earnings for all prime-age men during for the mid-1980 period, ranking as the most unequal for 4 of the 6 indices. Sweden ranked highest for the other two indices, the Ln Y measure and the Atkinson (1.5) measure (indicating a very high aversion to inequality). Both of these measures are unusually sensitive to the low end of the distribution and in a detailed examination of the Swedish earnings distribution, an unusually large proportion of low earnings men were found.[7] West Germany had the least unequal distribution according to all inequality measures.

Table B. Rank Frequency by Country for All Male Workers

Rank	Frequency of occupying the rank	
1	United States	4
2	Canada	4
3	Sweden	4
4	Australia	6
5	West Germany	6

Table 4. Country Rankings for Specified Measures of Earnings Inequality for All Men, Age 25 to 54 Years, With Wage and Salary Income for Countries for the Mid-1980 Reference Period

(Rankings from most to least unequal)

RANK	INEQUALITY MEASURE					
	LN Y	GINI	THEIL	ATKINSON (0.5)	ATKINSON (0.8)	ATKINSON (1.5)
1	1.070 (SW)	.353 (US)	.211 (US)	.110 (US)	.184 (US)	.598 (SW)
2	.812 (US)	.328 (CN)	.192 (CN)	.102 (CN)	.173 (CN)	.456 (US)
3	.767 (CN)	.269 (SW)	.142 (SW)	.079 (SW)	.147 (SW)	.441 (CN)
4	.529 (AS)	.257 (AS)	.129 (AS)	.068 (AS)	.117 (AS)	.317 (AS)
5	.363 (WG)	.249 (WG)	.111 (WG)	.058 (WG)	.097 (WG)	.225 (WG)
6	.229 (IT)	.215 (PL)	.082 (IT)	.042 (IT)	.070 (IT)	.150 (IT)
7	.152 (PL)	.211 (IT)	.081 (PL)	.039 (PL)	.061 (PL)	.110 (PL)
8	.136 (LX)	.198 (LX)	.064 (LX)	.032 (LX)	.050 (LX)	.096 (LX)

NOTE: AS = Australia 1985; CN = Canada 1987; IT = Italy 1986; LX = Luxembourg 1985; PL = Poland 1986; SW = Sweden 1987; US = United States 1986; WG = West Germany 1984;

Shaded area indicates noncomparable earning definition.

Table 5 presents the inequality measures for men age 25 to 54 who were heads of household working year round, full time. What is immediately noticeable is that all measures of inequality are lower, reflecting the more restrictive universe, and in particular, the control for year-round, full-time work. Another noticeable feature in the table is the behavior of the Swedish distribution across measures. Again it has the most unequal distribution according to the Ln Y measure and the most extreme Atkinson measure, but in the other measures its rank drops to third and fourth place. The high values for the Ln Y and Atkinson(1.5) for Sweden persist in spite of the implementation of the censorship which eliminated cases in the lowest and highest 1-percentiles.

Table C. Rank Frequency by Country for Male Heads Working Year-round, Full-time

Rank	Frequency of occupying the rank	
1	United States	4
2	Canada	6
3	Sweden	3
4	Australia	5
5	West Germany	6

Employing the frequency ranking process we find in Table C that the U.S. again appears to display the highest inequality and West Germany the lowest level of inequality. It does seem that Australia's position in fourth place is solid but the second and third positions open for debate since Sweden ranked first in two instances.

CHANGES IN INEQUALITY, 1979-81 TO 1984-87

For the U.S., Canada, Sweden, Australia, and West Germany we can identify changes in earnings inequality among men age 25 to 54, who headed households and worked year round, full time, during the 1980's.[8] The data presented in Table 6 show the percentage share of aggregate wages and salaries for this universe at the beginning of the 1980's and in the mid-1980's, by quintiles. In each country, there is evidence, to varying degrees, of a greater concentration of earnings in the upper quintiles of the earnings distributions. (It should be remembered that, with the exception of Canada and Sweden, the time periods of the comparisons vary in length and date.) In the U.S., for example, the share of aggregate wage and salary earnings received by the top one-fifth of earners increased from 34.8 percent to 37.4 percent. Canada also had a 2.0 pecentage point increase in the share going to the top earners--from 31.4 to 33.4 percent. In both countries, the share received in the lowest two quintiles declined by roughly 2.0 to 3.0 percentage points. Percentage increases in the aggregates going to the highest earners in Sweden, Australia, and West Germany were smaller, but there was, nevertheless, evidence of a shifting towards greater earnings concentration.

