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Luxembourg Income Study Working Paper Series

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Poverty As Inefficiency of the Welfare State.
A Cross Country Comparison

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POVERTY AS INEFFICIENCY OF THE WELFARE STATE. A CROSS COUNTRY COMPARISON.*

August 1990

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Abstract

Taking the position that poverty eradication is concerned with establishing the right to a minimum income, we propose a new approach to determine the poverty line. It is suitable for statistical measurements and applicable to welfare states. The poverty line is set equal to the average disposable income for families in the working age but have no incomes from work or capital.

Using data from the Luxembourg Income Study we calculate poverty lines for ten countries. Results show a wide variation between countries with regard to the relationship between the poverty line and average disposable income. The poverty lines are used to estimate poverty in each country, its structure and are used to illustrate the economic situation in other countries. Results on the impact of public sector transfers and income taxes on poverty are also reported.

1. Introduction

How to define the poverty line in a welfare state is a much debated issue. In this paper we present a new approach. It builds on the fundamental characteristics of the welfare state: It provides livelihood for those without work or income from capital. People considered poor are those with disposable incomes that are smaller than the average of those without any income from work and capital, but fall in ages where one is able to work.

Since our poverty line is based on outcomes from political decisions, including the implementation of various transfer programs, as well as the system of income taxation, the relation between it and average income can vary over time, as well as between countries. If one subscribes to the view that the concept of poverty is more than an aspect of the distribution of income, such a property is worth striving for.

We apply this approach on data for Australia, Canada, France, Federal Republic of Germany, Netherlands, Norway, Sweden, Switzerland, UK and USA using the Luxembourg Income Study, LIS-data base. Regression model estimates are used to extract poverty lines for each country. Relating the results to mean income for each country, we find considerable differences.

The poverty lines are used to estimate the size of poverty with the help of various indexes for the entire population and to make decompositions for demographic groups. A number of similarities emerge. Young families and single parents are more poverty prone. Childless non-aged couples and couples with one or two children are, in almost all countries less poverty prone than the average population. However, the relationship between poverty for the aged and the total population varies between countries.

We also experiment with the application of a poverty line, defined for one country to other countries. In addition, computations dwelling on the role of public sector transfers and income taxes are made. We find that the poverty reducing effect varies between countries. A large proportion of the aged are brought out of poverty in all countries. However, the poverty reducing effect among single parents varies much between countries.

The paper proceeds as follows: In the next section the new approach is described and compared to others. The operation of the framework in the course of making international comparisons is discussed in Section 3. Results on poverty lines are presented in Sections 4 and 5, respectively. Estimates of poverty among various demographic groups, using country-specific poverty lines are reported in Section 6. The exercise of applying a poverty line extracted from one country to another is done in Section 7. Effects of public sector transfers and income taxes are described in Section 8. Section 9 contains a summary discussion of our findings.

2. Approaches to the determination of a poverty line

Poverty lines are used for a number of administrative and statistical purposes. Our interest is in making a statistical portrait of the living conditions prevailing in a country based on information on disposable incomes. Such information provides an overall picture of the economic circumstances for the needy, which can be a useful input in the political process.

How to conceptualize poverty, and thus define the poverty line, is subject to much controversy. Our point of departure is that "poverty" implies a state of severe lack of income. The relation between "poverty" and "inequality" is subject to debate. Should "poverty" be something more than an aspect of the distribution of income? When the poverty line is defined as a percentage of average income, or of the mean income, the answer would be "no". This stand-point was adopted in several international comparisons for developed countries during the 1980s (Commission of European Communities (1981), Buhmann et al (1988), Smeeding et al (1990)). However, if the answer to the question is "yes", which might be the case if one admits that "Poverty ... is always defined according to the conventions of the society in which it occurs" (Hobsbawm (1968)), we have to turn to other alternatives.

Alternative approaches can be structured according to who determines the poverty line. One possibility is to depend on expert evaluations of the basic needs. This alternative has a long tradition, and was used to establish the poverty line used for the official poverty estimates in the US. But even though experts might be well informed, their judgements are nothing but their own.

A second alternative is to extract a poverty line from political decisions and administrative regulations, as has been done in the UK, where the poverty line is often based on the scales for Supplementary Benefits.¹ It might, however, not always be easy for the researcher to arrive at a poverty line with the help of this approach. Since a number of transfer programs exist in an individual country, poverty lines defined from the different alternatives might not necessarily agree.

When making cross-country comparisons the second approach could be troublesome, since the various welfare states have different transfer programs. An administrative scale for one country might lack a direct counterpart in the other. The second approach can also be criticised for being too vulnerable to manipulation by the politicians. Via simple legislation in parliament a less generous scale could be approved, and when used in estimation, the results could show that the size of poverty had decreased.

A third approach which might be labelled the "consensus approach" (Veit-Wilson (1987)) builds on public opinion. For survey purposes questions could be posed in various ways. Alternatives include the so called "Minimum Income

¹ For a survey see Morris & Preston (1986)

Question" and the "Income Evaluation Question",² or questions on necessities.³ The approach has been applied to cross-country comparisons.⁴ Results show that the poverty lines obtained via this approach have levels which are substantially different from the individual country's mean income.

Why does public concern with regard to poverty vary between countries? There seems to be no answer to this question in the literature. It is disturbing that this approach would suggest that economic well-being as well as public policy have no explicit role in determining the poverty line.

In our approach, we look beyond administrative rules. Instead of moving all the way to assessing public opinion, we look instead at the material facts. The point of departure being the main characteristic of the welfare state: It provides income for those without work or capital.

Our conception of poverty is concerned with "the right to a minimum level of resources" (Atkinson (1989) chapter 1). The level of the poverty line is thus set to equal the disposable income of those that do not work.

The welfare state provides income for various categories. Not infrequently families with aged heads of household have rights to income not shared by those within ages where people are supposed to work. We calibrate our poverty line to the average disposable income of families having heads 25-64 years of age and without income from work or capital.

Of course using a somewhat different age group as a reference or allowing positive income from work or capital could affect the poverty lines obtained. In addition, the operationalization scheme discussed in the next section could also influence the poverty line obtained. Thus the poverty lines reported below should be viewed as one example of how the approach can be applied.

In our approach "poverty" indicates the inefficiency of the welfare state. Thus the poor are persons with living conditions that are worse than the average, and for whom the state takes responsibility. The poverty line has a concrete meaning. It is related to actual living conditions. It is the outcome of the functioning of various public transfer programs and the system of income taxation. Since these can vary between welfare states, the relationship between the poverty line and the mean income of the population might vary between countries. Countries having generous transfer programs can be supposed to have higher poverty lines than those with parsimonious ones.

According to our approach the poverty line can be arrived at via income or expenditure surveys. Legislation on public sector transfers and income taxes

² Some of these works are surveyed by van Praag (1985), operational problems are discussed by Kapteyn, Kooreman & Willems (1988), for a critique see Hartoog (1988).

³ Mac & Lansley (1985), See also Walker (1987), who discusses other methods than a survey.

⁴ van Praag, Hagenars & van Veeren (1982), Hagenars (1986) and de Vos & Garner (1989).

passed in parliament affects the poverty line together with implementations of the transfer programs and the income taxes.

At this point we shall apply the new approach to cross country comparisons. Attempts at measuring the size of poverty have quite different traditions in various countries. We think that our study can be useful in applying the same framework for all countries under study. Therefore comparisons of the size and structure of poverty are made easier. For each country, we compare our results with earlier ones. It is hoped that our study can stimulate further conceptualization of poverty in various countries.

This approach can also be beneficial in analysing the development of poverty over time. However, in carrying out such a study the researcher faces the problem of updating the poverty line. Various approaches are possible. If the study is concerned with the standard of living it might be natural to update the line by using the consumer price index only. If the approach to poverty is concerned with the right to a minimum level of resources, it should be recognized that such rights change over time. One might expect that the right increases as the general level of income increase. In our approach it is possible to obtain a poverty line for each year under study.

3. Operationalization

How should a survey based on household income or expenditure be used to operationalize a poverty line for people who are of an age when one is supposed to work, but do not do so? An alternative would be to take a subsample of those without income from work or capital and estimate their disposable income. This can however be problematic since incomes at low levels are typically measured with low precision as information might originate from the system of income taxation as a by-product.

The existence of tax exemptions could also lead to measurement errors regarding factor income. Since these may differ between countries, this hampers international comparisons. Alternatively, very few observations of families in the relevant age bracket without income from work or capital are available in the survey, which leads to low precision in estimation.

We shall proceed to undertake regression analyses, using all observations in the surveys. The main purpose is to control for the other possible ways in which the transfer- and income-tax system of the welfare state affects disposable income. Equation (1) indicates the chosen specification.

(1)

$$Y = \alpha + \beta_1 \text{ADULTS} + \beta_2 \text{AGEDH} + \beta_3 \text{YOUNGH} + \beta_4 \text{SINGLE PARENT} + \beta_5 \text{CHILDREN} + \beta_6 (\text{AGEDH} * X) + \beta_7 (\text{SINGLE PARENT} * X) + \beta_8 (\text{OTHER} * X) + \beta_9 (\text{AGEDH} * X^2) + \beta_{10} (\text{SINGLE PARENT} * X^2) + \beta_{11} (\text{OTHER} * X^2)$$

Where:

Y	= Disposable income.
ADULTS	= Number of adults in addition to the head of the family.
AGEDH	= 1, if head of family is 65 years or older.
YOUNGH	= 1, if head of family is less than 25 years.
SINGLEPARENT	= 1, if head of family is single parent and less than 65 years.
CHILDREN	= Number of children.
X	= Factor income.
OTHER	= 1, If head of family is not single parent or aged.

The intercept is our poverty line for a single adult without children. Aged families and single parents are typically entitled to special transfers or/and tax relief. They are taken to be more generously treated than others (variables AGEDH, SINGLEPARENT). Young persons might have lower living costs than other families, since they often share housing and other expenditures with their parents. Thus they (variable YOUNGH) might, on average, be less generously treated than others by the transfer- and income-tax system.

The number of family members has implications on how the transfer- and income-tax system affects disposable income. In our specification we include a variable measuring the number of adults in addition to the head, and another one indicating the number of children. As public programs often assume presences of economics of scale in family consumption, the effect of the number of adults (variable ADULTS) is supposed to be smaller than the intercept. Most welfare states have family allowance programs and the number of children (variable CHILDREN) is taken into account in the system of income taxation. However, the sums channelled to the families in such systems normally amount to a small percentage of what might be needed for maintenance.

Furthermore, we shall try to pick up nonlinear effects of factor income (variable X)⁵ using quadratic terms. In this manner we can arrive at estimates for tax wedges. We allow for separate effects of disposable income for the three categories a. Aged head of family (variable AGEDH), b. Single parent (variable SINGLEPARENT), c. All other families (variable OTHER).

Table 1.

⁵ Income variables can be defined in several ways in the data base used. As our interest is in public sector transfers, we start from a base line definition of factor income in which private transfers are included.

Data used is from the Luxembourg Income Study (LIS), which has assembled cross-section micro data sets collected at the micro level in different countries at one location. These sets are, then, reorganized in order to meet certain standards with respect to the definitions of the variables and the manner in which they are recorded. Comparisons between different countries, based on data with a higher quality than that used in earlier research can be performed.⁶

Table 1 gives an overview of the data sets used in the analysis. For each country they refer to one point in time. One set, Israel, was not used due to several reasons: low population coverage, small sample size, doubts regarding data quality etc. The table shows data sets by name and size, income year, data sampling frame and representativeness with respect to the total population. All data sets, with the exception of the Swiss set, exclude institutionalized and homeless people. Sample sizes vary widely between the different data sets.

We use the family as the income unit in our study. However, the definition of a family may vary considerably from country to country. In Sweden and Switzerland, for example, a family cannot have more than two adults which is not the case in other countries.

Equation (1) was estimated by OLS using survey weights and every family observed was in addition weighted by the number of persons in it. Observations with negative values for labour income were excluded.

4. The poverty line

Estimates of equation (1) for ten countries are reported in Table 2. Most coefficients have the expected signs and magnitude. The point estimate for the effect of the number of adults, in addition to the head, is smaller than the point estimate of the intercept in all countries except Australia. They imply equivalence scales, calibrated with a single person at 1.0, ranging down to 1.33 (France). The effect of the number of children is positive and significant in eight of the countries. It is generally small in comparison to the effect of an adult. (France is the exception) The effect for an aged family head is positive and significant in all countries except the UK. Head of family younger than 25 years has a significant negative effect in all countries. It ranges from 7 percent of the intercept (Sweden) to 39 percent of the intercept (USA).

