Female Income Differentials and Social Benefits: A Four Country Comparison

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Abstract: Past literature on the family gap--the difference in outcomes for mothers and women without children--discusses inequality in wages and employment. This study examines family gaps in the economic well-being of households, and analyzes the extent to which they are reduced by the availability of social benefits. Preliminary results, using the Luxembourg Income Study, indicate that the generosity of the social protection system accounts for the size of the family gap, particularly in countries with sizeable income differentials. In countries with the most generous systems, family gaps for the lower half of the income distribution are, to begin with, very small. The inequality analysis finds that earnings have a significant role in determining overall inequality due to their large share in total income. Benefits have a redistributive effect in all countries, with the magnitude of this effect depending on the generosity of benefits relative to income.

1 Introduction

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The degree of public support toward families affects individual labor market decisions. The extent to which related measures influence individual behavior varies across families and across countries. Government involvement in creating employment-oriented policies aimed at reducing poverty, inequality and exclusion depends on national policy attitudes, attitudes that dictate the level of generosity of the welfare state. As a result, the role of the government in creating social support also differs across countries.

In this study, the impact of social benefits in improving welfare is examined in a multi-country context. The family gap in labor market outcomes, defined as the difference in the outcomes for women without children and for mothers, has been explored to a certain extent. The past literature discusses the size of family gaps in wages and employment, but does not refer to the actual well-being of the family units. Wages may indicate the returns to education, but income is an indicator of the amount of monetary resources that are available for consumption by family members. As a result family income is often considered one of the better, but not ideal overall measures of economic well-being. This study looks at the differences in well-being, as measured by family gaps in income and examines the

extent to which the gap is reduced by the availability of social benefits across countries. The redistributive impact of benefits is also examined.

. This analysis contributes to the literature by focusing on "family income gaps" and by determining the potential differences in the well-being between families with children and those without. As the proportion of married couples with children has been falling and the number of single-mother families has been increasing, this work seeks to discern the role of the generosity of the state in determining such differences. The analysis is focused on traditionally different welfare regimes[2]: France, Poland, Sweden, and the United States.

This study finds that the generosity of the social protection system has explanatory power in accounting for the size of the family gap, especially in countries with sizeable income differentials. In countries with the most generous systems, family gaps for the lower half of the income distribution are, to begin with, very small. The inequality analysis finds that earnings have a significant role in determining overall inequality due to their large share in total income. Benefits have an equalizing effect in all countries, but the magnitude of this effect depends on the generosity of benefits relative to income.

Subsequent sections contain an overview of previous research on the family gap, the model framework, methodology, and data. Section 4 discusses the empirical results, followed by conclusions. The Appendix discusses inequality measures, and contains a section on trends in female participation in the labor force over the past two decades.

3.2 Prior Research on the Family Gap

In a 1999 study, Harkness and Waldfogel perform a cross-country comparison of family gaps and find differences in the effect of children on women's employment and hourly wages, even after controlling for age, education, etc. The gap is greatest in the United Kingdom (where mothers work in low paying part-time jobs), followed by the other Anglo-Saxon countries (Australia, Canada, and the United States), then

[2] See Sierminska (2003) for details on family policies in these countries.

Germany. The gap is smallest for the Nordic countries (Finland and Sweden). For full-time workers, children have a negative effect in all countries, but the effect is smallest in the US and the UK, and is comparable to that in the Nordic countries. The authors also find a positive relationship between the family gap and the gender gap across countries. A family gap in pay exists in the US and in the UK, but not in the other countries. In these two countries, the family gap is most likely explained by steep penalties for part-time work (Bardasi and Gornick (2000)), as many mothers work only about ten hours a week. The authors do not find a clear positive relationship, however, between the family gap in pay and the family gap in employment. Using Heckman's sample selection correction model they do not find a differential selection for women with respect to employment (i.e. that mothers with low earnings potential are more likely to work), with the exception of the US. There, both negative employment and the wage effects of children exist. When calculating family gaps, the authors do not distinguish between married mothers and single mothers. Correspondingly, they do not find a big effect of marriage on employment[3].

Examining policies in the United States, Waldfogel (1998a) finds that, while the US has done fairly well with respect to equal pay and equal opportunity policies, on the international arena, it is well behind most other countries in family policy—for example, in the provision of leave and child care. It is the only country without provisions for paid leave; further, it has one of the highest out-of-pocket costs for child-care relative to women's earnings. As a result, even though the gender gap has been decreasing over the past decades, the family gap in pay has been increasing. Maternity leave may reduce the family gap by raising women's retention rates and increasing their levels of work experience and job tenure, which in turn should raise their wages.

Looking at data for Britain, Joshi, Paci, and Waldfogel (1999) find that childless women have higher earnings and demonstrate a higher propensity for working full-time. Meanwhile, mothers tend to be concentrated in part-time jobs, which carry a high wage penalty. Such pay penalties, associated with part-time work and lost work experience, have increased over time. The authors find little evidence that children

[3] A comparison of employment over the years has shown, for some countries, a decreasing, yet still substantial effect of marriage on employment over time. The effect varies with the age of child in the household. For details, see Table A.3.4 and A.3.5.

have a negative effect on pay once allowance is made for human capital and sectors of employment; further, that mothers with a continuous employment history do better than those that return to work after a break.

By exploring the effect of maternity on wages, Waldfogel (1998b) finds that women who have leave coverage and return to work receive a wage premium that offsets the negative effects that children have on wages. A low level of work experience explains some of the wage differences between mothers and non-mothers, but the significant direct effect of children remains unexplained. The author also finds that the difference between mothers and non-mothers is more a factor of slower wage growth than pre-existing differences in base wages. The author does not find any unobserved heterogeneity bias or omitted human capital that might even in part explain family gaps.

3. Methodology, Model and Data

Unlike prior studies that have attempted to identify the reasons for the existence of family gaps in earnings and employment rates, this study focuses on the family gap from the point of view of welfare. Women, both with and without children, are treated as family units, and income differentials between these two family types are examined. Some may argue that a family gap defined on the basis of hourly wages is not as severe as one based on disposable income. Wages indicate returns to education, while income represents the total amount of resources available for consumption by family members. For this reason, income is often considered to be the "least worst" measure of economic well-being[4].

An examination of income-gaps allows us to determine the effect of children on the well being of their respective family units. In this study, the economic well-being of a family may be affected by the presence of children in two ways. First, there could be a wage or "employer effect" in the form of lower wages for mothers;[5] this has a negative impact on the economic well being of the family unit. Second, in many

[4] For a discussion of this issue, see Canberra(2001).