Table 5. Country Rankings for Specified Measures of Earnings Inequality for Men, Heads of Household, Age 25 to 54 Years, Working Year round, Full time, With Wage and Salary Income for the Mid-1980 Reference Period

(Rankings from most to least unequal)

RANK	INEQUALITY MEASURE					
	LN Y	GINI	THEIL	ATKINSON (0.5)	ATKINSON (0.8)	ATKINSON (1.5)
1	.358 (SW)	.287 (US)	.136 (US)	.066 (US)	.104 (US)	.255 (SW)
2	.314 (CN)	.252 (CN)	.105 (CN)	.056 (CN)	.092 (CN)	.196 (CN)
3	.277 (US)	.206 (AS)	.079 (SW)	.044 (SW)	.077 (SW)	.187 (US)
4	.217 (AS)	.204 (SW)	.073 (AS)	.039 (AS)	.065 (AS)	.140 (AS)
5	.109 (WG)	.191 (WG)	.058 (WG)	.028 (WG)	.045 (WG)	.080 (WG)
6	.104 (LX)	.185 (LX)	.054 (LX)	.027 (LX)	.042 (LX)	.076 (LX)

NOTE: AS = Australia 1985; CN = Canada 1987; LX = Luxembourg 1985; SW = Sweden 1987; US = United States 1986; WG = West Germany 1984;

Shaded area indicates noncomparable earnings definition.

Table 6. Changes in the Share of Aggregate Wage and Salary Income Received by Men, Heads of Household, Age 25 to 54 Years, Working Year round, Full time by Quintile: 1979–81 to 1984–87

COUNTRY AND YEAR	TOTAL	QUINTILE LOWEST	SECOND	THIRD	FOURTH	HIGHEST
UNITED STATES						
1986	100.0	8.5	13.6	17.7	22.8	37.4
1979	100.0	9.3	14.6	18.5	22.8	34.8
CANADA						
1987	100.0	8.5	14.7	19.3	24.1	33.4
1981	100.0	10.5	15.7	19.2	23.0	31.4
SWEDEN						
1987	100.0	10.9	16.4	18.8	22.1	31.8
1981	100.0	11.3	16.8	19.0	22.0	31.1
AUSTRALIA						
1985	100.0	10.5	16.0	19.2	23.1	31.2
1981	100.0	11.3	16.0	19.2	22.7	30.7
WEST GERMANY						
1984	100.0	12.5	15.5	18.2	22.2	31.6
1981	100.0	12.8	15.9	18.7	21.9	30.8

Values of the inequality measures in these countries at the beginning and middle of the 1980's are displayed in Table 7. As might be expected from the"share" analysis above, all of the measures indicate a trend towards greater inequality in the earnings distributions of men from these five countries. Canada appeared to have a particularly sharp increase in earnings inequality in the 1980's, although it is measured over a longer period than the other countries (except Sweden). The Ln Y measure almost doubled and the most sensitive Atkinson measure rose by more than 75 percent. On the other hand, most of the smallest changes in the earnings inequality measures were observed for West Germany, but, of course, the time period of the measurement was only from 1981 to 1984.

The values of the inequality measures in Table 7 also reveal something about the nature of the measures themselves. Of the six measures displayed, the smallest amount of change was observed in the Gini index. The increases in the Gini indexes ranged from as little as 5 percent (Australia) to 21 percent (Canada). This reflects this measure's sensitivity to changes in the middle of the distribution. The largest amount of change in the inequality indicies was found in the Ln Y measure and the most extreme of the Atkinson measure. These particular measures are sensitive to changes in the lower end of the distribution.

DISCUSSION OF RESULTS

The growth in earnings inequality in the U.S. in recent years has been well-documented and the subject of concern in both the research and policy communities. One of the central concerns has been whether the millions of jobs created in the U.S. during the 1980's were primarily of the "low paying, low productivity" variety. Another, and obviously related concern, is how much of this growing earnings inequality was responsible for the growing inequality of incomes among families and households.

New insights, or at least new perspectives, on earnings inequality in the U.S. have been obtained by examining changes in earnings inequality in other industrialized countries. It was shown for adult men who headed households and worked year round, full time in Canada, Sweden, Australia, and West Germany, that wage and salary earnings distributions also became more unequal during the 1980's, as they did in the U.S. The U.S. was not alone in experiencing growing earnings inequality.

Additionally, the rates of employment growth in these countries, at the time earnings inequality was increasing, varied widely. As shown in the table below, in the U.S. and Canada, the annual average rate of employment growth was in the 1.3 to 1.5 percent-a-year range, and in Australia 1.1 percent a year. In Sweden, on the other hand, employment growth was meager, while in West Germany employment was declining. Consequently, rising earnings inequality was taking place in each of these countries at times when rates of employment growth--and job creation--varied greatly.

The hypothesis that in the U.S. employers were generating a disproportionate number of low-paying jobs has been the subject of some debate. Burtless (1990) and others have pointed out that if employers were demanding greater and greater numbers of low wage workers, their

Table 7. Changes in Measures of Earnings Inequality for Men, Heads of Household, Age 25 to 54 Years, Working Year round, Full time, With Wage and Salary Income: 1979–81 to 1984–87

COUNTRY AND YEAR	INEQUALITY MEASURE					
	LN Y	GINI	THEIL	ATKINSON (0.5)	ATKINSON (0.8)	ATKINSON (1.5)
UNITED STATES						
1986	0.277	0.287	0.136	0.066	0.104	0.187
1979	0.228	0.252	0.104	0.052	0.082	0.154
CANADA						
1987	0.314	0.252	0.105	0.056	0.092	0.196
1981	0.161	0.208	0.069	0.035	0.057	0.110
SWEDEN						
1987	0.358	0.204	0.079	0.044	0.077	0.225
1981	0.254	0.193	0.071	0.038	0.066	0.161
AUSTRALIA						
1985	0.217	0.206	0.073	0.039	0.065	0.140
1981	0.156	0.196	0.063	0.032	0.053	0.106
WEST GERMANY						
1984	0.109	0.191	0.058	0.028	0.045	0.080
1981	0.099	0.178	0.051	0.025	0.040	0.072

wages would have eventually risen because employers would have bid them up. But this did not happen. Earnings of poorly educated young men have actually fallen in the 1980's relative to better educated men.