Table 2.

One minus the estimates of the coefficient for the variable X, factor income, describes to what extent an income increase is retained by the family at low levels

⁶ Our poverty estimates differ from others using the same data base (Buhmann et al. (1988), Smeeding et al. (1990)) since our conceptualization of the poverty line is different. We apply different equivalence scales for each country and take in to consideration the possibility that "needs" for children can be smaller than for adults. This is in contrast to Buhmann et al (1988), who did not distinguish between the "needs" of adults and children, and used the same equivalence scales for each country. However, given those limitations they applied a battery of different equivalence scales, an approach not followed here.

of factor income. For most countries, the results indicate that single parents retain less than other categories from an increase in factor income at low values. The estimate for OTHER is based on the largest number of observations, and might thus be the most reliable indicator of the tax wedge at low income. The estimates range from families retaining only 40 percent in Netherlands closely followed by Sweden up to 74 percent in the USA.

Figure 1.

In Figure 1 we report poverty lines for a single person and a couple as a percentage of average disposable income per person in the country. The poverty line for a single person is generally less than the average disposable income, which is reasonable. When we look at the two categories, we note that: Highest poverty lines are found in Netherlands and Sweden, but cannot be internally ranked. They are in turn followed by first Norway and Federal Republic of Germany and then United Kingdom. After these comes Australia, Canada France and Switzerland, without internally ranking.⁷ The lowest poverty line is found for the USA

The relative levels agree with the size of public expenditures on social security and welfare in relation to GDP (IMF (1988))⁸. In such a ranking Netherlands with 22 percent and Sweden with 21 percent are followed by France 17 percent, Federal Republic of Germany 16 percent, then comes United Kingdom and Norway, whose expenditure on social security and welfare amounts to 12 percent of GDP. After them comes Australia, USA and Canada all with 7 percent. However, Switzerland where many transfers are not administered by the public sector has the lowest position with 4 percent.

When we look at the confidence intervals reported in the appendix, we see that the poverty line for Switzerland and Norway is determined with the smallest precision. Taking the confidence interval into account it is not possible to rule out, for example, the possibility that the poverty line for a single person in Sweden, Norway and the UK have the same relation to the countries' average income.

One problem we face when estimating poverty is how to take into account number of children in the poverty line. Several alternatives can be considered. In the following a child is assumed to have needs as large as an adult. Another alternative, also applied here, is based on the assumption that children's needs are a fixed fraction of the adults. The fraction is set to 50 percent. A third, and perhaps the most satisfactory alternative, is to assume the needs to be an increasing function of the age of the child. However, due to lack of information on the age of the children in some of the data sets, this alternative was not attempted.

⁷ However, France is ranked higher than Switzerland and Canada.

⁸ The regression is: Poverty line for a Single adult = 29,4 + 2,4 * Public expenditure, R² = 0,69, SE of coeff = 0,56.

5. The size of poverty

We measure the size of poverty using a class of indexes proposed by Foster et al (1984). The class of index nests the head count index. If z is a family's poverty line and y its disposable income then for the $i = 1, 2, \dots, q$ poor families (for whom $z > y$) the class can be written as:

(2)

$$P(\alpha) = \frac{1}{N} \sum_{i=1}^q \left(1 - \frac{Y_i}{z_i}\right)^{\alpha-1} = \frac{1}{N} \sum_{i=1}^q \left(\frac{g}{z}\right)_i^{\alpha-1}$$

where $g (= z - y)$ is the poverty-gap, and N the size of the population. The parameter α (where $\alpha > 0$) measures the weight given to those with relatively large poverty-gaps, and therefore permits welfare judgements to be included in the measurement of poverty. We use the special cases where α is set to 1, 2 and 3 respectively.

When α is set to 1, $P(1)$ is the head count ratio ($H = q/N$). When α is set to 2 $P(2)$ is the average poverty gap expressed as a proportion of the poverty line (I) multiplied by the head count ratio:

(3)

$$P(2) = \frac{q}{N} * \frac{g}{z} = H * I$$

When α is equal to 3 we get:

(4)

$$P(3) = H * (I^2 + (1-I)^2 * X^2)$$

Where X^2 is the squared coefficient of income variation among the poor. This case introduces distributional considerations into the index of poverty by laying more emphasis on families with the largest poverty gap.

The advantage of using this class of index, rather than any other of the number of poverty index suggested in the literature surveyed by Seidel (1988), is that it is additively decomposable into sub-group indexes.

The head count ratio has few characteristics suitable for a poverty index. However, its meaning is easy to grasp, and allows comparison to other studies as it is often reported. In addition, as illustrated by Kakwani (1989), it might be estimated with more precision, than other indexes. His empirical results suggest that the precision of the measure of Foster et al. is a monotonically decreasing function of α , which is intuitively reasonable. The more information contained in the index, the bigger are the possible errors.

When estimating the head count index, negative incomes for families surveyed pose no problem. However, for the other indexes proposed by Foster et al (1984), negative values might greatly affect estimates. Here we set all negative values equal to zero.

Table 3.

Comparing indexes for persons and families in Table 3, we find that in France, Federal Republic of Germany, Netherlands, Switzerland, and the UK, the figures are generally higher for families than for persons while those for poor families are smaller than for other families. For the other five countries, no general pattern valid for both assumptions in the size of the poor families is found.

How do results for the various assumptions and indexes coincide? A number of families with children are near the poverty line. However, these estimates of poverty vary when different assumptions regarding the needs of children are applied. Differences in the size of poverty are largest for the head count ratio. Half of those considered poor in Australia and Sweden disappears when assumptions on children's needs change.

When families are counted the discrepancy between the assumptions decreases, this is even more marked when indexes with higher α are used. For $\alpha = 3$ the range in poverty estimates is very small for France, Federal Republic of Germany, Netherlands, Norway and Switzerland. It is largest in the USA where the smaller estimate is 79 percent of the larger. From a pragmatic point of view, there are good arguments for the use of a distributive sensitive index.

Comparing poverty in different countries, the outcome is more robust to some assumptions than to others. Estimates using the two assumptions on children are highly correlated, as are estimates for $\alpha(2)$ and $\alpha(3)$. However, estimates for $\alpha(1)$ are not highly correlated with those for $\alpha(2)$ and $\alpha(3)$ ⁹. Some results are uniform for the various indexes and assumptions. Generally, Netherlands is ranked among the poorest countries. Australia is always in the middle, and Norway follows closely. For all indexes Federal Republic of Germany is below the mode, Canada has a position close to the bottom, and France has the lowest ranking.

When poverty among countries is measured by the head count ratio, UK and Sweden are among the poorest. However, for the distribution sensitive index the two countries take much lower positions. Thus the average poverty gap is smaller and more equally distributed in Sweden and UK, while the opposite is true for the USA. In the USA poverty is relatively small when measured by the head count ratio, but the average poverty gap is relatively large and unequally distributed. Measured by the distribution sensitive poverty index USA ranks close to the top.

⁹ For example under assumption 2, estimates for $\alpha(1)$ are correlated to $\alpha(2)$ and $\alpha(3)$ by 0,72 and 0,54 respectively, while the correlation between $\alpha(2)$ and $\alpha(3)$ is 0,97.

Why does the size of poverty vary between countries? Of course the level of the poverty lines is of importance. In addition the general state of the economy at the time of observation plays a great role. Among the countries under study, Netherlands had the highest unemployment figure for the year in question. Countries with low figures at the time of measurement were Switzerland, Sweden and Norway.¹⁰

How do our results relate to earlier ones? In Table 4 we survey previous studies using country specific poverty lines. Some estimates are based on other data and/or relate to different periods, and are thus not quite comparable. On balance, the comparisons indicate that our estimates are reasonable.

Table 4.

Our estimates for Australia are close to previous estimates.¹¹ For Canada, our estimates are considerably lower than previous ones using the same data. This is because our poverty line is considerably lower. However, our poverty line fits better to previous used poverty lines updated with consumer price index, Love & Oja (1977)¹².

Our estimate for France is much lower than such based on subjective poverty lines¹³. While France, according to our estimates, performs much better than all other countries, the opposite was found by van Praag et al. (1982), using subjective poverty lines to compare eight European countries. Our estimates for the Federal Republic of Germany resemble those based on subjective poverty lines and are also in the interval of those based on social assistance scales. There is a considerable variation in previous poverty estimates for the Netherlands. Ours can be placed in a range that is considerably higher than for those based on administrative scales, and somewhat higher than for those based on subjective poverty lines.

For Norway our lowest estimates are close to previous ones, while for Sweden, using the same data set, previous estimates are not far from ours. Estimates for Switzerland are in the interval of previous ones using the same data set as here, and lower than those based on social insurance and subjective scales.

¹⁰ Comparative unemployment figures from OECD were: Australia 6,4 %, Canada 7,5%, France 6,0%, Federal Republic of Germany 8,2%, Netherlands 15,0%, Norway 2,0%, Sweden 1,9%, Switzerland 0,4%, UK 4,5% and USA 5,8%. For $\alpha(2)$ or $\alpha(3)$ we find a statistically significant relationship between unemployment and size of poverty. For example, Standard Errors in paranthesis, Poverty, assumption 2, $\alpha(2) = -3,19 - 0,20 (0,14) * \text{Public expenditure} + 0,07 (0,03) * \text{Single adult} + 0,48 (0,13) * \text{Unemployment}$. $R^2 \text{ adj} = 0,63$, $F = 6,1$.

¹¹ Our poverty line is somewhat lower than previous ones. On the other hand, we do not exclude self-employed and young persons with high poverty rates.

¹² The definition of the poverty line given by Love and Oja (1977) and Messinger et al (1988) are based on the same methodology. However, the first is based on the consumption patterns prevailing 1969, the second on those prevailing 1978. Using the consumer price index, the two can be compared. In 1981 prices, the earlier figure becomes 5 504 for one person living in big city and 4 000 for one person living in rural area. Amounts for the later are 8 108 respectively 6 056.

¹³ However, it is close to the figure 6,4% obtained from the same data using a poverty line set to 40% of the mean. (Les Français, 1989)

Estimates for the UK are higher than those based on Supplementary Benefit scales, but are close to those that use relative definition, and in the range of those for subjective poverty lines. Estimates for the USA are close, but lower than the official ones deriving from the same data. Definitely lower than the subjective ones, they are close to estimates where income is adjusted by in kind transfers.

Perhaps one can see a pattern of how our results relate to those where other methods are used to specify a poverty line. In some cases, Netherlands, UK and some alternatives for the Federal Republic of Germany, estimates based on administrative scales show less poverty. However, for Sweden, and sometimes Norway, Federal Republic of Germany and Switzerland, the differences are small. Subjective poverty lines give higher poverty rates in several countries (France, Switzerland, UK and USA) but not in all (the Federal Republic of Germany and Netherlands being the exceptions).

6. The poor

Who are the poor? Can one find a general pattern which is valid for most or all countries? In order to answer such questions, we have disaggregated the population according to the age of the head, alternatively among those having a non-aged head, according to familytype. Tables showing estimates of poverty for age groups and familytype respectively, and using three indexes for each country are found in the appendix. Here we focus on the main results.

Figure 2.

Let us first look at the relationship between the age of the head and poverty. Figure 2 illustrates poverty, using assumption 2 in the youngest age groups, in relation to the average mean of each country for $\alpha=1$ and $\alpha=3$. Generally poverty is higher among the young compared to the average population.¹⁴ It should be observed that the methodological problem of defining the income unit can have a sizeable impact on estimates for the youngest group. Some people are supported by their parents which might not show up in the data.

For example, in some countries young persons living with their parents are considered separate families. This explains why young families constitute the largest part of the poor in Sweden and Switzerland. For the distribution sensitive index, almost half of the poor families in those two countries belong to the youngest age group. In data for these countries a family cannot have more than two adults.

Figure 3.

Besides the young who are poorer than the others, there is no general pattern for all countries regarding the way poverty varies with the age of the head. There are large differences between countries concerning poverty for the two oldest classes. In Canada, France, Netherlands and USA poverty is, as shown in Figure 3, higher

¹⁴ Great Britain and the head count index is the exception.

for people having a head of 55 to 64 years, compared to the average population. The opposite is true for the Federal Republic of Germany, Norway, Sweden and Switzerland.¹⁵

Figure 4.

When it comes to the relationship between poverty among the aged and the average population, as shown in Figure 4, we can distinguish between three groups of countries. In the first group, consisting of Australia, Canada, France, Sweden and USA, poverty is smaller for all indexes and both assumptions used. In all results poverty among the aged accounts for less than 20 percent of total poverty. In some cases the proportion is very small. The extreme case is Sweden, and the distribution sensitive index, where only 1% of total poverty can be attributed to families with aged head.