[5] Resulting, for example, from employer discrimination.

countries, the presence of children results in their respective family units receiving benefits payments. This constitutes a positive influence on the family units' well-being. As such, it is an indication of the governments' role in society.

In line with this rationale, let the household's maximization problem be given by:

$U(C, L, K)$ subject to

$$P_c C + P_K K = W(K)H(K) + B(K) + \overline{B} \quad (1)$$

$$H(K) + L + M(K) = T \quad (2)$$

where C is consumption, L is leisure, and K is the number of children. Equation (1) is the budget constraint, where $P_c = 1$ is the price of the consumption bundle, P_K is the price or opportunity cost of having children, W(K) is the wage rate, H(K) denotes hours worked, B(K) denotes child dependent benefits, and $\overline{B}$ denotes other benefits and nonlabor income. Equation (2) is the time constraint, where the total time available, T, can be divided into the number of hours worked, leisure and non-market work dependent on the number of children- $M(K)$.

More formally, we have

$\frac{\partial W(K)}{\partial K} \leq 0$, indicating that having children may have a negative effect on the wage rate;

$\frac{\partial B(K)}{\partial K} \geq 0$, indicating that benefit payments are an increasing function of the number of children; and $\frac{\partial M(K)}{\partial K} > 0$, $M(0) = 0$, indicating that non-market work increases with the number of children. Additionally, $\frac{\partial H(K)}{\partial K} \leq 0$.

Since Full income= $F = W(K)T + B(K) + \overline{B} = C + P_K K + W(K)[L + M(K)]$, (3)

the income (Y) constraint becomes

$$Y = W(K)[T - L - M(K)] + B(K) + \overline{B} = W(K)H(K) + B(K) + \overline{B} = C + P_K K. \quad (4)$$

Maximizing the utility subject to equation (4) yields the demand function for hours worked or labor supply $H = f[W(K), B(K), \overline{B}, P_K, M(K)]$. (5)

From equation (4), we get $\frac{\partial Y(K)}{\partial K} = H\frac{\partial W(K)}{\partial K} + W\frac{\partial H(K)}{\partial K} + \frac{\partial B(K)}{\partial K}$. (6)

Two cases can be distinguished: (1) $\frac{\partial W(K)}{\partial K} = 0$ and (2) $\frac{\partial W(K)}{\partial K} < 0$.

For case (1), an employer-wage effect exists. As a result, $\frac{\partial Y(K)}{\partial K} > 0 \Leftrightarrow \frac{\partial B(K)}{\partial K} > W\frac{\partial H(K)}{\partial K}$. This is likely the case for countries with generous child benefits, and where similar employment patterns exist for mothers and non-mothers.

For case (2), $\frac{\partial Y(K)}{\partial K} > 0 \Leftrightarrow \frac{\partial B(K)}{\partial K} > H\frac{\partial W(K)}{\partial K} + W\frac{\partial H(K)}{\partial K}$. Improvement in the well-being of the family is more difficult to accomplish in this case, as the benefits effect needs to compensate for the wage effect as well as the hourly effect.

To see this clearly, let us assume two possibilities: one with children (K=1) and one without (K=0). Thus,

$Y(1) = W(1)H(1) + B(1) + \overline{B}$ and $Y(0) = W(0)H(0) + \overline{B}$. The difference is the family income gap

$Y(1) - Y(0) = W(1)H(1) - W(0)H(0) + B(1)$. (7)

Equation (7) can be expanded into $Y(1) - Y(0) = \alpha + \beta + \gamma + B(1)$, where (8)

$\alpha = W(0)[H(1) - H(0)]$ is the hourly effect;[6]

$\beta = H(0)[W(1) - W(0)]$ is the wage effect;[7]

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[6] $\alpha<0$, since H(1)-H(0)=-M(1)<0.

[7] $\beta=0$ or $\beta<0$.

$\gamma = [W(1) - W(0)][H(1) - H(0)]$ is the interaction of the wage and hourly effect;[8] and

$B(1)$ is the benefit effect. The goal of this paper is to analyze the net effect $Y(1) - Y(0)$ in order to determine the level of government involvement in determining income differentials between mothers and women without children; moreover, to explore to what extent government responsibility for women's childbearing differs across countries and across the income distribution within each country. It also examines the extent to which government's generosity may explain the size of the family gap.

Data

The data comes from the Luxembourg Income Study (LIS)[9]. LIS is a micro-dataset archive gathered from a large range of industrialized countries. It contains demographic, labor market and income data (earned and unearned), both at the household and individual level. The data is rendered comparable, and is available to researchers worldwide through remote access. At the household level, the LIS includes such variables as child or family allowances, maternity allowances (including pay replacement and birth premiums), and other means-tested cash benefits. Cash transfer variables for the most recent group of chosen countries are presented in Table 3.8. This study is most interested in family-supporting payments, such as child or family allowances, maternity pay, and means-tested cash benefits, among others. Datasets for each country and each year include a LISsification table. These present a translation of the original dataset file into the LIS data, thus allowing comparability across countries. The definition of transfer variables for the group of countries of interest in the most recent wave can be found in Table 3.9. The LIS makes every effort to make measures of income as comparable as possible across countries. If there is any doubt about comparability, it should be pointed out that it is only the relative well-being of mothers and women without children that is being analyzed. By looking at the effect of children on income differences across countries other common effects are netted out.

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[8] γ indicates whether the contribution of the wage effect depends on the level of the hourly effect or vice versa.

[9] Remote access is available through http://www.lisproject.org.

Variable of Interest

In this study, the economic welfare of the family is measured by disposable personal income (DPI). The goal of the Luxembourg Income Study (LIS) is to define this variable consistently across all countries. DPI is defined as gross income minus taxes and mandatory contributions (in the United States). Near cash benefits are included and comprised of all forms of transfers that are in a strict sense, in-kind payments (i.e., they are tied to a specific requirement such as school attendance), but have a cash equivalent value equal or nearly equal to the market value, including near cash housing benefits. In-kind earnings are not included in the DPI. These would include home production or in-kind income as a substitute for income, and would only be food commodities, homegrown food, board, or housing received as pay. DPI in LIS does not include employer luncheon vouchers, education vouchers, medical benefits, etc. as these are counted as voluntary supplements to cash wages.