Table D. Annual Average Job Growth Rates

Country	Period	Average annual growth rate
United States	1979-85	1.49
Canada	1981-87	1.28
Australia	1981-85	1.08
Sweden	1981-87	.43
West Germany	1981-84	-.77

Source: OECD (June, 1990b)

The fact that rising earnings inequality occurred in other industrialized countries with different job creation experiences is significant. This may suggest that the causes of greater inequality are related more generally to phenomena occurring across nations rather than to specific factors unique to one country. One possibility involves changing technologies. Technological changes related to the computer age have swept across industrialized countries in recent years and these may have altered the demand for different skill classes of labor. Production processes may have been so altered that companies and factories now require more highly skilled and educated workers, while the demand for less well- trained labor associated with older production processes has collapsed. At the same time these shifts in demand have taken place, the supply of workers in the various skill classes may have changed less rapidly thereby increasing inequality in the wage distribution.

The above, of course, is speculation. Nevertheless, evidence now exists that the phenomenon of growing earnings inequality may have an international or global dimension.

FOOTNOTES

1/ Other countries in the LIS database at this time, but not included in the analysis because datasets were not yet available for the mid-1980 reference period are: France, 1979; Israel, 1979; Netherlands, 1983; Norway, 1979; Switzerland, 1982; and the United Kingdom, 1979;

2/ The definition of year-round, full-time was not identical for all countries. For the United States and Luxembourg the definition was usual hours worked per week of 35 or more and 50 or more weeks worked with pay. For Sweden the universe was defined by those working 1872 hours or more during the year. For Canada, Australia, and West Germany variables indicating year-round, full-time status were provided in the dataset, however the precise details concerning the derivation of this variable are not known.

3/ All of the measures were calculated using "weighted" earnings data, except in the case of Poland whose microdata set did not contain weights.

4/ Obviously, the years shown in table are not precisely consistent with the trough of the business cycle in each country. For example, in the U.S. growth slumped from the 2.2 percent rate in 1979 to -0.2 in 1980; in Canada, economic growth fell from 3.7 percent in 1981 to -3.2 percent in 1982, and in Australia it fell from 3.2 percent to -0.3 percent.

5/ These Lorenz curves have been based on "ventiles," or the aggregate share of earnings received by each 5-percentile in the earnings distribution.

6/ For the universe of all men age 25 to 54, crossing or touching Lorenz curves were identified for the following pairs of curves: 1) Canada and U.S., 2) Italy and Poland, and 3) Italy and Luxembourg. For the year-round, full-time universe Lorenz curves crossed or touched for the following; 1) Canada and U.S., 2) Sweden and Australia, 3) Australia and West Germany, and 4) West Germany and Luxembourg.(see appendix tables B-1 through B-3).

7/ As a matter of fact, when the distributions of these countries were being examined it was found that the range between the 1st and 99th percentile of the distribution for Sweden was unusually large relative to the other countries. We therefore censored the distributions at the 1st and 99th percentiles, thereby reducing the difference in the relative ranges. (see Appendix C for details)

8/ It was only for these countries and this universe of men that such an intertemporal comparison could be made. The LIS database for the earlier period contained earnings data only for the head of household and spouse.

REFERENCES

Bluestone, Barry, "The Impact of Schooling and Industrial Restructuring on Recent Trends in Wage Inequality in the United States," Papers and Proceedings of the 102nd Annual Meeting of the American Economic Association, May 1990, pp. 303-307.

Braun, Denny, "Multiple Measurements of U.S. Income Inequality," The Review of Economics and Statistics, Vol. LXX, No. 3, August 1988, pp. 398-405.

Burtless, Gary, "Earnings Inequality Over the Business and Demographic Cycle," in Gary Burtless (ed.), A Future of Lousy Jobs, Washington, D.C.: The Brookings Institution, 1990.

Coder, John, Rainwater, Lee, and Smeeding, Timothy M., "LIS Information Guide," LIS-CEPS Working Paper No. 7, Walferdange, Luxembourg, rev. November 1988.

Council of Economic Advisers, The Economic Report of the President, Washington, D.C.: USGPO, February 1990.

Mincer, Jacob, Schooling, Experience, and Earnings, New York: National Bureau of Economic Research, 1974.

Organisation for Economic Co-operation and Development, OECD Economic Outlook, Paris: OECD, June 1990b.

Organisation for Economic Co-operation and Dvelopment, OECD in Figures, (Supplement to the OECD Observer, No. 164), Paris: OECD, June, July 1990a.

Osberg, Lars, Economic Inequality in the United States, New York: M.E. Sharpe, 1984.

Slottje, D. J., The Structure of Earnings and the Measurement of Income Inequality in the U.S., Amsterdam: North-Holland, 1989.