At the other extreme, the aged in Federal Republic of Germany, Norway and United Kingdom are poorer than the rest of the population for all the indexes and the assumptions used. According to the distribution sensitive index at least 30 percent of the poverty in these countries can be attributed to the aged.¹⁶ These families are in the majority among the poor in UK. This has no counterpart in any other country in the sample.

The third group consists of Netherlands and Switzerland. Here poverty, according to the head count ratio, is more frequent among the aged than the rest of the population. However, their average poverty gap is small and relatively equally distributed. When the distribution sensitive index is used, poverty among the aged is shown to be less than for the rest of the population.

We now turn to the disaggregation among families with a non-aged head. We have considered the categories "single without children", "couples without children", "single parents", "couples with one or two children" and "couples with three and more children". In addition, for most countries, there is a category "others" consisting of families with more than two adults, or two adults not forming a couple. Typically, grown up children living with their parents make a unit belonging to this category. In most cases this category is of marginal size in comparison to the total population and the poor. Exceptions are USA where "others" compose about 15 percent of the poor families, France where they are 22 percent of the poor and Netherlands where their poverty are 26 percent of the total.

Figure 5.

¹⁵ The difference between countries might, to some extent, be artificial. This is because of the various conventions in defining the family unit, as discussed above. Attributing grown up children with relatively low income to their parent families makes more units look poor in such countries. See also the discussion of the category "Others" in the following.

¹⁶ For other indexes the proportion is smaller in Norway, but higher in UK.

Among single parents, poverty is larger than among the average population, see Figure 5. This conclusion follows for both assumptions and all indexes used in all countries with the exception of the Netherlands. However, there is large variation in the increased poverty risk for single parents between countries. For example the ratio of the head count index for single parents to the average population ranges from about 4 in Australia, Canada, Federal Republic of Germany and USA to about 2 or less for Netherlands, Switzerland and Sweden. In some countries (Australia, Norway and Sweden) the difference to the total average is much smaller when poverty is measured by the distribution sensitive index.

However, as single parents are relatively few in all countries, they do not form the majority among the poor. Their share of poverty is largest in Canada, Norway and USA where single-parent poverty makes up more than 10 percent of total poverty according to all indexes and both assumptions. In US, where single parent poverty has recently been the subject of much research, (See for example Garfinkel & Mc Lanahan (1987)) single parents account for 17 - 24 percent of total poverty. At the other extreme are France, Federal Republic of Germany, Netherlands, Sweden and Switzerland where single parents account for less than 10 percent of total poverty according to all indexes and both assumptions.

Figure 6.

As can be seen in Figure 6, for almost all estimates and countries, poverty among couples with one or two children is less than among the whole population. Sweden under assumption 1, $\alpha(1)$ and $\alpha(2)$ is the exception. Since such families are many among the population, their poverty is not negligible in some countries. The proportion of poverty attributed to couples with one or two children is for all indexes larger than the fraction attributed to single parents in France, Netherlands and Sweden.

Estimates of poverty among couples with many children largely depend on assumptions about needs for children. In some cases (France, Netherlands, Switzerland and UK) poverty is generally smaller among such families compared to the total population. Head count ratios higher than the total population is found in Australia, Federal Republic of Germany and Sweden. However, nowhere does the distribution sensitive index for both assumptions show larger poverty among couples with many children than for the total.

Figure 7.

Figure 8.

We now turn to those having non-aged head and no children. In all countries there are systematic differences between couples and single persons. In almost all countries, and for all indexes, poverty among couples is less than among the average population, Fig 7. (France is the exception). As a rule, only a small percentage of the poor families are non-aged couples without children. Also other indexes supports the view that couples with children contribute only

marginally to total poverty. Poverty among single individuals without children is generally greater than among the whole population¹⁷, see Figure 8. This difference is sharper for the distribution sensitive index.

Our results on poverty risk show some similarities between countries. Most often couples having a non-aged childless head or with one or two children are less poor than the total population. Singles and single parents are generally poverty prone. This suggests that changes in family composition can be important for the status of poverty. To find out if this is really the case, one obviously needs panel data. Results from a well known study by Bane and Ellwood (1986) for US, point in this direction. In nearly half of the cases, family structure and life cycle events were associated with a start of a poverty spell.

7. Applying different poverty lines

How does poverty in one country look like, if a poverty line derived from another country is applied? Such translations can be made in different ways. When one is concerned with the standard of living, it is natural to aim at an income level representing the same basket of goods in the different countries. However, we are here interested in variations in the right to a minimum level of resources. Therefore, we make the translation by relating the poverty line for one country to its average income. Our estimates thus concern questions such as: "Suppose the right to minimum a level of resources in Norway was defined in relation to the average income of the country as the corresponding is in USA, how large would poverty have been?"

By applying a cascade of more or less generous poverty lines, we can learn how the income distribution looks like at its lower end. When formulating this for various countries we can try to rank them after the degree of equality. The exercise of applying a cascade of poverty lines also indicates how sensitive conclusions on the composition of the poor are with regards to the level of the poverty line.

In order to be more parsimonious we limit the cascade of poverty lines to four. The highest (80,6 percent of average income for single and 46,8 percent for each additional adult) is the average for Netherlands and Sweden. The second highest (69,2 percent of average income for single and 39,9 percent for each additional adult) represents the average for Norway and UK, and the third (44,7 percent of average income for single and 31,8 percent for each additional adult) is the average for Australia, Canada and Switzerland. Our fourth alternative (29,8 percent of average income for single and 27,5 percent for each additional adult) is our poverty line for the US.

Table 5.

Table 5 indicates estimates for ten countries using the four alternative poverty lines using the head count ratio. The counts varies most for UK. Under the

¹⁷ Exceptions are Australia and UK using the head count ratio under one assumption.

hypothesis that the right to a minimum level of income was as in USA (line 4), the proportion considered poor would have been less than 2 percent in Sweden, and less than 3 percent in UK and Norway and no more than 3 percent in France and Federal Republic of Germany. Highest rates are for Netherlands and USA. At the other extreme, under the assumption that the right to a minimum level of income had been as in Netherlands and Sweden (line 1), at least one in four of the families in UK and USA would have been considered poor.

We now turn to what the various poverty lines say about variations between countries in the distribution of income at the lower end of the tail. This is also illustrated in Figure 9 and Figure 10 for assumption 2. According to all poverty lines, Sweden shows the smallest figures. Thus we conclude that this country has the most equal distribution at the lower tail of income out of the countries under study. Figures for Norway are all close but somewhat higher than for Sweden.

Figure 9.

Which country has the most unequal distribution of income at the lower end of the tail? There is no general agreement on this, for all lines and indexes. Depending on the alternative of line and index the answer is UK, USA or Netherlands. However, for the distribution sensitive index, as shown in the appendix, Netherlands has higher values than any other country.

8. Effects of public sector transfers and income taxes

How does the public sector affect poverty via transfers and income taxes? This can be illuminated by using different income concepts below. :

Factor income
+ Received Public Sector transfers
= Gross income
- Income taxes
= Disposable income

Data for the various income variables are available for each family in the surveys. Thus we can compute poverty indexes based on other variables than "disposable income". Comparisons between calculations based on factor income and disposable income provide information on the role played by public sector transfers and income taxes. However, this is a first approximation, since we do not take into account behavioural responses which might have been induced by the transactions. This can be misleading. For example without the present system of pensions, some old people would surely have larger wages than they do today, and consequently larger factor incomes. In this case the computations overestimate the effects of transfer payments on poverty.

Table 6.

Estimates based on factor income poor are given in Table 6. We limit the results to the head count ratio. Negative factor incomes are not infrequent in some countries, and their existence makes estimates of the other poverty index less precise. Generally more families are brought out of poverty by public sector transfers, than are pushed in by income taxes. The fraction of families considered poor based on factor income ranges from 21-23 percent in Canada and USA to about 40 percent in Netherlands and Sweden. The poverty reducing effect is lowest in UK, USA and Canada, and it is highest in Sweden followed by France and Federal Republic of Germany.

Disaggregation of the population after type of family shows some general patterns, see Table 7. Generally a majority of the aged are considered poor when only factor income is taken into consideration. The proportion ranges from about 60 percent in USA and Canada up to about 90 percent in Netherlands and Sweden. More than half of the aged families are brought out of poverty by public sector transfers and income taxes in all countries, UK being the only exception.

Table 7.

Netherlands and Switzerland represent two extreme situations regarding the situation of single parents in the labour market and effects of public sector transfers on poverty. In Netherlands, labour force participation among women is generally low. Factor income poverty here is of the same size among single parents as among aged families and the poverty reducing effect of public sector transfers and income taxes is quite similar for both categories. In Switzerland few public sector programs are available for single parents and only a few are brought out of poverty by public sector transfers.

By making computations based on gross income and comparing them to those based on disposable income we arrive at estimates of the effects of income taxes on poverty. These calculations indicate the extent to which poverty can be affected by changes in income taxes.

Table 8.

For most countries, less than three percent of the families become poor due to income taxes. This has important policy implications. Income tax reform as a measure to reduce poverty can only have limited success. However, there are exceptions. In Netherlands and Sweden larger proportions are made poor by income taxes.

9. Conclusions

Assuming that poverty is concerned with the right to a minimum income, we have proposed a new approach in determining the poverty line. This approach is suitable for statistical measurements and applicable to welfare states. It builds on the fundamental characteristics of the welfare state, in that it provides income for those without income from work or capital. The poverty line is set equal to the

average disposable income for families in the age group where at least one individual is supposed to work. The poverty line is thus the joint outcome of the system of public sector transfers and income taxes. We have tried to show that these approaches can be useful in comparing the structure of poverty between countries, as well as the effects of public sector transfers and income taxes. We hope that our efforts can stimulate the conceptualization of poverty in the various countries under study.

In the paper we have used data from the Luxembourg Income Study. Using regression analysis we have extracted poverty lines for Australia, Canada, France, Federal Republic of Germany, Netherlands, Norway, Sweden, Switzerland, United Kingdom and United States. The results show wide variations between countries regarding the relation between the poverty line and the countries' average disposable income. At one extreme Netherlands and Sweden have the highest poverty lines, at the other USA has the lowest.

In applying the poverty lines to data, we estimated poverty for the entire population as well as for subgroups, using various assumptions on expenditure needs for children and indexes proposed by Foster et al (1984). Many results are in a broad range when the head count ratio is used, but in a much smaller range when the distribution sensitive index is applied. Thus there are pragmatic reasons to work with the later kind of index. However, negative income hampers the use of such index. The limitation is severest when making estimates for other income concepts than disposable income.

When decomposing the population we found many similarities between countries in the structure of poverty. Among families with a non aged head single and single parents are more poverty prone. In addition, young families are in general poorer than the average population, but methodological problems might limit this conclusion. Childless couples and couples with one or two children are almost everywhere less poverty prone than the average family. Among the aged and those close to the general retirement age, there are large variations in poverty between countries.

Our approach also allowed us to investigate questions such as -"Suppose the right to a minimum level of resources in country A were defined in relation to its average income in the same way as they are in country B, how large would poverty have been?" It was found that under the hypotheses that the right to minimum level of income was as in the USA, the proportion of families considered poor would have been less than 2 percent in Sweden, less than 3 percent in UK and Norway and about 3 percent in France and Federal Republic of Germany. At the other extreme, under the hypotheses that the right to minimum level of income had been as in Netherlands and Sweden at least one out of four families in UK and USA would have been considered as poor.

Generally, public sector transfers reduce poverty more than what income taxes generate it. A majority of the aged are considered poor when comparisons are made from "factor income" and very many are brought out of poverty by public

sector transfers. However, the situation of single parents in the labour market and effects of public sector transfers vary very much between countries. Results from calculations based on "gross income" made us conclude that a tax reform as a measure to reduce poverty can only have limited success.

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Table 1:

Datasets used.