By measuring the resource flow in money that increases the recipient's potential to consume or save, income is a good proxy for individual economic welfare. It should be noted that this study looks exclusively at the material well-being of families, acknowledging at the same time that family well-being is a multidimensional concept influenced not only by the economic position, but also by the social, political, physical, emotional and psychological status of the family.[10]

Unit of Analysis

The unit of analysis is the individual although income and transfers are measured at the household level. The study focuses on females aged 25-44. This age frame is chosen to accentuate the childbearing age for females in independent households. Individuals working full-time, full-year are defined as working more than 47 weeks full-time during the past 12 months[11].

Equivalence Scales

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[10] For more on the topic see Sen (1987)

[11] For France, Sweden and the US: PWEEKFT > 47. For Poland: the individual must not be a part-time employee, must be employed, number of weeks unemployed must be less than 5 and must have worked at least 35 hours per week.

To focus on the well-being of the family, incomes must be deflated to account for the size of the family. This is accomplished by using equivalence scales. Equivalence scales measure the relative cost of living of families of different sizes and composition that are otherwise similar. They deflate income by a score of less than one for each extra member since households are economies of scale in the provision of some goods like heating and electricity. This study employs the scale ($\sqrt{\text{number of adults} + \text{number of children}}$). This scale does not distinguish between child and adult consumption-both are treated equally. This study considers single-family or married households with the same number of adults, as a result the economies of scale root rule will pick up the distinction between adults and children for families that contain a larger proportion of children[12] in which case the scale is suitable for the purpose of this study.

Countries of Interest

In many developed countries the government plays an active role in helping balance work and family responsibilities by providing public or financing day care, having mandated parental leave, and providing cash payments for families with children.[13] In this study I compare the role of the government and its effect on the family gap in four countries: France, Poland, Sweden, and the United States.

According to Gornick, Meyers, and Ross (1996), who performed a ranking of countries by governments' generosity in providing policies supporting the employment of mothers, France and Sweden stand at the top of the list of countries. The United States is last.[14] Poland is not included in the ranking, but as a state in transition is also of interest. The transition in terms of social policy has been a move from more equality to more efficiency and there has been a strong drift toward reliance on means-tested social assistance-more common in the 'liberal'-Anglo-Saxon welfare states.

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[12] See Ruggles (1990). For a discussion on equivalence scales see Citro and Michael, ed. (1995).

[13] There is an on going debate on how the costs of raising children should be shared between parents, the government and employers. See Fuchs (1996) for a discussion.

[14] In the United States it was not until 1993 that the Family and Medical Leave Act was passed mandating firms to provide *unpaid* family leave. Most countries had been providing *paid* leave for some time. The US subsidizes child-care for poor families and provides tax deductions for others, but it does not provide child-care unlike many European countries. The US can be seen as a control group with minimal benefits.

Methods

The family gap of women is explored with respect to the female income distribution. First, the overall income gap is observed. Gaps within the deciles of the distribution are then specified. The extent to which benefits components explain the sizes of family gaps is also examined. Standard statistical methods are used to compare income distributions. The earnings and income gap is compared for mothers and women without children i.e the pre-transfer and post-transfer levels of available income are explored in order to compare the effect of social benefits across units and countries. Income inequality between mothers and childless women is also examined. The inequality analysis is performed using the Gini, Mean-Log Deviation, Theil Enthropy, and the Coefficient of Variation[15]. These measures exhibit variation in their sensitivity to inequality changes. The Gini is more sensitive around the median of the distribution, while the Theil and Coefficient of Variation are more sensitive to changes at the top of the distribution. The differences in sensitivities imply that the inequality measures do not indicate the same inequality pattern between two distributions. As a result, inferences regarding the inequality between two distributions must be confirmed by nonintersecting Lorenz curves. If Lorenz curves cross, than it may be that the above mentioned measures differ in the reported direction of change in inequality between the two distributions. The Lorenz curve analysis is reported at the end of the inequality exploration.

The measure of income inequality is decomposed into inequality contributions attributable to each of the factor components of total income (Shorrocks (1982a)). Thus, if

$DPI = \sum_{i=1}^{T} Y_i$, where Y_i are components of disposable income (DPI),

then the decomposition rule is such that

[15] A detailed description of these methods is in the Appendix.

$S_i = \frac{\rho_i \sigma_i}{\sigma_{DPI}}$, $\sum_{i=1}^{T} S_i = 1$, where ρ_i is the correlation coefficient between Y_i and DPI, and $\sigma_{\cdot}$ is the standard deviation. Specifically, for the Coefficient of Variation (CV),

$S_i = \frac{\rho_i \mu_i}{\mu_{DPI}} \frac{CV_i}{CV_{DPI}}$, where μ_i is the mean, $\frac{\mu_i}{\mu_{DPI}}$ are factor shares in total income, and CV_i are factor inequalities.

It would not be appropriate to compare outcomes for married women with those of single women, since equivalized incomes of married women take into account the earnings of husbands. In this study, the goal is to actually analyze the family gap, and the role of the structure of social benefits and transfers in making resources more available to women with children. As a result, the analysis focuses on the comparison of mothers and women without children on the basis of marital status. The difference in access to economic resources is explored in four population groups: married women without children, married women with children, single women without children and single-mothers. This division allows for a determination of the size of the family gap, or, in others words, the effect of children and social benefits within a country on the well-being of women in different family structures net of other effects.

4. Empirical Analysis

4.1 Income Distribution

The income distribution of women with and without children is examined across countries, and their relative well-being is compared. The cumulative distribution indicates that overall, women without children and married women are better off in all countries past the fifth percentile (See Figure 3.1).[16] The distribution is scaled to highlight the bottom of the distribution. For example, in France, 30 percent of the highest income or more is enjoyed by 90 percent of married childless women, 85 percent of married mothers, 80 percent of single women,

[16] See Figure.3.2 for the results on full-time, full-year workers.

and only 50 percent of single-mothers. This compares to 80 percent, 60 percent, 70 percent and 40 percent respectively in Poland; 98 percent, 97 percent, 90 percent and 90 percent respectively in Sweden; and 80 percent, 60 percent, 63 percent and 25 percent respectively in the United States. Below the fifth percentile, differences across countries are observed. In France and Sweden, single mothers are better off than single women. Married mothers are as well off as those without children at the bottom of the distribution in France, but not in Sweden. In Poland and the United States, women without children are better off than those with children.