Ryscavage, Paul and Henle, Peter, "Earnings Inequality Accelerates in the 1980s," Monthly Labor Review, (forthcoming), 1990.

APPENDIX A

Household Surveys in the LIS Database*

Australia

The Australian data for both 1981 and 1985 were obtained from The Income and Housing Survey. The sample size in 1981 was 15,985 households and in 1985, 7,560*.

Canada

Earnings data for Canada were obtained from The Survey of Consumer Finances and refer to 1981 and 1987. Sample sizes for the LIS data base were 15,136 and 10,999 households, respectively.

West Germany

Data for West Germany for the year 1981 were taken from the 1981 German Transfer Survey and based on a household sample size of 2,727. The German Panel Survey (Wave 2) was the source of the data for 1984 and 5,174 households from it comprised the LIS database.

Italy

The data from Italy were taken from The Bank of Italy Income Survey and relate to the year 1986. The sample size was 8,022 households.

Luxembourg

The Luxembourg Household Panel Survey was the source of the data for Luxembourg. The data relate to 1985 and were obtained from 2,049 households.

Poland

Data for Poland were obtained from The Polish Household Budget Survey and cover the year 1986. The sample size was 10,646 households.

Sweden

The Swedish Income Distribution Survey in both 1981 and 1987 was the source of the data for Sweden. LIS used data from 9,625 households in 1981 and 9,421 households in 1987.

United States

The data for the United States comes from the Work Experience and Income Supplement to the March Current Population Survey and relate to the years 1979 and 1986. In 1979, the sample consisted of 15,225 households and in 1986, 13,707.

* The household sample sizes do not necessarily reflect the size of the original sample in all cases, but rather the number of households comprising the country's microdata set in the LIS data base.

TABLE A-1. SAMPLE SIZES FOR SPECIFIED UNIVERSES USED IN THIS STUDY BY COUNTRY

COUNTRY	ALL MEN AGE 25 TO 54 WORKING MID-1980 PERIOD	MEN WHO WERE HEADS OF HOUSEHOLD, WORKING YEAR ROUND FULL TIME, AGE 25 TO 54 MID-1980 PERIOD	MEN WHO WERE HEADS OF HOUSEHOLD, WORKING YEAR ROUND FULL TIME, AGE 25 TO 54 EARLY-1980 PERIOD
AUSTRALIA	3,186	2,727	5,094
CANADA	4,631	3,767	4,014
ITALY	2,863	(X)	(X)
LUXEMBOURG	928	753	(X)
POLAND	4,382	(X)	(X)
SWEDEN	4,040	3,330	2,096
UNITED STATES	4,750	3,337	4,307
WEST GERMANY	2,659	2,148	1,160

X Not available.

APPENDIX B

Inequality Measures

Four measures of earnings inequality are used in this paper. A brief description of each is provided below.

Variance of the Natural Logarithm of Annual Earnings

This is a popular measure of "relative" earnings dispersion because earnings distributions are approximately lognormal and the lognormal distribution has particular mathematical properties conducive for analysis. For example, it is useful in the specification of human capital models where income or earnings are related to time investments in education and skill development.

This measure is written as

$$\text{Var ln Y} = \frac{\sum_{i=1}^{n} (\ln y_i - \ln \bar{y})^2}{n}$$

where $\ln y_i$ is the natural logarithm of person i's annual earnings, $\ln \bar{y}$, is the mean of the logarithm of annual earnings, and n is the number of persons with earnings.

There are, however, certain characteristics of this measure which users should be aware of. For one thing, it is possible for this measure to show that a decrease in inequality has occurred when income from a rich individual is transferred to an even richer one (Osberg, 1984). This is because annual earnings have been transformed into natural logarithms and the added variance of the richer person is less than the subtracted variance of the rich person. Another difficulty is that the measure is more sensitive to changes (of equal size) in the lower part of the distribution than in the upper part. A $1,000 decrease in a low earner's annual earnings will produce a much larger increase in inequality than a $1,000 dollar increase in the annual earnings of a high earner.

The Gini Index or Coefficient of Concentration

The Gini index is also a common measure of inequality. It can be written as

$$G = 1.0 - \sum_{i=1}^{n} f_i \, (p_i + p_{i-1})$$

where f_i is the proportion of earners in interval i and p_i is the proportion of total earnings received by earners in interval i and all lower intervals.

One of the major problems with this measure, which was addressed in the text, is that when Lorenz curves intersect, a meaningful comparison of Gini indexes becomes problematic. Also mentioned was the characteristic of the Gini to be more sensitive to changes in the middle of the distribution than at either the lower or upper ends. This is because it is derived from the Lorenz curve which expresses the relationship between the cumulated percentage of aggregate earnings and the cumulated percentage of earners. A $1,000 increase or decrease in earnings among earners in the middle of the distribution will have a greater impact than a similar change at either end of the distribution because there are more earners found in the middle ranks.