Country	Survey	Year	Size
<i>Australia</i>	Income & housing survey	1981-82	15985
<i>Canada</i>	Survey of consumer finance	1981	15136
<i>France</i>	Survey of individual tax returns	1979	11044
<i>Germany</i>	German panel survey	1984	5174
<i>Netherlands</i>	Survey of income & program users	1983	4833
<i>Norway</i>	Survey of Norwegian taxfiles	1979	10414
<i>Sweden</i>	Swedish income distr. survey	1981	9625
<i>Switzerland</i>	Swiss income & wealth survey	1982	7036
<i>UK</i>	Family expenditure survey	1979	6888
<i>USA</i>	March current population survey	1979	15225

Table 2:

Estimates of equation (1)*(t - statistic in italic)*

	Australia	Canada	France	Germany	Netherlands	Norway	Sweden	Switzerland	U.K.	U.S.A.
Intercept	2130,2	3938,3	13466,4	10203,2	10174,0	19207,2	24455,9	9125,8	1378,6	1660,0
ADULTS	48,50	53,69	63,32	101,44	52,77	21,97	42,96	13,81	87,15	74,34
AGEDH	2452,0	1932,3	4459,5	4262,0	3896,9	11129,0	20317,2	5232,7	710,5	1525,2
	111,20	71,13	48,58	110,75	53,42	13,72	34,56	7,74	107,20	157,00
YOUNGH	2091,9	2176,9	18889,8	9239,3	3132,6	9017,4	9992,2	6350,8	-26,2	2429,2
	28,92	17,94	61,73	70,69	10,81	5,54	13,07	7,05	1,13	63,74
	-169,5	-832,9	-3906,5	-3704,8	-2812,6	-4876,0	-1664,8	-2880,0	127,9	-650,6
	2,83	9,40	9,37	20,77	9,12	4,50	2,16	2,91	6,61	22,72
SINGLEPARENT	2273,4	1084,6	82264,6	-539,7	8119,6	9751,9	16963,6	-7875,6	317,8	1344,7
	21,95	6,38	3,94	1,69	15,72	5,96	8,63	3,51	7,36	28,65
CHILDREN	163,3	269,8	4103,5	1096,6	-695,2	2677,3	4687,6	-339,6	249,9	125,6
	14,08	14,65	67,73	30,83	11,24	13,09	21,03	1,57	64,98	21,91
AGEDH * X	0,588	0,786	0,746	0,519	0,603	0,460	0,479	0,588	0,627	0,844
	60,06	86,29	105,30	107,90	42,14	24,75	17,06	27,95	88,65	170,56
SINGLEPARENT * X	0,487	0,611	0,627	0,461	0,178	0,516	0,339	1,012	0,361	0,738
	17,29	43,52	79,26	51,49	2,30	19,43	5,47	18,75	14,92	139,00
OTHER * X	0,608	0,656	0,712	0,428	0,401	0,455	0,424	0,598	0,512	0,740
	286,19	200,75	380,82	191,29	112,51	66,35	110,22	73,81	178,70	700,30
AGEDH * X ² * 10 ⁻⁷	-10,600	-13,840	-1,930	8,790	-7,900	0,840	-6,740	0,830	20,950	-36,050
	2,83	11,32	14,48	69,12	8,21	1,85	14,73	4,02	5,02	34,82
SINGLEPARENT * X ²	0,820	0,190	-0,270	13,020	24,390	0,640	0,770	-22,480	4,190	-51,730
* 10 ⁻⁷	0,06	9,27	27,04	35,42	1,68	0,61	0,16	12,35	15,12	51,82
OTHER * X ² * 10 ⁻⁷	-7,220	3,280	-0,550	6,020	3,710	1,700	-1,720	-0,010	74,900	-27,530
	31,06	9,34	29,75	53,02	21,49	14,10	78,15	0,18	61,72	237,38
R2 (Adjusted)	0,967	0,940	0,896	0,880	0,844	0,842	0,844	0,755	0,888	0,872
F	40110	33746	39894	39035	7726	1963	4017	1722	47409	133925

Table 3: Size of poverty in ten countries

	Index			
	$\alpha = 1$			
	Persons		Families	
	Assumption 1	Assumption 2	Assumption 1	Assumption 2
	%	%	%	%
Australia	12,62	6,53	10,44	6,69
Canada	7,32	4,87	8,08	6,49
France	4,08	3,27	4,24	3,80
Germany	8,27	6,29	10,25	9,10
Netherlands	17,45	13,83	19,01	16,63
Norway	10,24	5,55	9,89	7,20
Sweden	17,67	9,02	13,31	9,35
Switzerland	4,96	3,97	6,68	6,20
UK	16,23	11,89	21,22	18,67
USA	9,26	5,80	8,29	6,38
	$\alpha = 2$		$\alpha = 3$	
	Families		Families	
	Assumption 1	Assumption 2	Assumption 1	Assumption 2
	%	%	%	%
Australia	4,48	3,41	3,07	2,60
Canada	3,22	2,83	2,13	1,94
France	1,69	1,56	1,03	0,97
Germany	3,80	3,58	2,39	2,30
Netherlands	10,47	10,16	8,84	8,75
Norway	3,61	3,04	2,12	2,05
Sweden	3,79	2,95	1,96	1,65
Switzerland	4,88	3,21	2,54	2,49
UK	4,99	4,37	2,16	1,92
USA	4,26	3,70	3,67	2,91

Table 4: **A survey of poverty estimates based on specific poverty lines.**

Country	Year	Data	Poverty line	Fam()/Ind(*) Head count %	Reference
Australia	1973-74	Grouped tables from Income-Distribution survey	Updated unofficial (Henderson)	12,9 11,0*	Beckerman (1979 A)
	1975-76	Household expenditure survey	As above	4,4-11,5 6,2*-9,3*	Kakwani (1986)
	1981-82	Housing survey, (Excl. selfemp, single living with parents)	As Above	9,2-12,9 8,2*-12,4*	Gallagher (1985)
	1981-82	As above	As above	9,5-10,1	Social policy research unit. (1988)
	1981-82	As above, (Excl. in total 20% of population)	As above	10,5*	Johnson (1988)
	1985-86	As above	As above, updated with CPI.	13,0*	As above
	1985-86	As above	As above, updated with real income.	15,9*	As above
Canada	1981	Survey of consumer finances	Basic needs	19,3	Statistics Canada (1985)
	1985	Survey of consumer finances 1981, projected.	Basic needs	16,4	Messinger et al (1988)
France	-1974	Various	Not formalized	17*	Stoleru (1974)
	1979	Conditions of living survey.	Subjective	27,1*-43,4*	van Praag et al (1982)
	1979	As above	As above	41,7*	Hagenaars (1986)
Germany	1973	Income and consumption survey (excluding foreigners)	Social assistance scale	4,8	Roberts according to Hauser et al (1981)
	1973	As above	As above	2,2 , 2,4	Hauser et al (1981)
	1974	International classification tables of DIW	As above	9,1	Geissler according to Hauser et al (1981)
	1975	As above	As above	20,3	Kögler according to Hauser et al (1981)
	1979	Conditions of living survey.	Subjective	3,1* , 7,5*	van Praag et al (1982)
	1979	As above	As above	5,7*	Hagenaars (1986)
	1983	Income and expenditure survey (excluding foreigners)	Social assistance scale	1,3*	Hauser-Semrau (1989)
Netherlands	1977	Housing needs survey	Social assistance scale	8,6 , 12,4	Sociaal en culturell planbureau (1980)
	1979	Condition of living survey.	Subjective	5,9*-15,8*	van Praag et al (1982)
	1979	As above	As above	16,1	Hagenaars (1986)

Table 4: Continued.

Country	Year	Data	Poverty line	Fam()/Ind(*) Head count	Reference
Netherlands	1983	Newspaper survey	Administrative	5,7	Hagenaars & de Vos (1988)
	1983	As above	Basic needs	10,9	As above
	1983	As above	Relative deprivation	13,6	As above
	1983	As above	Food/Income ratio	14,0	As above
	1983	As above	Subjective	15,0	As above
	1983	As above	Fixed costs	23,5	As above
	1983	As above	Minimum food	33,5	As above
Norway	1980	Level of living survey	Relative deprivation	4* - 5,7*	Stjernö (1985)
	1981	Tax files	Minimum pension	5* - 6*	As above
Sweden	1981	Household income survey	Social assistance scale	9,4 , 8,2*	Gustafsson (1987)
	1981	As above	Public opinion on social assistance scales	13,6	As above
Switzerland	1982	Income & wealth survey	Social assistance scale	3,4-7,3 2,2*-7,5*	Buhmann (1988)
	1982	As above	Social insurance scale	10,3-24,6 6,2*-31,2*	As above
	1982	As above	Subjective	11,1-26,4 6,7*-33,4*	As above
UK	1975	Family expenditure survey	Supplementary benefit scale	4,4 3,3*	Beckerman (1979 B)
	1975	General household survey	As above	13,3 , 11,3*	Berthoud-Brown (1981)
	1979	Conditions of living survey	Subjective	13,9 , 22	van Praag et al (1982)
	1979	As above	As above	28,4	Hagenaars (1986)
	1979	Family expenditure survey	Constant relative	20,3	Pichaud (1988)
	1983	As above	Supplementary	7,7	Morris&Preston (1986)
	1983	As above, current income	Benefit scale	5,6*	As above
	1983	As above, annual income	As above	11,7 , 21,5*	As above
	1983	Living in Britain survey	Relative deprivation	11,7-21,5	Mac & Lansley (1985)

Table 4: Continued.

Country	Year	Data	Poverty line	Fam()/Ind(*) Head count %	Reference
USA	1979	Current population survey	Official	9,2 , 11,7*	Statistical abstract of USA
	1979	Census	As above	13,1	Ross et al (1987)
	1979-80	Current population survey, adjusted income.	As above	6,1*-8*	Smeeding (1982)
	1979	Condition of living survey	Subjective	13-22	van Praag et al (1982)
	1982	Consumer expenditure interview	As above	37,7	de Vos & Garner (1989)

Table 5: **Size of poverty using various poverty lines.**

	$\alpha = 1$							
	Line 1		Line 2		Line 3		Line 4	
	A1	A2	A1	A2	A1	A2	A1	A2
	%	%	%	%	%	%	%	%
Australia	28,36	23,94	15,88	12,64	8,19	5,92	5,30	4,17
Canada	27,33	22,92	18,45	15,75	9,14	6,85	5,11	3,78
France	21,64	16,10	12,47	9,28	5,22	3,88	3,04	2,35
Germany	20,60	16,20	11,83	9,81	5,42	4,77	3,24	2,89
Netherlands	22,46	16,87	14,87	13,35	10,95	10,61	9,49	9,23
Norway	18,93	14,47	8,79	6,53	4,64	3,72	2,93	2,50
Sweden	12,88	10,40	7,88	6,85	3,55	3,12	2,04	1,76
Switzerland	26,98	22,70	17,58	15,57	6,65	5,85	3,87	3,61
UK	33,09	28,37	23,39	20,58	5,42	3,85	2,77	2,08
USA	29,95	25,97	22,85	19,62	12,68	10,02	8,29	6,39

Table 6:

**Size of factor income poverty and poverty effects by
Public sector transfers and income taxes.**

(Families, Country specific poverty lines. $\alpha = 1$)

	Factor income poor.		Reduction of poverty.	
	A1 %	A2 %	A1 %	A2 %
Australia	27,98	26,43	17,54	19,74
Canada	21,87	20,82	13,79	14,33
France	30,33	28,80	26,09	25,00
Germany	35,75	35,30	25,50	26,20
Netherlands	40,57	40,07	21,56	23,44
Norway	33,64	32,30	23,75	25,10
Sweden	42,21	39,46	28,90	30,11
Switzerland	24,47	23,82	17,79	17,62
UK	36,29	31,99	15,07	13,32
USA	22,57	21,20	14,28	14,82

**Size of factor income poverty and poverty effects by
Public sector transfers and income taxes.
Selected demographic groups.**

($\alpha = 1$)

<i>Aged</i>	Factor income poor.		Reduction of poverty.	
	A1 %	A2 %	A1 %	A2 %
Australia	74,14	74,04	67,37	67,47
Canada	61,75	61,62	55,50	55,78
France	77,81	77,81	76,14	76,20
Germany	88,86	88,79	76,12	76,20
Netherlands	89,97	89,97	59,54	59,54
Norway	81,61	81,39	71,07	71,30
Sweden	90,92	90,92	84,43	84,43
Switzerland	74,96	72,25	67,95	65,38
UK	84,44	84,44	33,30	33,41
USA	60,12	59,91	53,65	53,73
<u>Single Parent</u>				
Australia	66,80	61,83	18,67	40,67
Canada	50,49	45,05	15,59	25,50
France	29,72	23,61	17,78	16,67
Germany	48,49	47,89	7,22	14,76
Netherlands	84,56	82,55	50,33	71,14
Norway	39,86	34,78	13,05	21,74
Sweden	53,12	35,94	27,08	26,56
Switzerland	20,00	16,01	4,00	4,81
UK	67,98	62,28	13,16	29,82
USA	48,81	42,67	15,45	24,74

Table 8:

**Size of gross income poverty and poverty effects
by income taxes.**

(Families, Country specific poverty lines. $\alpha = 1$)

	Gross income poor.		Increase of poverty.	
	A1	A2	A1	A2
	%	%	%	%
Australia	9,01	5,84	1,43	0,85
Canada	7,79	6,29	0,29	0,20
France	4,18	3,74	0,06	0,06
Germany	8,92	8,30	1,33	0,80
Netherlands	10,33	9,42	8,68	7,21
Norway	7,26	5,68	2,63	1,52
Sweden	6,83	5,36	6,48	3,99
Switzerland	6,25	5,37	0,43	0,83
UK	19,11	16,93	2,11	1,74
USA	7,92	5,91	0,37	0,47

Figure 1. **Poverty line for single adult & couple as percent of disposable income per person**

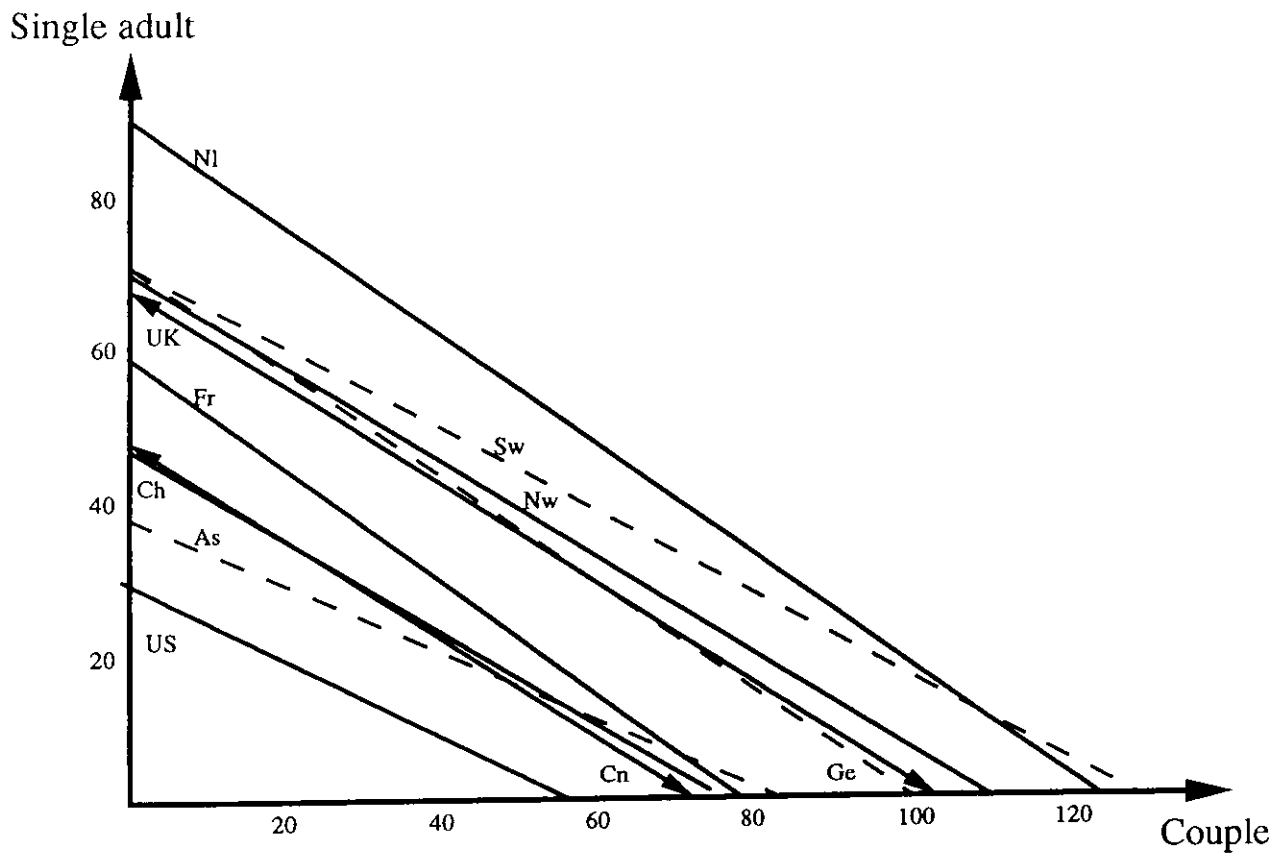


Fig 2

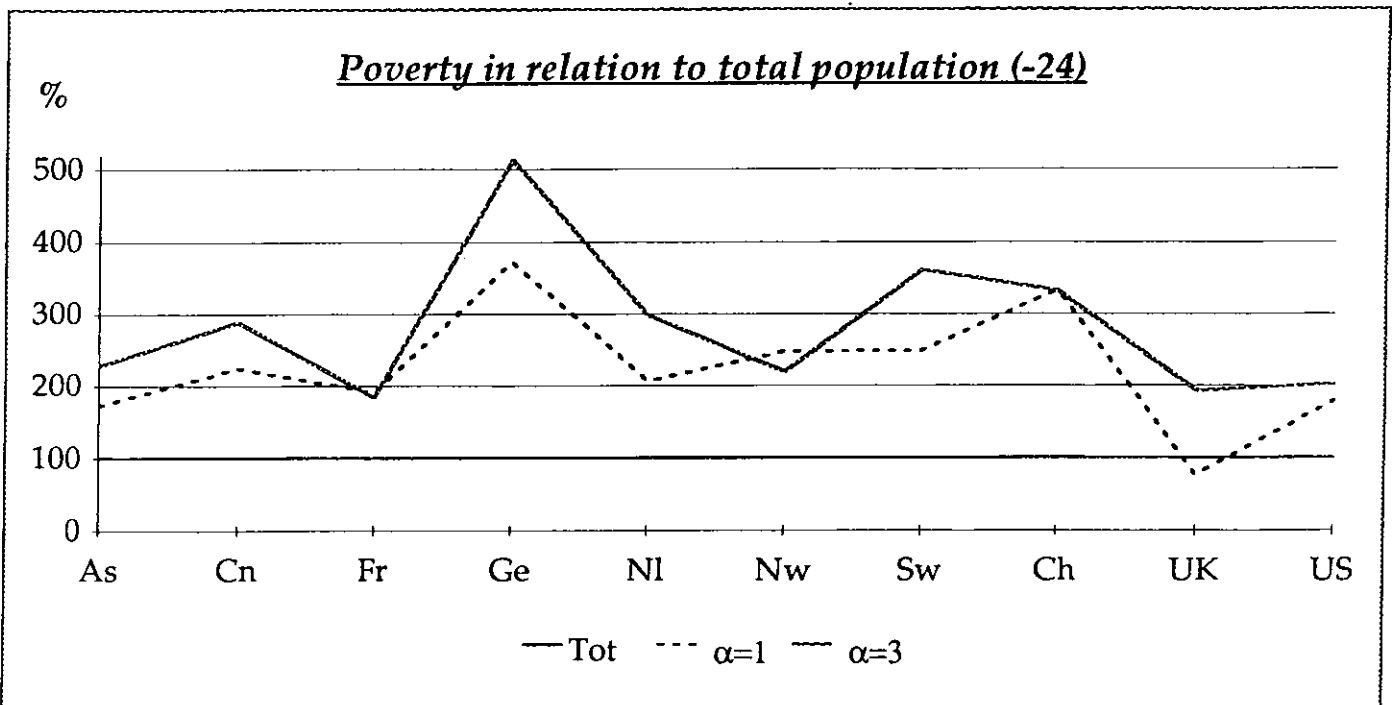


Fig 3

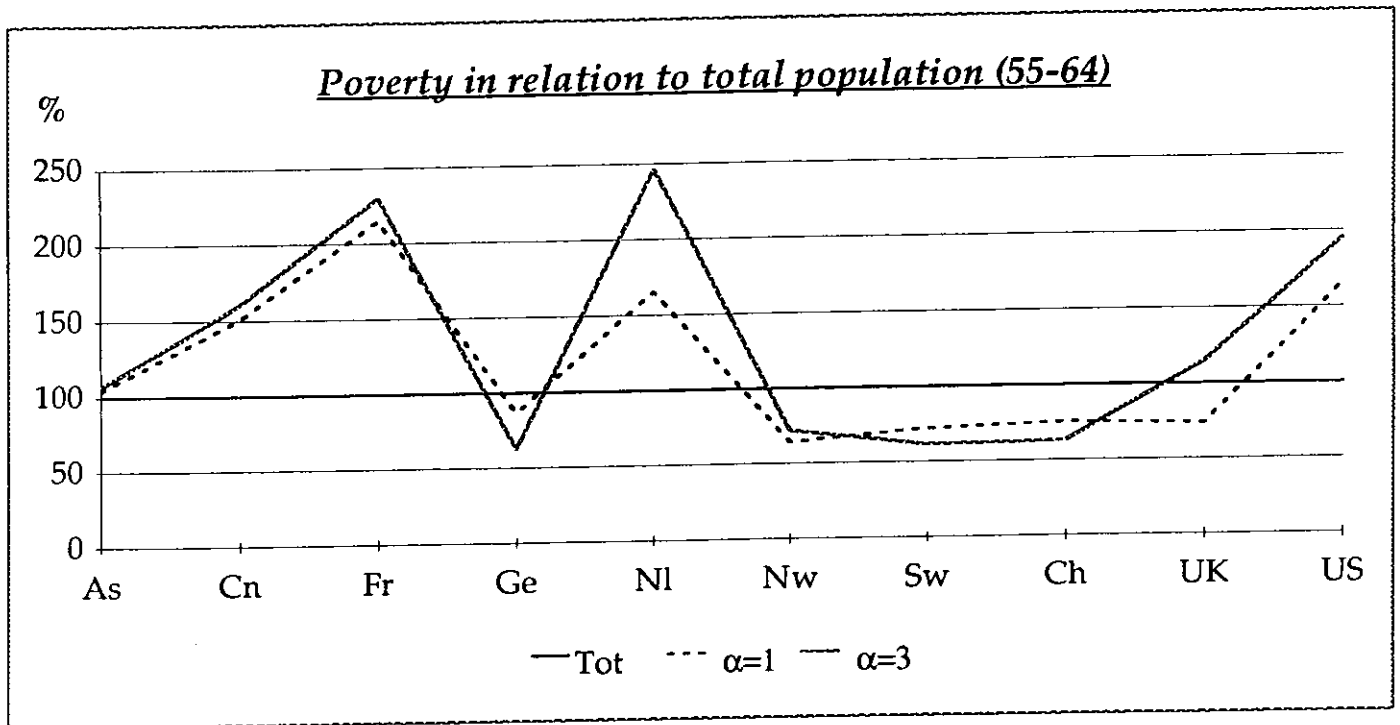


Fig 4

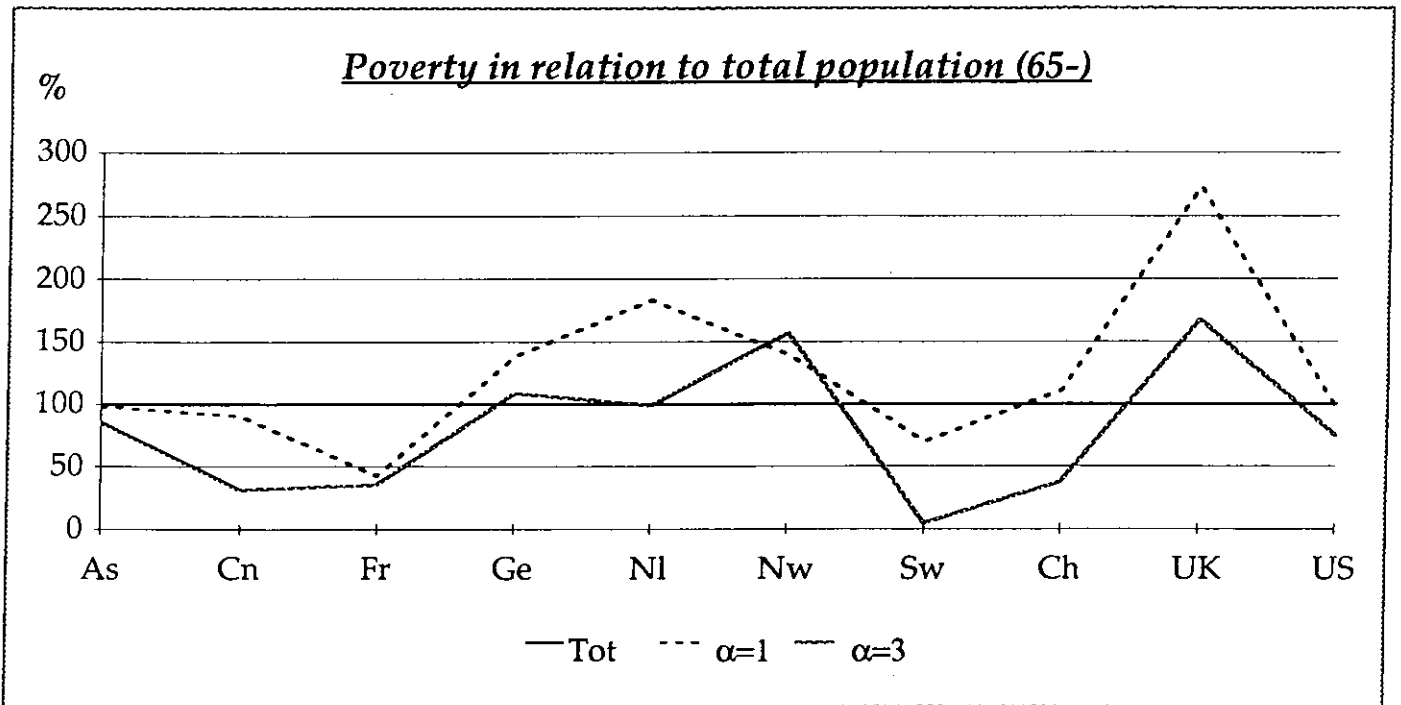


Fig 5

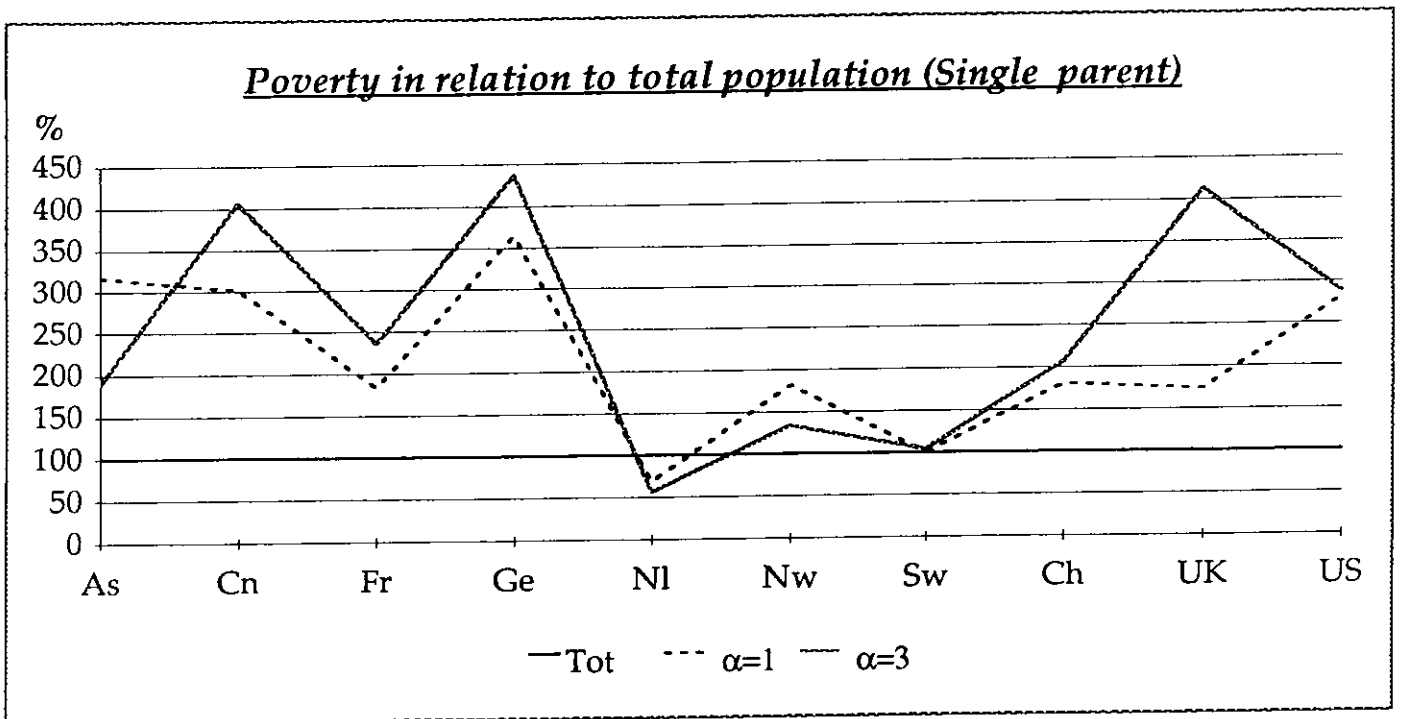


Fig 6

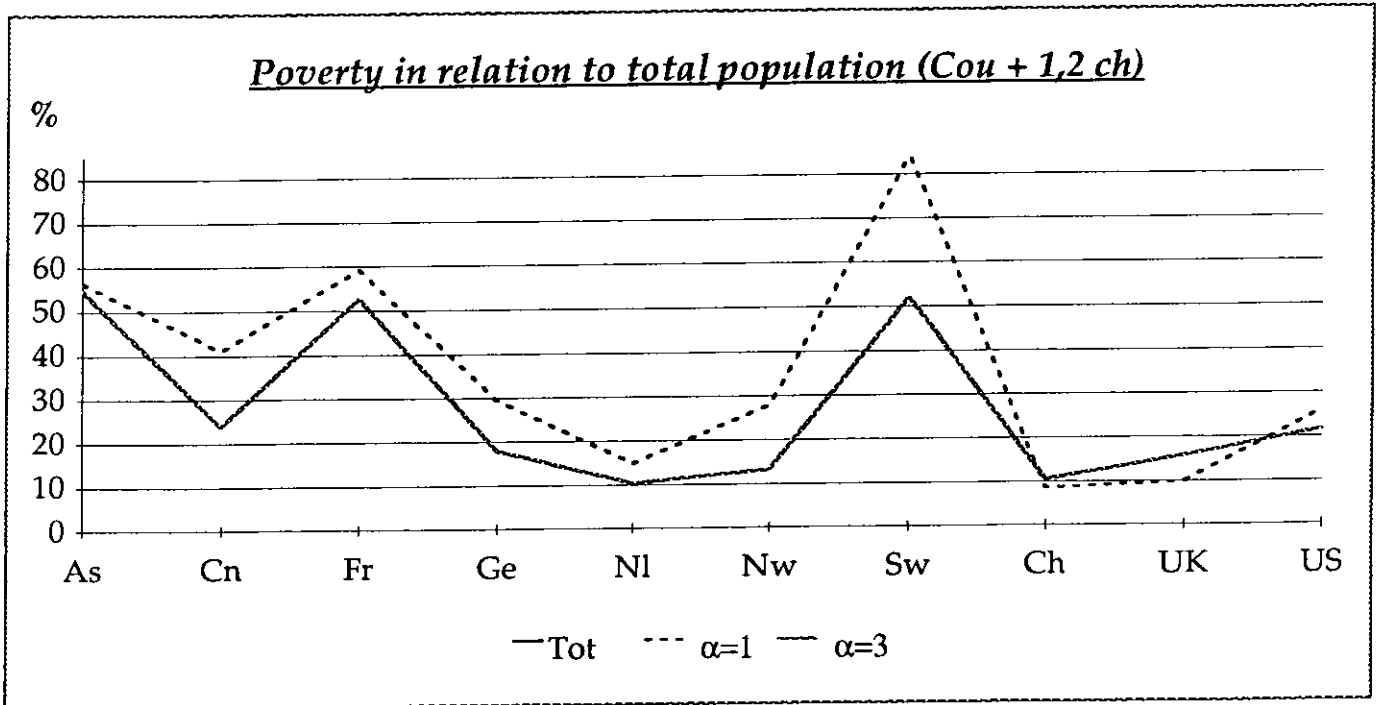


Fig 7

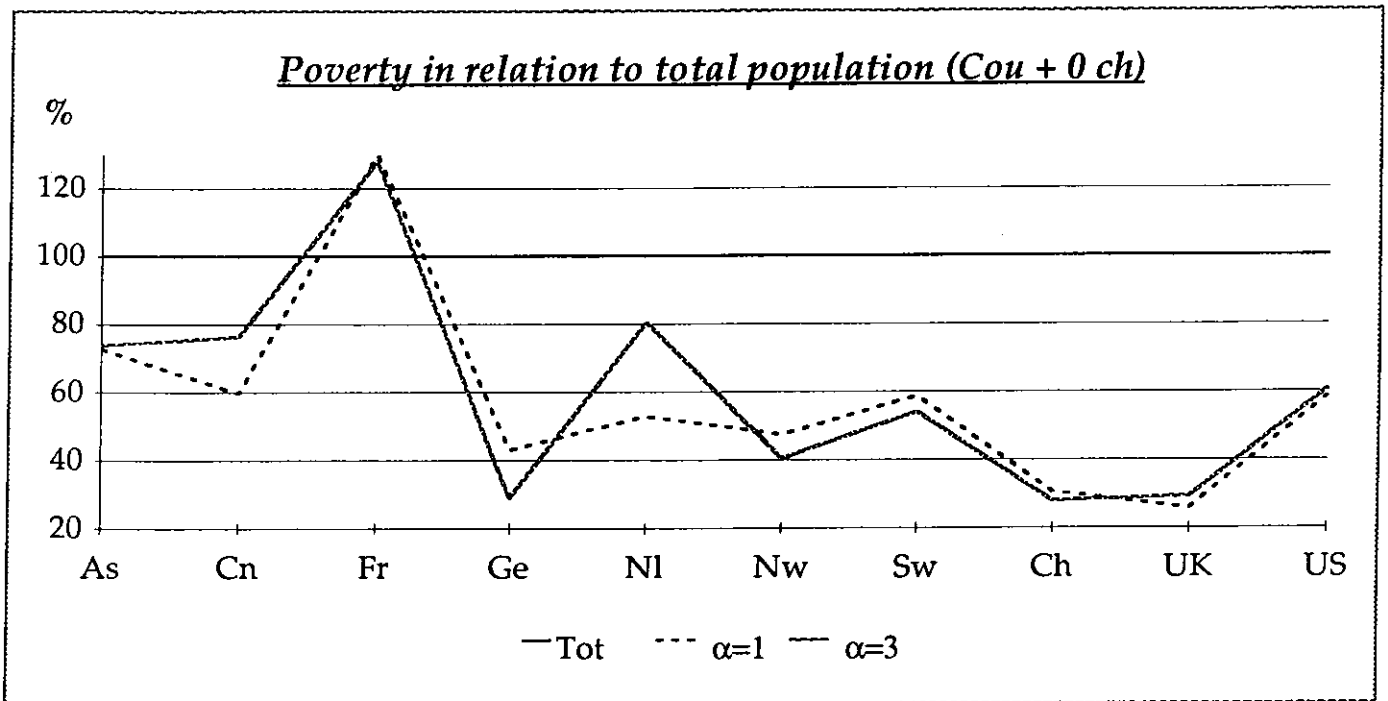


Fig 8

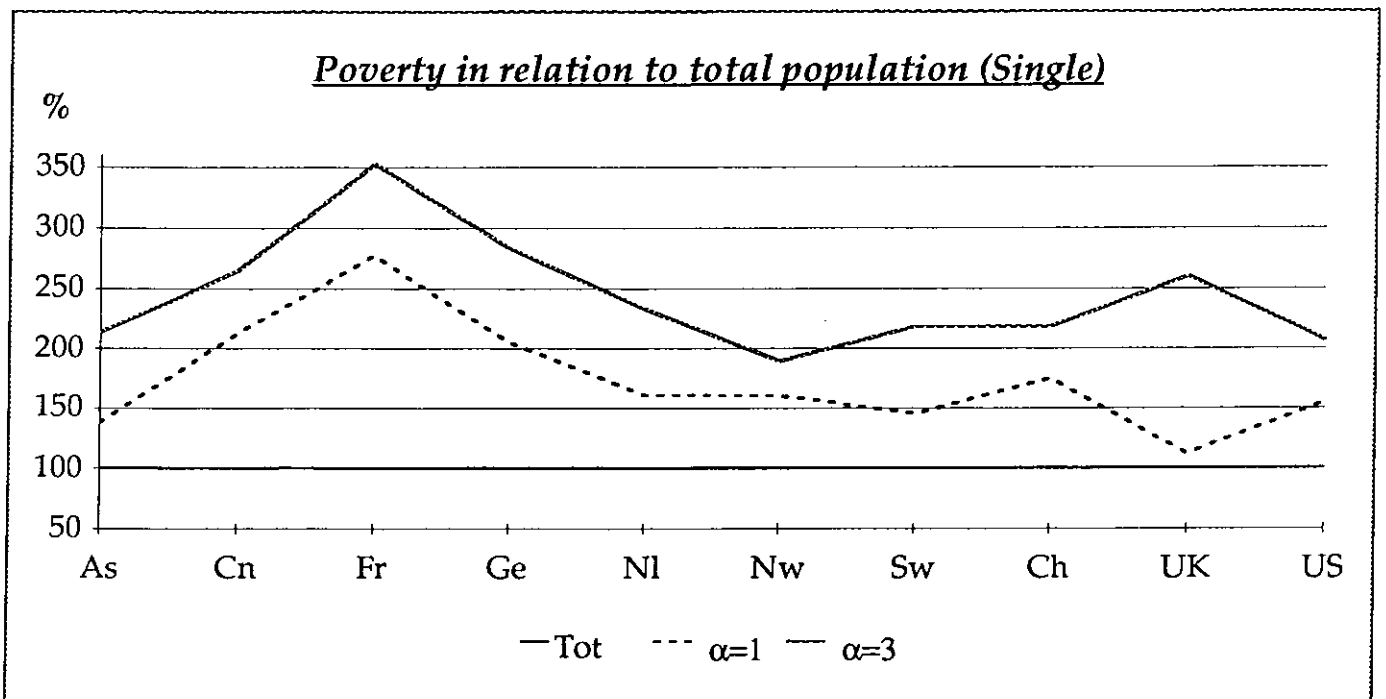


Fig 9

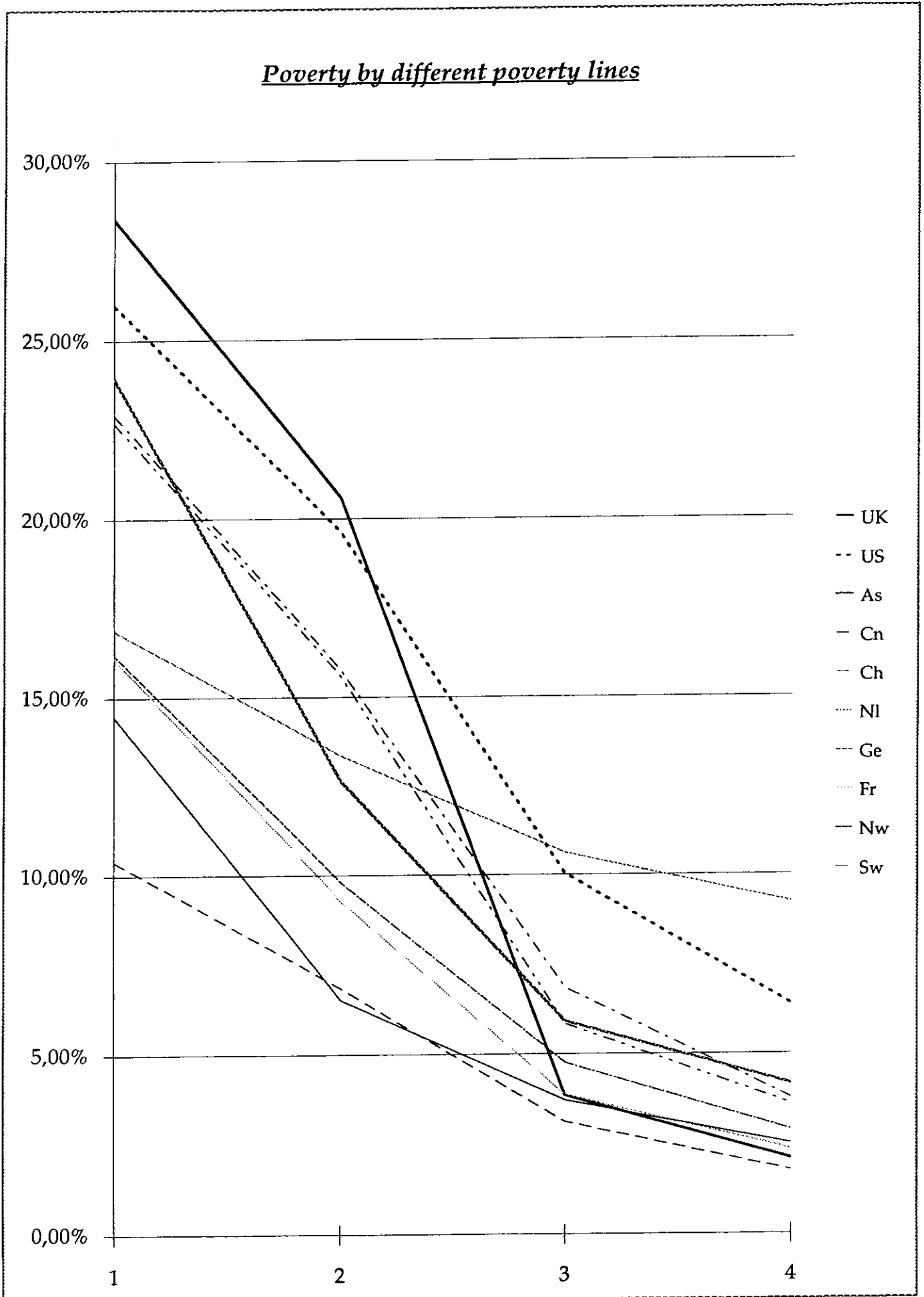


Table A1:

The level of country specific poverty lines as percent of disposable income per capita.

	Single adult		Couple	
	Point Estimate %	95% confidence Interval %	Point Estimate %	95% confidence Interval %
Australia	38,4	1,6	82,7	1,7
Canada	48,5	1,8	72,3	1,9
Germany	70,6	1,4	100,1	1,5
France	58,7	1,8	78,1	2,0
Netherlands	89,7	3,3	124,1	3,6
Norway	70,6	6,3	111,5	8,6
Sweden	71,4	3,3	130,7	4,7
Switzerland	47,3	6,3	74,4	9,5
UK	67,7	1,5	102,7	1,7
USA	29,9	0,8	57,3	0,9

Table A2:1

Profile and decomposition of poverty

Headage	Index						Composition					
	$\alpha = 1$		$\alpha = 2$		$\alpha = 3$		$\alpha = 1$		$\alpha = 2$		$\alpha = 3$	
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %
- 24	14,71	11,54	7,99	7,17	6,28	5,92	14,84	18,16	18,78	22,11	21,55	23,95
25-34	12,83	6,14	4,76	2,89	2,93	2,13	27,49	20,53	23,77	18,92	21,32	18,26