Family Gap and Absolute Differences

Absolute differences of income between childless women and women with children can be found in the Appendix (See Appendix A.3.1). The family gap--an indicator of the effect of children on income[17]--expresses these differences in relative terms (See Figure 3.3). In Poland, women with children at the bottom of the income distribution are worse off than those without children, but the difference in absolute terms is the same among married and single women This is not the case in relative terms; the family is larger for single women relative to their married counterparts, indicating that throughout the distribution (except at the 20th percentile), the gap in income between women without children and those with children is greater for women that are not married. The absolute gap increases as we move up the population share, and the relative gap is fairly constant except for the initial decline for single women at the bottom of the income distribution.

In the United States, women at the bottom of the income distribution are worse off

if they have children. The absolute gap increases as we move up the distribution. In relative terms (See Figure 3.3.4), children have a larger negative effect for single-mothers than married ones. This is most likely the effect of husbands' earnings. The family gap increases for single mothers as we move along the distribution for single females, and then slightly falls after the 25th percentile. For married women the effect also increases up to the 25th percentile, but then remains stable.

[17] This indicator measures the income ratio of women without children and mothers at each percentile of the income distribution. If it is greater than one, it indicates that children have a diminishing/negative effect on income.

In France, the absolute difference in the well-being of women steadily increases for both single and married women towards the top of the distribution. In relative terms (See Figure 3.3.1) the indicator for the effect of children is less than one for single women at the bottom of the income distribution, and increases to 1.85 towards the top of the distribution. For married women it begins at around 1, increases to 1.25 towards the middle of the married population, and then slightly declines at the top of the distribution.

In Sweden the absolute difference in the well-being of females is small for single women and is steadily increasing across the distribution for married women. The family gap is larger for married than for single women (See Figure 3.3.3). For married women, the negative effect of children is very small at the bottom of the income distribution and remains stable along the rest of distribution (at around 1.30). For single women, the negative effect of children is almost non-existent, and only appears for the top ten of the distribution.

The effect of children across countries is compared in Figure 3.4.1 and 3.4.2. The disparity along the distribution is larger for single women than for married women. The highest negative effect among single women is in the United States. There is no negative effect of children in France and Sweden for women at the bottom of the income distribution. Moving along the distribution, the negative effect steadily increases in both countries, though it is larger in France. In almost all countries, there is a steep increase in the family gap at the bottom of the distribution. In Poland, the opposite is true; the effect remains roughly constant throughout the distribution, though becoming slightly higher at the top and bottom of the distribution.

The increase in the family gap as we move up the income distribution must be the result of a relatively greater increase in the returns to education (i.e., in the form of higher wages) for women without children, and of a decline in the share of benefits with greater income.

The effect of children on the well-being of families is summarized in Table 3.10. For single women the effect ranges from .15 to 2.22. For married women, it ranges from 1 to 1.5; it is largest in the US for the top 80 percent of the distribution, but for the bottom 20 percent the negative effect is greatest in Poland. In France there is no negative effect of children for the bottom 5 percent of the income distribution and there is a very small average effect in Sweden for the whole distribution. The most stable effect seems to be in Poland.

The family gap is less dispersed for married women, which may result from a tightening effect caused by husband's incomes. In the end, having children is costly and this can only be viewed as a problem once the relative costs of children become so high that married couples not only postpone, but forego childbearing altogether as is the case, for example in Japan.

Full-Time Full-Year Workers

It may be argued that the family gap exists because women with children tend to be more prevalent in part-time jobs, which have been shown to exhibit a penalty and to provide on average fewer work hours. In order to circumvent this factor, the analysis has further focused only on individuals working full-time, full-year. As can be seen from Figure 3.5 and the bottom portion of Table 3.10, this has a tightening effect on the gaps throughout the distribution, the exception of single women in Poland, and married women in Sweden. The family gap for single women has the same pattern in all countries once the case study is focused on full-time, full-year workers only. The smallest gap is found at the bottom of the income distribution, with a steep increase from the first to the fifth percentile. Little variation is observed after that though there is an increase towards the top one percentile. The steep increase at the bottom of the distribution is relatively smaller in countries with means-tested benefits and in countries with an average higher gap than in those that provide universal benefits. The family gap is almost nonexistent in Sweden. France has a considerably higher family gap, but it is very small for women at the bottom of the distribution. Married women exhibit bigger gaps that are generally less dispersed.

Overall, variations in the relative well-being of families with and without children, across countries and throughout the distribution are the result of the combination of the wage penalties connected with having children; the number of hours worked (for those working part-time); and the generosity of the welfare state. In some countries, the government's generosity completely alleviates the negative effect of having children at the bottom of the distribution.

The Family Gap and Social Benefits

Next, the benefit structure and the effect of benefits across the income distribution are examined. To what extent is the family gap closed by benefits? This is an important question. If the aim is to keep women attached to the labor market and above the poverty level, the gap needs to be closed, and benefit payments may play an important role in accomplishing this goal. Previous studies have shown that benefit generosity is accompanied by smaller employment family gaps. (The gender gap has been falling and the family gap has been increasing in employment rates as well as wage rates, but in both cases remains the smallest in countries with the most generous benefit systems.) Figure 3.6 indicates that with respect to family benefits[18] as a share of income, the countries examined in this study can be divided into two groups. In the first group, the share of benefit systematically decreases as we move along the deciles of the income distribution. This takes place in countries in which means-tested benefits are more prevalent- Poland (although there is a slight increase at the median) and the United States. In the second group, in countries that provide generous universal benefits—such as France and Sweden--a declining, continuous 'W' pattern is observed with shares at first decreasing, then increasing around the 30th percentile, then again falling, and then finally increasing again beginning around the 60th and 70th percentile and until the top of the distribution. The share of benefits in income for single-mothers varies across countries from as low as less than ten percent in Poland to 40-50 percent of income in Sweden.

Table 3.11 and 3.12 summarize the effects of social benefits on the overall size of the family gap-- i.e., the income differentials between childless women and women with children. This is done in two ways. First, the overall income gap is compared to the gap without benefits. Second, the family gap for earnings is reported and the equalizing effect of taxes and of social benefits is analyzed. The results reinforce each other. Social benefits in France reduce the family gap by 25 percent for single women regardless of whether they are full-time or part-time workers. In Sweden, benefits cut the gap by over 40 percent, again regardless of type of worker, but taxes do not have the same equalizing effect as in the other countries. In Poland the family gap is reduced by about 15 percent and taxes have a small equalizing effect. Benefits in the United States have the smallest diminishing effect on the family gap, about 10 percent for both types of workers (full-time and part-time) and the gap is highest for these four countries. For married women,

[18] Family benefits include child or family allowances, maternity pay, childcare benefits that are not means-tested, and means-tested cash benefits.

the benefits have a smaller effect on the size of the family gap, though, with the exception of Sweden, the gaps are on average smaller than for single women for both types of workers.