Theil's "Entropy" Index of Inequality

The Theil index can be written as

$$T = (1/n) \sum_{i=1}^{n} (y_i / \bar{y}) \log (y_i / \bar{y})$$

where y_i is the annual earnings of the i th earners, $\bar{y}$ the mean annual earnings, and n, the number of earners. Like the Gini index, this index too is more sensitive to changes in the middle of the distribution. Again, this is because the middle of the distribution carries a greater weight than the extremes of the distribution. Because this measure is based upon a Lorenz derivation, it too suffers from limitations related to the issue of Lorenz dominance.

Atkinson's Measures of Inequality

Atkinson's measure of inequality were developed to overcome the problem of Lorenz dominance (Braun, 1988). His measure is constructed as

$$A = 1 - \left[(1/n) \sum_{i=1}^{n} (y_i / \bar{y})^{1-e} \right]^{1/1-e}$$

with the similar notation found in the other measures, except for the e (epsilon). The epsilon represents the degree of inequality aversion one wishes to specify in their assessment of inequality in a distribution. That is, what part of the distribution one is most concerned about. As the value of the epsilon rises, the measure becomes increasingly sensitive to inequality among low earners. Low values of epsilon produce results similar to the Gini's.

TABLE B-1. CROSS-COUNTRY COMPARISONS FOR INTERSECTING LORENZ CURVES FOR WAGE AND SALARY INCOME FOR ALL MEN, AGE 25 TO 54 YEARS, FOR THE MID-1980 REFERENCE PERIOD

(applies to Table 2 of text)

COUNTRY	US	CN	SW	AS	WG	IT	PL	LX
US	-	X	-	-	-	-	-	-
CN	-	-	-	-	-	-	-	-
SW	-	-	-	-	-	-	-	-
AS	-	-	-	-	-	-	-	-
WG	-	-	-	-	-	-	-	-
IT	-	-	-	-	-	-	X	X
PL	-	-	-	-	-	-	-	-
LX	-	-	-	-	-	-	-	-

X Indicates crossing Lorenz curves.

TABLE B-2. CROSS-COUNTRY COMPARISONS FOR INTERSECTING LORENZ CURVES FOR WAGE AND SALARY INCOME FOR MEN, HEADS OF HOUSEHOLD, AGE 25 TO 54 YEARS, WORKING YEAR ROUND, FULL TIME, FOR THE MID-1980 REFERENCE PERIOD

(applies to Table 3 of text)

COUNTRY	US	CN	SW	AS	WG	LX
US	-	X	-	-	-	-
CN	-	-	-	-	-	-
SW	-	-	-	X	-	-
AS	-	-	-	-	X	-
WG	-	-	-	-	-	X
LX	-	-	-	-	-	-

X Indicates crossing Lorenz curves.

TABLE B-3. CROSS-COUNTRY COMPARISONS FOR INTERSECTING LORENZ CURVES FOR WAGE AND SALARY INCOME FOR MEN, HEADS OF HOUSEHOLD, AGE 25 TO 54 YEARS, WORKING YEAR ROUND, FULL TIME, FOR THE EARLY-1980 REFERENCE PERIOD

(applies to Table 6 of text)

COUNTRY	US	CN	SW	AS	WG
US	-	-	-	-	-
CN	-	-	X	-	-
SW	-	-	-	X	-
AS	-	-	-	-	X
WG	-	-	-	-	-

X Indicates crossing Lorenz curves.

APPENDIX C

Methodological and Microdata Issues

The first step in our investigation of earnings inequality was to develop and examine some very basic summary measures for each of the distributions. This step was taken in order to identify obvious differences in the distributions that might have significant effects on the overall comparability of the data. While a great deal of consistency exists between the country surveys, all of the data contained in the LIS database were collected independently by institutions within the participating countries. Each survey used different questionnaires, employed different data collection and processing procedures, had varying degrees of response rates, covered somewhat different population universes, used somewhat different variable definitions, etc. These differences could affect the comparisons overall and may have greater affects on some measures of inequality than on others.

Tables C-1 summarizes the data derived for this initial examination of comparability for the universe of men who were household heads in the 25-to-54-year age group and working year round, full time for wage and salary income. The comparison is restricted to those countries for which observations were available for both the early and mid-1980 periods.

Revealed in this table are a number of potential comparability problems. The most important related to the extremes of the distributions where sampling and data collection problems tend to be most conspicuous. Dollar levels defining the 1st and 99th percentiles of each distribution show a high degree of variability relative to median. The maximum wage and salary amounts also display very large differences with respect to the median.

Since the universe for these data are prime-age male, household heads, working year round, full time at wage and salary jobs, one would expect that the lower tail of the distribution would be truncated at a level that represented the pay received by persons working for the "minimum wage" or its equivalent. For some of the countries, most notably Sweden, the 1st percentile level appears far too low for a year-round, full-time worker. Especially unreasonable levels are also noticeable for Canada and Australia for the mid-1980 period. Even the $5,200 figure for the United States for 1986 is lower than that implied by the minimum wage and annual hours of a year-round, full-time worker.