35-44	12,92	6,09	4,70	2,58	2,78	1,86	23,93	17,63	20,32	14,62	17,51	13,82
45-54	7,58	4,82	3,58	2,85	2,57	2,24	11,14	11,05	12,27	12,79	12,83	13,21
55-65	7,87	6,93	3,88	3,66	2,86	2,77	11,30	15,53	12,98	16,07	13,99	15,93
65 -	6,77	6,57	3,06	3,02	2,25	2,22	11,30	17,10	11,88	15,49	12,80	14,83
Total population	10,47	6,69	4,48	3,41	3,07	2,60	100,00	100,00	100,00	100,00	100,00	100,00
Of which												
All -64	11,21	6,72	4,78	3,49	3,24	2,68	88,70	82,90	88,12	84,51	87,20	85,17
Single without children	9,21	9,21	6,47	6,47	5,55	5,55	18,21	28,43	29,86	39,17	37,36	44,14
Couples without children	4,86	4,86	2,54	2,54	1,92	1,92	6,57	10,26	8,02	10,52	8,83	10,44
Single parents	48,13	21,16	17,52	7,87	9,34	4,91	19,53	13,42	16,60	9,79	12,91	8,01
Couples 1,2 children	8,60	3,77	2,92	1,95	1,83	1,42	16,52	11,32	13,07	11,49	11,97	10,99
Couples 3 + children	24,14	8,97	7,99	3,17	4,59	2,14	19,05	11,05	13,82	7,65	10,44	6,77
Others	6,12	3,81	2,03	1,38	1,16	0,88	8,81	8,42	6,76	5,89	5,69	4,82

Table A2.2 Profile and decomposition of poverty

Canada

Headage	<u>Index</u>						<u>Composition</u>					
	$\alpha = 1$		$\alpha = 2$		$\alpha = 3$		$\alpha = 1$		$\alpha = 2$		$\alpha = 3$	
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %
-24	16,29	14,51	7,93	7,56	5,82	5,59	19,05	21,03	23,20	25,14	25,72	27,08
25-34	6,39	4,24	2,43	1,88	1,49	1,22	19,47	16,03	18,55	16,29	17,19	15,39
35-44	6,96	3,87	2,50	1,82	1,61	1,36	15,99	11,03	14,39	11,79	14,00	12,47
45-54	6,96	5,74	3,12	2,69	2,19	2,01	13,49	13,79	15,14	14,84	16,10	16,19
55-65	10,22	9,77	4,50	4,40	3,13	3,10	18,92	22,41	20,81	23,18	21,92	23,76
65 -	6,25	5,84	1,54	1,44	0,64	0,60	13,08	15,71	7,91	8,76	5,07	5,11
Total population	8,08	6,49	3,22	2,83	2,13	1,94	100,00	100,00	100,00	100,00	100,00	100,00
Of which												
All -64	8,42	6,58	3,57	3,11	2,42	2,21	86,92	84,29	92,09	91,24	94,93	94,89