Total benefit shares by country are presented in Figures 3.7.1-3.7.4. Family benefits[19] are also presented for women, both with and without children. Although these benefits are specifically geared to families with children, single women have a positive share of benefits. This is a result of the means-tested cash-benefits category, which is included in the calculations, and contains social assistance not only for families with children. In an effort to partially net out this effect, the single women benefit share is differenced from the single mothers' shares. The family gap across the income distribution is compared with the difference in the family benefit share in order to explore the effect of benefits on the size of the family gap across countries. In most countries, as the share of benefits declines the family gap increases. This relationship is most pronounced in France, though with the calculation of correlation coefficients seems to be of strong magnitude in all countries (See Table 3.13.).

Estimating family gaps for benefit shares for single women over the income distribution gives an R^2 of about 0.4, indicating that about 40 percent of the variation in the family gap can be explained by variation in the benefits shares. The results are in Figure 3.8. A high family gap is accompanied by a low share of benefits in total income, but the gap is almost non-existent where benefits represent 25 to 40 percent of income. The effects by country are given in Figure 3.9. The US exhibits the highest family gap, but as benefits shares increase, it shows the biggest decline in family gap of the four countries examined. In France, benefits shares also explain almost half of the variation in the family gap, though with a greater dispersion throughout the income distribution. In Poland, benefits shares represent less than 15 percent of income, but still have a negative effect on the family gap. The smallest effect seems to be in Sweden, with benefits shares about 20 to 40 percent of income and the gap being virtually non-existent.

Figure 3.10 presents the effect of benefits shares on the size of the family gap across the income distribution. Benefit shares have the biggest effect at the bottom of the income distribution. It should be noted, however, that in some countries (for example, in Sweden) the smaller effect in the top of the distribution is much larger than the greatest effect at the bottom of the distribution in another country (for example, in the United States). It

[19] See Table 3.6 for the components of the benefit category by country.

is important to point out that in France and Sweden, benefits shares do not have a big effect for the bottom one percent of the income distribution, but at the same time the corresponding family gap is non-existent.

Controlling for Different Characteristics

It may be the case that mothers have different characteristics than women without children, and income differences may only be due to difference in age, education, and other factors that affect income. Ideally, the goal is to find out whether two identical women in terms of sociodemographic traits have different incomes solely because one has children and the other does not. To control for these characteristics, regressions with income as the dependent variable and sociodemographic traits as independent variables are estimated. The residuals from these regressions are then differenced. This leads to the ratio of the actual family gap and the estimated family gap. Thus,

$\hat{e}_N - \hat{e}_C = (y_N - y_C) - (\hat{y}_N - \hat{y}_C) = \ln\frac{I_N}{I_C} - \ln\frac{\hat{I}_N}{\hat{I}_C} = \ln\frac{gap}{\hat{gap}}$, where e indicates the residual, ^-denotes an estimated value, N-no children, C-with children, $y = \ln(income)$ and $gap = income_N / income_C$.

Figure 3.11 presents the actual gap (gap) and the gap versus the estimated gap $(\frac{gap}{\hat{gap}})$. Two things need to be pointed out. First, a ratio of gaps greater than one indicates that a smaller gap actually exists than is predicted by the model. This indicates that factors other than the presence of children—fewer hours worked or employment in lower paying jobs for example--are affecting income. For all countries, with the exception of the United States, the estimated gap is greater than the actual gap at the bottom of the income distribution. The actual gap is smaller due to benefits. Second, gap ratios smaller than the gap indicate that the model predicts the existence of income differentials $(\hat{gap} > 1)$. This is true for France, Poland, and to a lesser extent, Sweden. This is not the case towards the bottom of the income distribution in the United States, something that may be explained by the heterogeneity of the population in this country.

Figure 3.12 looks separately at the regression residuals for single women without children and single-mothers. The results reinforce those from the previous figure, though in greater detail. A negative residual indicates that the actual income is smaller than the predicted income; a positive residual indicates the opposite. The same overall pattern is observed in Poland, France and Sweden. At the bottom of the income distribution, actual income is, on average, smaller than predicted by the model for both types of women until the 50th percentile. For the lowest part of the income distribution, $|\hat{e}_N| > |\hat{e}_C|$, implying that the model is a better predictor for single mothers than single women without children. The fit can be improved, as family benefits are very generous at the bottom of the distribution. $|\hat{e}_N| > |\hat{e}_C|$ also implies that the actual gap is overestimated--$(\hat{gap} > gap)$. A lack of benefits would increase the gap.

Overall, the bottom of the distribution exhibits a children-based effect on income ratios and the generosity of benefits alleviates the family gap with respect to income. For the rest of the income distribution, other forces affect income disparities, and the actual gap is greater than that predicted by the model. This is the case in Poland, France, and to a certain extent, Sweden. In Sweden, $\hat{gap} \approx gap$, and the actual gap is due to the effect of children, with the exception of the bottom of the income distribution, where $\hat{gap} > gap$ on account of the level of high benefits. The United States appears to be somewhat different. At the bottom of the income distribution, actual income is lower than predicted income, but more so for single mothers than for childless single women. Throughout the distribution, $\hat{gap} < gap$, suggesting that other forces are at work besides the effect of children on the income differentials.

Family gap and the employment gap

A popular argument is that the family gap does not translate to a lower well-being of females with children in terms of their utility since less hours of work may not directly translate into more nonmarket hours of work, but instead into more leisure. In this scenario, in the absence of generous benefit payments, a large family gap resulting from fewer hours worked and less income will coincide with a large employment gap or low employment for women with children, but not a larger utility gap. To verify this argument I look at the average employment and employment

gaps in these four countries. The results in Table 3.14 indicate that there is very small correlation among countries between the ranking of the employment gap and the family income gap. There is a small employment gap and family income gap in Sweden, but the same does not hold true in countries with big family income gaps. I also find that in a country with a high family income gap and low income for mothers, such as the United States, single-mothers have a high rate of employment. In Sweden I observe a small family income gap and a relatively high level if employment among single-mothers. In Poland the family income gap is not large and there are relatively low employment rates among mothers, but there are safety nets provided for those at the bottom of the distribution. This argument seems to have more empirical proof for married women in terms of employment gaps. For this group I find that a high family income gap accompanies a high employment gap in the United States. In countries with more generous benefits this does not hold as well.