At the upper tail of the distributions the relative differences at the 99th percentile seem more well-behaved than those at the 1st percentile. In contrast, the relative maximum values show significant dispersions between countries and between years. While one might concede that these wide variation can be expected since they are relate to a single survey observation, they may be telling us something about differences in data collection and

processing techniques. For example, the "topcoding" of amounts on the public use versions of the March CPS file used as the source for the LIS database for the United States is clearly evident in the table. As a means of preserving confidentiality, the U.S. Bureau of the Census limits the level of income which is disclosed on data files made available to the public. In 1979 this limit was $50,000 and in 1986 it was $100,000. All amounts higher than the specified limits are reduced to the limit before the data are released. For Sweden, the high relative maximum values may be related to the fact that the amounts were taken from administrative records rather than reported directly in the survey by respondents as was the case for all of the other countries shown.

Upon observing these differences we sensed that survey noise and variations in data collection techniques warranted some adjustment before computing and comparing measures of earnings inequality. As a compromise between concerns for reducing noise and preserving real differences in the shape of these distributions we chose to censor each distribution at the tails for the universe of year-round, full-time universe. This censorship called for the exclusion of the lowest and highest 1-percentiles. The distributions for the United States were not censored at the top because the topcoding of amounts had already provided some unspecified upper limit. Measures of inequality shown and discussed in the text of this report for the year-round, full-time universe are, therefore, based on this restricted universe.

Censorship at the lowest and highest 1-percentile reduced the statistical measure of inequality for all countries, for all measures, over both time periods examined. The effects of censorship can be examined in Tables C-2 and C-3. For the early-1980 period (see table C-4) shifting of ranks occurred in all but the 0.5 and 0.8 Atkinson measures, however, the top and bottom ranking positions did not change for any measure. For the mid-1980 period the country rankings (see table C-5) based on Ln Y, the Gini, and the Theil were unchanged by the censorship while some shifting can be noticed within the Atkinson measures. It is very important to note that the trends toward rising inequality between the early and mid-1980's are virtually the same whether the censored or uncensored distributions are used to examine this issue.

Given the very low relative cutoff for the lowest 1-percentile for Sweden a simple sensitivity analysis of the inequality measures for this country was conducted. In this analysis, the relative cutoff (ratio of the cutoff to the median) for the lowest percentile for the United States was used as the point of censorship for the Swedish distribution for 1987. Using this level, the inequality measures for Sweden dropped significantly. For Ln Y the value declined from .358 to .148 and the Gini declined from .204 to .190.

While it is likely that nonsampling errors and differences in data collection and processing procedures are far more important in the context of international comparisons such as those attempted in this report, sampling errors are also present and important to specify. We were, however, not able to follow this prescription because the appropriate sampling errors were not available to us. Instead we can only caution of their existence and note the relatively small sample sizes for some of the countries(see Appendix table A-1).

TABLE C-1. SELECTED SUMMARY MEASURES BY COUNTRY AND YEAR FOR THE UNIVERSE OF MEN, HEADS OF HOUSEHOLD, AGE 25 TO 54 YEARS, WORKING YEAR ROUND, FULL TIME, WITH WAGE AND SALARY INCOME

(Figures in specified country currency)

	A	B	C	D	E	F	G	H	I	J	K	L
	MEDIAN	MEAN	LOWEST DECILE	HIGHEST DECILE	1ST PERCENTILE	99TH PERCENTILE	MAXIMUM VALUE	(A/B)	(D/C)	PERCENT (E/A)	(F/A)	(G/A)
US79	18,700	20,079	9,750	32,000	3,000	50,000	50,000	93	328	16	267	267
US86	27,500	30,848	13,000	50,600	5,200	100,000	100,000	89	389	19	364	364
SW81	81,900	87,185	55,808	126,272	1,807	238,212	700,000	94	226	2	291	855
SW87	129,800	140,629	86,607	207,963	924	387,609	1,800,000	92	240	1	299	1387
CN81	23,510	24,761	13,501	37,539	4,590	57,835	105,000	95	278	20	246	447
CN87	31,410	33,398	14,430	52,210	1,765	95,122	260,000	94	362	6	303	828
AS81	17,490	18,292	10,971	27,213	2,224	42,000	170,000	96	248	13	240	972
AS85	23,290	24,763	14,088	37,190	1,318	59,352	200,000	94	264	6	255	859
WG81	36,700	40,071	25,680	58,680	10,000	88,300	200,000	92	229	27	241	545
WG84	41,200	46,173	28,900	69,300	18,000	107,900	236,000	89	240	44	262	573

Table C-2. COMPARIONS OF INEQUALITY MEASURES BASED ON UNCENSORED AND CENSORED EARNINGS DISTRIBUTIONS FOR THE UNIVERSE OF MALE HOUSEHOLD HEADS, AGE 25 TO 54 YEARS, WORKING YEAR ROUND, FULL TIME FOR WAGE AND SALARY INCOME FOR THE EARLY-1980 REFERENCE PERIOD

COUNTRY	INEQUALITY MEASURE					
	LN Y	GINI	THEIL	ATKINSON (0.5)	ATKINSON (0.8)	ATKINSON (1.5)
AUSTRALIA						
UNCENSORED	0.264	0.211	0.079	0.041	0.070	0.174
CENSORED	0.156	0.195	0.063	0.032	0.053	0.106
CANADA						
UNCENSORED	0.228	0.224	0.085	0.044	0.072	0.150
CENSORED	0.161	0.208	0.069	0.035	0.057	0.110
SWEDEN						
UNCENSORED	0.505	0.216	0.096	0.052	0.093	0.320
CENSORED	0.254	0.193	0.071	0.038	0.066	0.161
UNITED STATES						
UNCENSORED	0.364	0.259	0.112	0.058	0.095	0.260
CENSORED	0.228	0.252	0.052	0.052	0.082	0.154
WEST GERMANY						
UNCENSORED	0.162	0.196	0.068	0.033	0.054	0.114
CENSORED	0.099	0.178	0.025	0.025	0.040	0.072