Single without children	13,76	13,76	6,92	6,92	5,13	5,13	34,68	43,00	43,60	49,62	49,06	53,75
Couples without children	3,87	3,87	1,95	1,95	1,48	1,48	6,96	8,64	8,77	9,98	10,09	11,05
Single parents	34,90	19,55	14,38	10,81	9,81	7,88	19,64	13,65	20,22	17,31	20,93	18,43
Couples 1,2 children	4,01	2,66	1,28	0,85	0,65	0,46	10,31	8,46	8,19	6,23	6,33	4,93
Couples 3 + children	10,28	3,55	2,79	1,30	1,31	0,75	8,07	3,46	5,47	2,92	3,89	2,46
Others	3,41	2,74	1,08	0,87	0,58	0,49	7,25	7,08	5,85	5,18	4,62	4,27

Table A2:3

Profile and decomposition of poverty**France**

Headage	<i>Index</i>						<i>Composition</i>					
	$\alpha = 1$		$\alpha = 2$		$\alpha = 3$		$\alpha = 1$		$\alpha = 2$		$\alpha = 3$	
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %
- 24	7,24	7,24	3,41	3,30	1,85	1,77	6,03	6,72	7,11	7,44	6,32	6,46
25-34	2,76	2,07	1,06	0,88	0,59	0,52	12,82	10,73	12,27	11,07	11,34	10,60
35-44	3,40	2,55	1,24	1,05	0,77	0,69	13,33	11,16	12,23	11,19	12,51	11,77
45-54	5,75	5,45	2,39	2,20	1,45	1,35	26,67	28,18	27,80	27,70	27,65	27,41
55-65	8,66	8,16	3,63	3,52	2,29	2,23	31,03	32,62	32,58	34,28	33,71	34,92
65 -	1,67	1,61	0,54	0,53	0,34	0,34	10,12	10,59	8,01	8,32	8,47	8,84
Total population	4,24	3,80	1,69	1,56	1,03	0,97	100,00	100,00	100,00	100,00	100,00	100,00
Of which												
All -64	5,11	4,54	2,08	1,91	1,26	1,18	89,88	89,41	91,99	91,68	91,53	91,16
Single without children	10,52	10,52	5,02	5,02	3,42	3,42	26,92	30,04	32,19	34,87	36,01	38,29
Couples without children	4,93	4,93	2,03	2,03	1,24	1,24	17,18	19,17	17,74	19,22	17,82	18,94
Single parents	11,94	6,94	4,44	3,49	2,74	2,28	5,51	3,58	5,14	4,38	5,20	4,61
Couples 1,2 children	2,78	2,25	1,10	0,88	0,63	0,51	14,87	13,45	14,76	12,79	13,83	11,92
Couples 3 + children	1,96	0,57	0,36	0,07	0,09	0,02	3,08	1,00	1,43	0,32	0,58	0,13
Others	5,34	4,70	1,98	1,75	1,05	0,93	22,32	22,17	20,73	20,10	18,09	17,27