Summarizing it seems that the argument that a fall in income is compensated for by a rise in leisure for women with children could possibly hold for married women in countries with low-benefit payments. Among single women I find that this argument is not true unless some type of minimal safety net is provided.

4.2 Inequality Analysis

Inequality tells us about differences across the population with respect to access to economic resources. The most common variable for analysis is income, or disposable income, which includes earnings, government transfers and taxes paid. It is a commonly used variable, because it appears to be important in determining the standard of living for individuals; also because it is associated with other quality of life indicators (such as life expectancy at birth or infant mortality). The cumulative income distribution suggests that on average and with few exceptions, women with children have fewer resources than those without for all countries. An inequality analysis allows us to determine whether access to resources is the same within the four groups of females, and whether benefits have an equalizing effect. Greater inequality—that is greater differences in income between the top and bottom of the income distribution—indicates that individuals at the bottom of the distribution may be more vulnerable to economic fluctuations and poverty. Neglecting the population at the bottom of the income distribution may result in grave social consequences (for example, crime). For these reasons, it is important for governments to

provide a proper welfare safety net for the poorest. The following analysis allows us to determine, which national governments exhibit the greatest distributive practices.

The analysis distinguishes between earnings and net earnings—i.e., earnings net of taxes and net earnings with benefits. Benefits include variables that the LIS categorizes as total transfer income, inclusive of sick pay, accident pay, disability pay, social retirement benefits, child or family allowances, maternity pay, alimony or child support, unemployment compensation, military or veteran benefits, other categories of social insurance, means-tested cash benefits, near-cash benefits, other sources of other regular private income, and cash income[20].

The four measures reported in Table 3.14 are the Gini, the Mean Log Deviation, Theil Entropy, and the Coefficient of Variation (CV).

Within Country

Generally, tax structures lead to a more equal distribution of income. The exceptions are Sweden, and, with respect to single women, Poland (see Table 3.16). Benefits have the biggest equalizing effect on income inequality in Poland and Sweden, even though benefits in Poland do not compromise a big share of income compared to Sweden. Benefit structures decrease inequality in each country to varying degrees. Specifically, comparing inequality rankings within the four groups of women for each country (see Table 3.15), it can be noted that in Poland single women exhibit the most equal income distribution. In the US, the only unambiguous facts are that single women without children exhibit the greatest inequality, and that benefits have an equalizing effect on mothers. The rankings are most clear in France and Sweden. Women with children have the most equal distributions, particularly single mothers. Single women, on the other hand, have the most unequal distribution. The benefit structure in Sweden is such that it reduces inequality for mothers more than for women without children.

Income inequality can also be decomposed into factor components (Shorrocks (1982a, 1982b)) independent of the choice of inequality measure. Tables 3.17 and 3.18 identify the relative importance of income components for the overall inequality of disposable

[20] For details see the Data section and Table 3.8 and Table 3.9. Not all variables are available for all countries and they may consist of different components as specified by their national database.

income (DPI). The first row identifies their respective shares in total DPI; the second row shows the proportional contribution of each income source to total inequality; next is the covariance between each income source and DPI; finally, each source's coefficient of variation. The results in the second row indicate that earnings play a significant role in determining overall income inequality. The contribution is highest in the United States, followed by Poland, France, and Sweden, in that order. Earnings' significant role in determining overall inequality reflects the large share this income source has in total DPI rather than an unequal distribution of earnings.

In France, in the case of single-mothers, other benefits contribute 33.9% to total inequality. This is mainly due to their unequal distribution, inasmuch as their share in income is only 22.1 percent. 'Other income' is the only income source that has a redistributing effect of -6.1 percent. It should be noted that the results for France may be misleading, as only data for earnings net of taxes is available. In Poland, Sweden and the United States, taxes have a big redistributing effect relative to family benefits (-6.6 percent, -33 percent and –22.3 percent respectively).

Across Countries

The ranking of countries with respect to inequality is given in Tables 3.15 and 3.16. Sweden has, with the exception of that for single mothers, the most equal earnings distribution. The tax and benefits structures reinforce this distribution. France exhibits an equal distribution, but the earnings data is not entirely complete. In the United States, the tax structure has a somewhat equalizing effect compared to other countries. The benefits distribution has a further equalizing effect, particularly for single mothers. Nonetheless, the overall distribution remains more unequal than in other countries. In Poland, there is a large variation in the effects of the tax and benefits structures across the four groups. Benefits have an equalizing effect for married women, but much less of an effect for single-mothers relative to other countries. The share of income coming from benefits may, in part, explain these results (see Figure 3.6 and 3.7). A large share of income derives from

benefits for both Sweden and France relative to the United States and Poland. Additionally, for Poland, unlike the case in France, a large share of benefits goes to single women without children throughout the income distribution, which may explain the change in ranking.

The Lorenz Curve results (Figure A.3-4) unambiguously suggest that in Sweden, income distributions for single mothers are more equal than for single women without children. In France, it is the reverse. Finally, in Poland and the United States, the results are not as clear, as the curves intersect. In Poland, Sweden and the United States, single women have more equal earnings and net earnings distribution.

The Family Gap in Income and Inequality

The family gap ranking for single women is consistent with the inequality ranking for single mothers for all four countries. For married mothers, it is also consistent in the sense that in Poland and in the United States, it is more unequal than in France and Sweden. Although benefits payments have a big effect in reducing the family gap, particularly toward the lower half of the income distribution, this study finds that they do not have a big redistributing effect compared to taxes in all countries.

5. Conclusions

This exploratory study provides a link between the past literature on family gaps-labor market outcomes for women with respect to wages and employment and the study of the differences in the well being of mothers and women without children. This paper finds evidence that respective benefit shares most likely account for the size of the family gap across the income distribution. In countries with universal benefits, or as is the case here with generous benefits, the family gap for the most vulnerable group—that at the bottom of the income distribution-- is alleviated. A big negative effect of children exists in countries with less generous benefits (usually means-tested), though to a lesser extent for those at lower end of the income distribution. The size of the family gap for income varies across countries and within the income distribution. It is a result of a combination of wage penalties incurred by having children, the number of hours worked, and the generosity of the welfare states.