Table C-3. COMPARIONS OF INEQUALITY MEASURES BASED ON UNCENSORED AND CENSORED EARNINGS DISTRIBUTIONS FOR THE UNIVERSE OF MALE HOUSEHOLD HEADS, AGE 25 TO 54 YEARS, WORKING YEAR ROUND, FULL TIME FOR WAGE AND SALARY INCOME FOR THE MID-1980 REFERENCE PERIOD

COUNTRY	INEQUALITY MEASURE					
	LN Y	GINI	THEIL	ATKINSON (0.5)	ATKINSON (0.8)	ATKINSON (1.5)
AUSTRALIA						
UNCENSORED	0.399	0.232	0.105	0.054	0.092	0.257
CENSORED	0.217	0.206	0.073	0.039	0.065	0.140
CANADA						
UNCENSORED	0.475	0.277	0.139	0.072	0.120	0.290
CENSORED	0.314	0.252	0.105	0.056	0.092	0.196
SWEDEN						
UNCENSORED	0.799	0.228	0.107	0.059	0.110	0.509
CENSORED	0.358	0.204	0.079	0.044	0.077	0.225
UNITED STATES						
UNCENSORED	0.426	0.293	0.144	0.071	0.115	0.322
CENSORED	0.277	0.287	0.136	0.066	0.104	0.187
WEST GERMANY						
UNCENSORED	0.144	0.208	0.075	0.036	0.056	0.104
CENSORED	0.109	0.191	0.058	0.028	0.045	0.080

TABLE C-4. COUNTRY RANKINGS FOR SPECIFIED MEASURES OF EARNINGS INEQUALITY FOR MEN, HEADS OF HOUSEHOLD, AGE 25 TO 54 YEARS, WORKING YEAR ROUND, FULL TIME, WITH WAGE AND SALARY INCOME FOR THE EARLY-1980 REFERENCE PERIOD BASED ON "UNCENSORED" DISTRIBUTIONS

(Rankings from most to least unequal)

	INEQUALITY MEASURE					
RANK	LN Y	GINI	THEIL	ATKINSON (0.5)	ATKINSON (0.8)	ATKINSON (1.5)
1	.505 (SW)	.259 (US)	.112 (US)	.057 (US)	.095 (US)	.319 (SW)
2	.364 (US)	.224 (CN)	.096 (SW)	.052 (SW)	.093 (SW)	.260 (US)
3	.264 (AS)	.216 (SW)	.085 (CN)	.044 (CN)	.072 (CN)	.174 (AS)
4	.228 (CN)	.211 (AS)	.079 (AS)	.041 (AS)	.070 (AS)	.150 (CN)
5	.162 (WG)	.196 (WG)	.068 (WG)	.033 (WG)	.054 (WG)	.114 (WG)

NOTE: AS = Australia 1981; CN = Canada 1981; SW = Sweden 1981; US = United States 1979; WG = West Germany 1981;

TABLE C-5. COUNTRY RANKINGS FOR SPECIFIED MEASURES OF EARNINGS INEQUALITY FOR MEN, HEADS OF HOUSEHOLD, AGE 25 TO 54 YEARS, WORKING YEAR ROUND, FULL TIME, WITH WAGE AND SALARY INCOME FOR THE MID-1980 REFERENCE PERIOD BASED ON "UNCENSORED" DISTRIBUTIONS

(Rankings from most to least unequal)

RANK	INEQUALITY MEASURE					
	LN Y	GINI	THEIL	ATKINSON (0.5)	ATKINSON (0.8)	ATKINSON (1.5)
1	.799 (SW)	.293 (US)	.144 (US)	.072 (CN)	.120 (CN)	.509 (SW)
2	.475 (CN)	.277 (CN)	.139 (CN)	.071 (US)	.115 (US)	.322 (US)
3	.426 (US)	.232 (AS)	.107 (SW)	.059 (SW)	.110 (SW)	.290 (CN)
4	.399 (AS)	.228 (SW)	.105 (AS)	.054 (AS)	.092 (AS)	.257 (AS)
5	.144 (WG)	.208 (WG)	.075 (WG)	.036 (WG)	.056 (WG)	.104 (WG)

NOTE: AS = Australia 1981; CN = Canada 1981; SW = Sweden 1981; US = United States 1979; WG = West Germany 1981;

Table 3. Percentage Share of Aggregate Wage and Salary Income Received by Men, Heads of Household, Age 25 to 54 Years, Working Year round, Full time, With Wage and Salary Income, by Decile for Countries for the Mid-1980 Reference Period