Table A2:4

Profile and decomposition of poverty**Germany**

Head age	<i>Index</i>						<i>Composition</i>					
	$\alpha = 1$		$\alpha = 2$		$\alpha = 3$		$\alpha = 1$		$\alpha = 2$		$\alpha = 3$	
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %
-24	35,30	33,87	18,64	18,33	12,74	11,80	13,72	14,82	19,52	20,40	21,25	21,79
25-34	13,15	10,49	5,61	5,12	3,94	3,72	20,71	18,60	23,84	23,10	26,67	26,10
35-44	6,30	4,23	2,11	1,64	1,25	1,05	10,47	7,92	9,46	7,80	8,90	7,80
45-54	4,45	3,37	1,19	1,00	0,64	0,57	8,46	7,21	6,11	5,45	5,26	4,82
55-65	8,26	7,89	2,54	2,49	1,45	1,44	13,32	14,33	11,06	11,52	10,06	10,31
65-	12,74	12,59	4,24	4,24	2,50	2,50	33,32	37,12	30,01	31,73	27,86	29,18
Total population	10,25	9,10	3,80	3,58	2,39	2,30	100,00	100,00	100,00	100,00	100,00	100,00
Of which												
All -64	9,34	7,82	3,63	3,34	2,35	2,23	66,68	62,88	69,99	68,27	72,14	70,82
Single without children	18,64	18,64	9,08	9,08	6,51	6,51	32,92	37,07	43,22	45,94	49,32	51,14
Couples without children	3,91	3,91	1,27	1,27	0,66	0,66	5,93	6,68	5,18	5,50	4,33	4,49
Single parents	41,27	33,13	18,82	14,98	12,34	10,04	5,42	4,90	6,66	5,63	6,95	5,86
Couples 1,2 children	5,72	2,67	1,24	0,78	0,56	0,41	9,57	5,03	5,57	3,72	4,02	3,02
Couples 3 + children	15,47	4,78	3,51	1,40	1,38	0,59	3,83	1,34	2,35	0,99	1,46	0,65
Others	4,99	3,89	1,45	1,27	0,79	0,70	9,01	7,86	7,01	6,49	6,06	5,66

Table A2:5

Profile and decomposition of poverty**Netherlands**

Head age	Index											
	$\alpha = 1$			$\alpha = 2$			$\alpha = 3$					
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %			
- 24	37,05	34,34	27,38	27,16	25,90	25,96	11,16	11,83	14,97	15,31	16,78	17,00
25-34	8,54	4,87	2,78	2,39	2,02	1,90	9,71	6,33	5,74	5,09	4,93	4,70
35-44	8,46	3,78	3,00	2,50	2,36	2,23	9,35	4,78	6,02	5,17	5,61	5,35
45-54	17,35	15,19	10,32	9,85	8,87	8,20	14,61	14,63	15,78	15,51	16,06	15,85
55-65	27,99	27,41	22,62	22,56	21,52	21,52	21,87	24,48	32,07	32,98	36,17	36,54
65 -	30,43	30,43	12,74	12,74	8,67	8,67	33,30	37,95	25,42	25,94	20,45	20,56
Total population	19,01	16,63	10,47	10,16	8,84	8,75	100,00	100,00	100,00	100,00	100,00	100,00
Of which												
All -64	16,62	13,02	10,24	9,50	9,22	8,78	66,70	62,05	74,58	74,06	79,55	79,44
Single without children	26,74	26,74	21,18	21,18	20,38	20,38	17,40	19,92	25,01	25,83	28,49	28,84
Couples without children	8,79	8,79	7,35	7,35	7,03	7,03	8,16	9,34	12,38	12,78	14,02	14,19
Single parents	34,23	11,41	9,14	6,18	5,89	4,91	4,62	1,76	2,24	1,56	1,71	1,44
Couples 1,2 children	6,25	2,46	1,52	1,13	1,01	0,90	7,61	3,43	3,36	2,57	2,63	2,38
Couples 3 + children	10,10	1,05	1,27	0,28	0,32	0,10	2,63	0,31	0,60	0,15	0,18	0,06
Others	27,13	24,51	17,66	17,13	15,60	15,37	26,28	27,29	30,99	31,16	32,50	32,54

Table A2:6

Profile and decomposition of poverty**Norway**

Headage	<u>Index</u>						<u>Composition</u>					
	$\alpha = 1$		$\alpha = 2$		$\alpha = 3$		$\alpha = 1$		$\alpha = 2$		$\alpha = 3$	
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %
- 24	24,30	17,76	8,87	7,10	5,20	4,48	16,05	16,10	15,66	15,26	14,74	14,24
25-34	10,95	6,80	3,78	2,58	2,12	1,62	22,84	19,49	21,07	17,51	19,02	16,28
35-44	7,70	3,29	2,47	1,34	1,33	0,85	11,11	6,78	9,54	6,55	8,25	6,11
45-54	7,24	4,07	2,26	1,73	1,28	1,13	9,88	7,63	8,24	7,66	7,50	7,41
55-65	6,01	4,59	2,39	2,14	1,54	1,47	10,49	11,02	11,14	12,17	11,53	12,37
65-	10,54	10,09	4,57	4,49	3,26	3,22	29,63	38,98	34,35	40,85	38,96	43,59
Total population	9,89	7,20	3,61	3,04	2,12	2,05	100,00	100,00	100,00	100,00	100,00	100,00
Of which												
All -64	9,56	6,04	3,34	2,47	1,93	1,59	70,37	61,02	65,65	59,15	61,04	56,41
Single without children	11,53	11,53	5,62	5,63	3,87	3,87	20,98	28,81	27,32	33,26	30,28	34,02
Couples without children	3,41	3,41	1,33	1,33	0,83	0,83	3,70	5,08	3,87	4,61	6,22	4,36
Single parents	26,81	13,04	8,66	4,55	4,45	2,74	22,84	15,26	19,72	12,62	16,28	11,26
Couples 1,2 children	4,24	2,00	1,05	0,55	0,46	0,27	10,49	6,78	6,96	4,40	4,91	3,22
Couples 3 + children	10,24	2,41	2,17	0,71	0,89	0,38	10,49	3,39	5,95	2,39	3,92	1,88
Others	20,00	6,67	7,00	3,51	4,38	2,50	1,86	1,70	1,83	1,87	-0,57	1,67

Table A2:9

Profile and decomposition of poverty**UK**

Head age	<i>Index</i>																	
	$\alpha = 1$			$\alpha = 2$			$\alpha = 3$			$\alpha = 1$			$\alpha = 2$			$\alpha = 3$		
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %
-24	16,58	14,25	6,53	5,70	4,05	3,69	4,38	4,28	7,34	7,32	10,48	10,76						
25-34	10,14	5,50	3,17	1,85	1,64	1,07	9,72	5,99	12,95	8,60	15,44	11,34						
35-44	9,68	3,89	2,67	1,41	1,32	0,87	7,67	3,50	9,00	5,43	10,22	7,62						
45-54	6,46	3,86	2,05	1,57	1,26	1,10	4,59	3,11	6,21	5,40	8,77	8,64						
55-65	14,32	13,78	4,15	4,05	2,23	2,20	10,88	11,91	13,43	14,96	16,64	18,50						
65 -	51,14	51,03	9,77	9,75	3,17	3,22	62,76	71,21	51,07	58,29	38,45	43,14						
Total population	21,22	18,67	4,99	4,37	2,16	1,92	100,00	100,00	100,00	100,00	100,00	100,00						
Of which																		
All -64	10,69	7,27	3,30	2,46	1,81	1,48	37,24	28,79	48,93	41,71	61,55	56,86						
Single without children	20,95	20,95	7,98	7,98	4,99	4,99	11,23	13,07	18,63	21,28	26,83	30,27						
Couples without children	4,79	4,79	1,14	1,14	0,56	0,56	3,56	4,04	3,59	4,10	4,08	4,61						
Single parents	54,82	32,46	20,83	12,66	11,84	7,92	8,56	5,76	10,19	9,60	18,12	13,67						
Couples 1,2 children	4,71	1,83	1,00	0,52	0,44	0,30	4,93	2,18	4,46	2,66	4,54	3,43						
Couples 3+ children	20,58	5,82	4,24	0,91	1,28	0,17	6,30	2,02	5,78	1,35	3,83	0,59						
Others	3,50	2,20	0,97	0,83	0,61	0,58	2,67	1,71	6,28	2,72	4,15	4,29						

Table A2:10

Profile and decomposition of poverty**USA**

Head age	<i>Index</i>						<i>Composition</i>					
	$\alpha = 1$		$\alpha = 2$		$\alpha = 3$		$\alpha = 1$		$\alpha = 2$		$\alpha = 3$	
	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %	A1 %	A2 %
-24	14,21	11,40	8,06	7,22	6,28	5,87	16,56	17,25	18,26	18,86	19,01	19,48
25-34	7,34	4,19	3,32	2,40	2,36	1,92	20,63	15,30	18,14	15,14	17,25	15,36
35-44	7,33	4,42	3,16	2,26	2,12	1,67	15,14	11,86	12,72	10,47	11,36	9,81
45-54	6,72	5,01	3,40	2,93	2,51	2,26	12,51	12,12	12,32	12,25	12,15	11,97
55-65	11,15	10,57	7,03	6,84	5,78	5,67	19,79	24,38	24,30	27,24	26,63	28,66
65-	6,47	6,18	3,10	3,00	2,21	2,16	15,37	19,09	14,26	16,04	13,60	14,72
Total population	8,29	6,38	4,26	3,70	3,67	2,91	100,00	100,00	100,00	100,00	100,00	100,00
Of which												
All -64	8,74	6,43	4,55	3,87	3,44	3,09	84,63	80,91	85,74	83,96	86,40	85,28
Single without children	9,88	9,88	7,07	7,07	6,02	6,02	25,18	32,72	35,06	40,45	39,84	43,69
Couples without children	3,73	3,73	2,12	2,12	1,76	1,76	6,27	8,15	6,93	7,99	7,69	8,44
Single parents	33,36	17,93	15,48	10,70	10,98	8,39	24,27	16,95	21,90	17,47	20,74	17,42
Couples 1,2 children	3,01	1,66	1,13	0,83	0,76	0,63	6,34	4,54	4,64	3,90	4,16	3,80
Couples 3 + children	10,29	4,57	3,95	2,37	2,52	1,79	6,92	4,00	5,17	3,57	4,41	3,45
Others	8,05	5,77	3,16	2,42	1,89	1,54	15,65	14,56	12,05	10,57	9,56	8,48

Table A3:

Size of poverty using various poverty lines.

$\alpha = 2$

	Line 1		Line 2		Line 3		Line 4	
	A1	A2	A1	A2	A1	A2	A1	A2
	%	%	%	%	%	%	%	%
Australia	8,65	7,09	6,05	4,94	3,86	3,31	2,96	2,67
Canada	8,97	7,50	6,39	5,34	3,51	2,87	2,42	2,03
France	5,54	4,20	3,42	2,72	1,85	1,54	1,24	1,06
Germany	6,12	5,15	4,16	3,73	2,46	2,28	1,79	1,70
Netherlands	11,07	10,27	9,65	9,40	8,51	8,41	7,96	7,89
Norway	4,75	3,73	3,45	2,91	2,21	1,98	1,63	1,47
Sweden	3,84	3,34	2,76	2,43	1,45	1,33	0,92	0,85
Switzerland	8,45	7,56	5,93	5,53	3,25	3,10	2,48	2,42
UK	9,13	7,86	5,61	4,86	1,90	1,58	1,30	1,12
USA	11,92	10,18	9,16	7,87	5,71	4,84	4,26	3,69

$\alpha = 3$

	Line 1		Line 2		Line 3		Line 4	
	A1	A2	A1	A2	A1	A2	A1	A2
	%	%	%	%	%	%	%	%
Australia	4,85	4,09	3,83	3,35	2,82	2,57	2,36	2,19
Canada	4,76	4,01	3,56	3,06	2,25	1,96	3,83	1,51
France	2,58	2,06	1,76	1,49	1,09	0,95	0,77	0,69
Germany	3,28	2,95	2,52	2,36	1,73	1,65	1,37	1,32
Netherlands	9,01	8,81	8,46	8,37	7,88	7,84	7,60	7,57
Norway	2,74	2,34	2,20	1,99	1,57	1,45	1,23	1,14
Sweden	2,02	1,91	1,55	1,45	0,94	0,89	0,69	0,66
Switzerland	4,59	4,29	3,59	3,44	2,50	2,44	2,12	2,09
UK	3,81	3,29	2,39	2,10	1,24	1,09	0,97	0,87
USA	7,10	6,13	5,67	4,98	3,97	3,55	3,19	2,91