The results indicate that in some countries, government generosity completely alleviates the negative effect of having children for families at the bottom of the income distribution. Does this encourage fertility at the lower percentiles? Causality is still to be determined, but one fact is certain: fertility is not penalized at the bottom of the income distribution. This suggests two things. First, that for women at the bottom of the income distribution, there is no income incentive against having children. Second, poor women that have children will receive welfare payments. Since the effect of children varies across the income distribution, cross-country differences in fertility decisions on the basis of the availability of social benefits and across the income distribution, need to be examined to a greater extent.

This study also finds that the argument that a fall in income is compensated for by a rise in leisure for women with children, may possibly hold for married women in countries with low-benefit payments. Among single women, this argument is not true unless some type of minimal safety net is provided. This warrants further investigation with a larger sample of countries.

The inequality analysis finds that the tax and benefit structures in Sweden reinforce equality. Benefit payments have a large effect on reducing the family income gap. The extent of their equalizing effect depends on the generosity of benefits relative to income.

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Table 3.1 Main components of the tax and benefit system.

	Unemployment Insurance	Unemployment Assistance	Social Assistance	Housing Benefits	Universal family benefits	Means-tested family benefits	Lone-parent benefits	Employment-conditional benefits(1)	Childcare benefits	Payments to care for children at home
France	+	+	+	+	+	-	+	-	+	+
Poland	+	-	+	+	-	+	-	-	-	+
Sweden	+	+	+	+	+	-	+	-	+	-
United States	+	-	+	+	-	+	-	+	+	-

(1) such as tax credits

Source: OECD (2002)

Table 3.2 Benefits for dependent family members.

	First child		Additional children/observations	Means-test	Additional unemployment benefit
	National currency	USD(1)			
France	-	-	No benefit for the first child. FRF 8208 per two children. FRF 10500 for third and subsequent children.	-	-
Poland	424	231	Amount for the 1st and 2nd children, which increases for each additional child	Y	-
Sweden	9000	921	Supplement of SEK 2400 for the third child, SEK 7200 for the 4th child, SEK 9000 for the fifth and subsequent children		-
United States	-	-	-	-	-

(1) 1999 purchasing power parities are used to calcualate USD values
Source: OECD (2002)

Table 3.3 Lone parent-tax and benefit schemes.

	Minimum benefit (yearly)	Rate		Income test
		National currency	USD(1)	
France	Guarantee of a level of income for lone parents. The payment ceases when the youngest child reaches 3 years old or after 12 months of support if the children are older (FRF 64392/year)	-	-	Reduction: 100% of net income
Poland	-	-	-	
Sweden	Separate benefit for children under 16	28152	2926	Non means-tested
United States	-	-	-	-

(1) 1999 purchasing power parities are used to calcualate USD values
Source: OECD (2002)

Table 3.4 Childcare benefits.

	Benefits to cover childcare costs	Benefits to care for children at home (tested for "non-activity")
France	The subsidy partly pays off the social security contribution costs caused by the employment of another person to take care of children under 6 years old at home.	For at least two children, at least one younger than 3 [condition: partly or totally leave a previous job of at least two years; rate: FRF 3061 (USD 462)/month if full-time]
Poland	-	For at least one child under 6: max. PLN 264.90 (USD 144)/month [PLN 421.30 (USD 229)/month for lone parents]. Family income-tested. Maximum duration 3 years.
Sweden	Heavily subsidised by state and local governments. Parents pay a portion (approximately 17%)	-
United States	Federal Childcare amd Development Fund provides subsidised day-care centres.	-

Source: OECD (2002)

Table 3.5 Maximum social assistance monthly amounts.

	Single		Couple with two children		Lone parents with two children		Determination of rates
	National currency	USD	National currency	USD	National currency	USD	
France	2202	332	1533	231	890	134	National rates
Poland	264	144	753	409	508	276	National rates
Sweden	6577	673	7954	813	3668	375	National guidelines
United States	125	125	982	982	788	788	Regionally determined

Source: OECD (2002)

Table 3.6 Parental leave availability by country.

	Eligibility	Duration			Payments			Special circumstances
		Maternity	Parental	Paternity	Maternity	Parental	Paternity	
France	Being economically active 2 of the preceeding 5 years	16 weeks	Family-based entitlement for 16 months	3 days	100% of last earnings	Unpaid if first child. If two or more 429USD per month.	100% of last earnings	Part-time possible
Poland								
Sweden	Employed for a minumum of 34 weeks. Custody of child 0-8 years old.	at least 12 weeks	Total of 18 months	4 weeks of parental leave exclusively for the father, and 10 days of paternity leave	see Parental	80% of last earnings for one year with a maximum of 30, 584USD per annum. Next 90 days is paid at 6.72USD per day and the remaining is unpaid. For mulitple births, paid leave is extended by 90 days at 80% of earnings.	80% of last earnings through the Temporary Leave Programme(1).	Part-time possible
United States	working parents	see Parental	Total of 12 months	see Parental	see Parental	Unpaid, except for 5 states, where Temporary Disability Benefits provide income support for about 10 to 12 weeks(2).	see Parental	

(1) Temporary Leave Programme: parents of children up to 12 years of age are also entitled to 120 days temporary parental leave in the event of their child being ill or 60 days if the regular career is taken ill.
(2) The Family and Medical Leave Act since 1993 provides a atatutory parental leave policy to employees in firms with 50 or more workers to care for babies, severely ill family-members, or to recuperate from a serius health-condition.
Source: OECD (2002)

Table 3.7 Maximum family benefit according to the number of children in the family (in USD).

	One	Two	Three	Four	Five
France	-	2476	4060	5644	7228
Poland(1)	231	462	747	1103	1459
Sweden	921	1842	3009	4667	6507
United States(2)	371	459	563	659	792

(1) Provided as long as the total gross income per each household member is less than 50% of the national average (928 USD (1707 PLN) in 1999).
(2) This is an example for one state-Michigan in family with one parent.
Source: OECD (2002) and own calculations.

Table 3.8. Availability of cash transfer variables for the most recent wave in the Luxembourg Income Study.

		PL99	FR94	US97	SW95
Sick Pay	v16	-	+	-	+
Accident Pay	v17	-	-	-	-
Disability Pay	v18	+	+	+	+
Social Retirement Benefits	v19	+	+	+	+
Child or family allowances	v20	+	+	-	+
Unemployment Compensati	v21	+	+	+	+
Maternity Pay	v22	+	+	-	+
Military/Vet benefits	v23	-	+	+	-
Other social insurance	v24	+	+	-	+
Means-tested cash benefits	v25	+	+	+	+
Near-cash benefits	v26	+	+	+	+
Alimony or Child Support	v34	+	+	+	+
Other regular private income	v35	+	+	+	-
Other cash income	v36	+	+	+	-

Source: Luxembourg Income Study

Table 3.9 Transfer variable definitions by chosen country for the most recent wave of the Luxembourg Income Study.