	COUNTRY					
DECILE	US	CN	SW	AS	WG	LX
LOWEST	3.4	2.9	3.8	3.8	5.6	5.6
SECOND	5.1	5.6	7.1	6.7	6.9	6.9
THIRD	6.3	6.7	7.9	7.6	7.3	7.4
FOURTH	7.3	8.0	8.5	8.4	8.2	8.2
FIFTH	8.3	9.1	9.1	9.1	8.7	8.8
SIXTH	9.4	10.2	9.7	10.1	9.5	9.6
SEVENTH	10.6	11.3	10.4	11.0	10.4	10.6
EIGHTH	12.2	12.8	11.7	12.1	11.8	12.0
NINTH	14.6	14.5	13.5	13.8	13.6	13.8
HIGHEST	22.8	18.9	18.3	17.4	18.0	17.1

Wage and salary income for Luxembourg are net of income and payroll taxes. Wages and salary for all other countries are gross amounts before deductions.

NOTE: AS = Australia 1985; CN = Canada 1987; LX = Luxembourg 1985; SW = Sweden 1987; US = United States 1986; WG = West Germany 1984;

Shaded area indicates noncomparable earnings definition.

FIGURE 1. LORENZ CURVE FOR ALL MEN

AGE 25 TO 54 YEARS

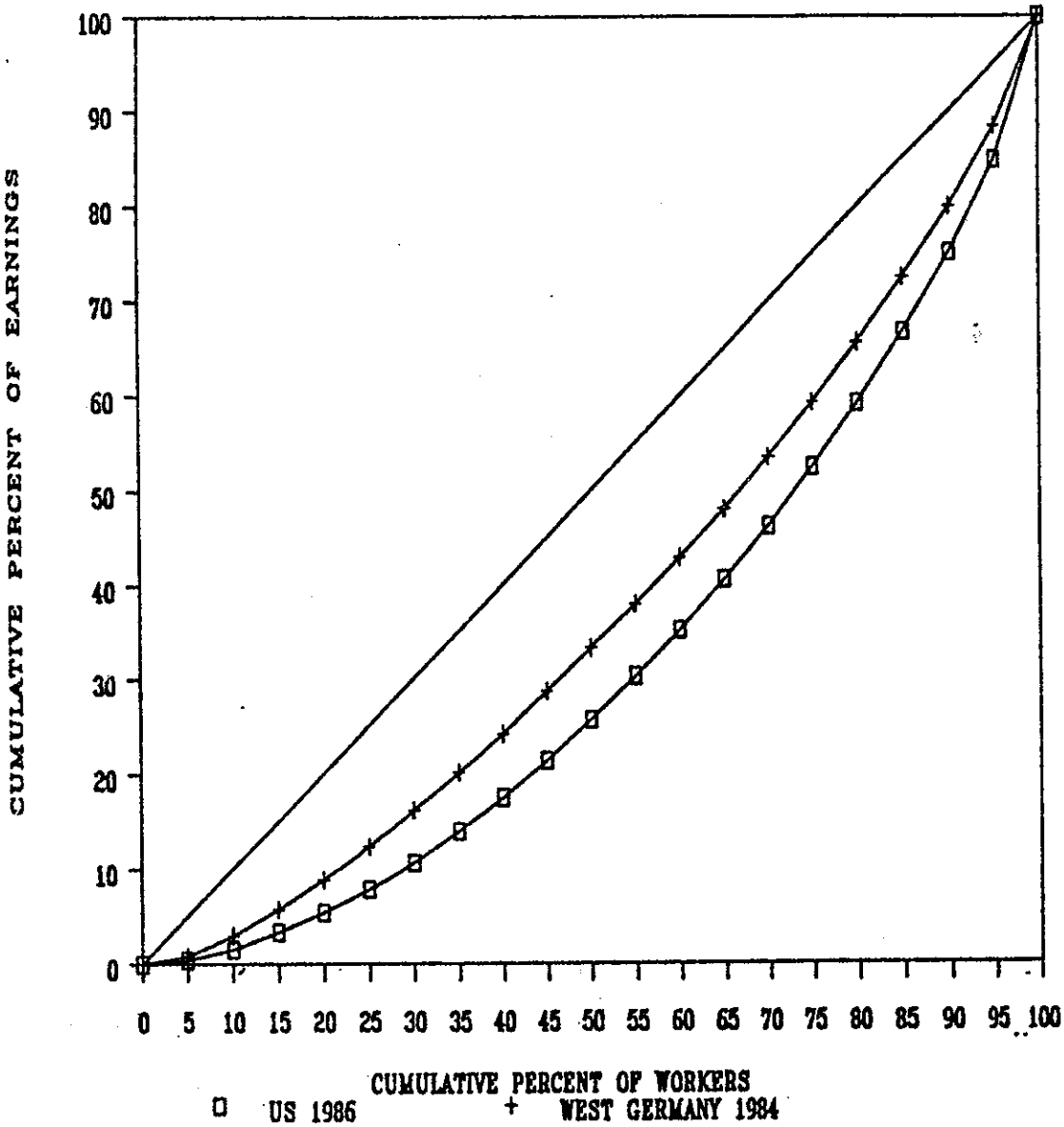

FIGURE 2. LORENZ CURVE FOR MEN YRFT

HEADS AGE 25 TO 54 YEARS