		Poland (1999)	France (1994)	USA (1997)	Sweden (1995)
Sick Pay	v16	Included in V24SR.	daily sickness allowance; inlcudes accidents, child birth	na	sick leave compensation
Accident Pay	v17	na	na	na	na
Disability Pay	v18	net invalidity pensions plus taxes on invalidity pensions.	benefit for handicapped adults;invalidity pension for occupational accidents;benefit for education to handicapped children	state disability payments, worker's compensation	disability pay summed over individuals
Social Retirement Benefits	**v19**	**v19s1+v19s4**	**v19s1+v19s2+v19s3+v19s4+v19sr**	**v19s1+v19sr**	**v19s1+v19s2+v19sr**
Basic Old Age Benefit	v19s1	net old-age pensions plus taxes on old-age pensions.	pensions	if age gt 62 social security payments and retirement income	national basic pension
Supplemantary Old Age Benefit	v19s2	na	assistance to old-age dependant person	na	national supplemantary pension
Early Retirement Benefit	v19s3	na	early retirement	na	na
Survivors Pension	v19s4	net family pensions plus taxes on family pensions.	widows and/or orphan pension	na	na
Other Social Retirement Income	v19sr	na	minimum old-age benefit	if under 62 disability income, retirement income and survivor income (US railroad)	residual of the original ppens (ppens=all pensions and annuities)
Child or family allowances	**v20**	**v20s1+v20s2+v20sr**	**v20s1+v20s2+v20sr**	**na**	**v20s1**
Child allowance	v20s1	child raising allowance	family benefits; additional family benefits (3+ children)	na	national child allowances
Advance Maintenance (Program for Single Parents)	v20s2	alimonies for ex-child from alimony fund and taxes on cash alimony from alimony fund	allowance for single parents; allowance of family support	na	na
Orphans Pension Allowance	v20s3	na	na	na	na
Other Child Allowance	v20sr	nursing allowance	benefit for young child	na	na
Unemployment Compensation	**v21**	**v21s1+v21sr**	**v21s1+v21sr**	unemployment compensation and strike benefits from union	labour market assistance includes: daily cash benefit under the unemployment scheme, cash benefit for those that do not qualify for the resular unempl. Scheme (lower benefits), benefits for unemployed during training programs, other benefits during training programs, special benefits during training programs
Unemployment Insurance	v21s1	net unemployment benefit plus taxes on unemployment benefit.	unemployment benefit	na	na
Training or Retraining Allowance	v21s2	na	na	na	na
Placement or resettlement benefits	v21s3	na	na	na	na
Other unemployment benefits	v21sr	other benefit from labour fund	redundancy payment	na	na
Maternity Pay	**v22**	**v22s1**	**v22sr**	**na**	**v22s1**
Maternity Pay Replacement	v22s1	net maternity benefit plus taxes on maternity benefit.	na	na	family support due to taxation includes: parental allowance during the first year and when child sick, both taxable
Birth Premium	v22s2	na. Included in V24SR.	na	na	na
Other ma/paternmity	v22sr	na	parental education allowance (for parents who interrupt their career to raise their children/ under age of 3 and at least 2 children)	na	na

Military/Vet benefits	v23	na	veterans pensions	disability compensation, survivor benefits, veteran's pension amd other veteran's payments	na
Other social insurance	**v24**	**v24sr**	**v24s1+v24sr**	**na**	**v24s2+v24s3+v24sr**
Invalid Care Premium	v24s1	na	na	na	na
Student Stipend-Not Means-Tested	v24s2	na	study or research grant	na	student stipend not means-tested
Child Care Benefit-Not Means-Tested	v24s3	na	allowance for child care	na	child care benefit not means-tested
Other Residual Social Insurance	v24sr	Net birth, funeral and sickness benefits and gross rehabilitation.	na	na	'Compensation for military duty(first education), H' I.e compensation when called for military exercise after first exercises, 'Other pos transfers, due to taxation, H' including compensation when taking care of disabled children or other relatives.
Means-tested cash benefits	**v25**	**v25s1+v25s4+v25sr**	**v25s1**	**v25s1+v25s2+v25sr**	**v25s1**
Social Assistance	v25s1	permanent and temporary benefits from social assistance	minimum guaranteed income; social assistance	AFDC/TANF and other public assistance	social assistance
Old Age Assistance	v25s2	na	na	if gt 65 supplemental security income	na
Unemployment Assistance	v25s3	na	na	na	na
Unmarried Mothers Allowance	v25s4	benefit for pregnant women and individuals bringing up children (only 32 obs)	na	na	na
Other Means-tested Cash Benefits	v25sr	benefit for pregnant women and individuals bringing up children	na	EITC	na
Near-cash benefits	**v26**	**v26s2+v26s6+v26sr**	**v26s2+v26s6**	**v26s1+v26s4**	**v26s2+v26s5**
Near-cash food benefits	v26s1	na	na	food stamps received and school lunches	na
Near-cash housing benefits	v26s2	housing supplement	housing allowance; housing benefit	na	means tested housing allowance includes pensioners and military service
Near-cash medical benefits	v26s3	na	na	na	na
Near-cash heating benefits	v26s4	na	na	LIHEAP (energy assistance)	na
Near-cash education benefits	v26s5	na	allowance at the beginning of the school year	na	means-tested scholarships for university students over 18 years old, or secondary students over 20 years old.
Near-cash child care benefits	v26s6	non-monetary nursing allowance	na	na	na
Other near-cash means-tested benefits	v26sr	other non-monetary social benefits, temporary non-monetary benefit from social assistance, and other non-monetary benefits from social assistance	na	na	na
Alimony or Child Support-Received	v34	private alimonies and taxes on cash private alimonies	received alimony from ex-partner	child support payments and alimony income	received alimony, h
Alimony or Child Support-Paid	v34x	na	paid alimony	na	paid alimony
Other regular private income	**v35**	**v35s2**	**v35s1**	income from financial assistance	**na**
Regular transfers from relatives	v35s1	na	regular income from ither household	na	na
Regular transfers from private charities	v35s2	financial assistance from non-profit organizations, private gifts from other pensions, financial near-cash assistance from non-profit organizations and private near-cash gifts from other pensions.	na	na	na
Other Residual Private Income	v35sr	na	na	na	na
Other cash income	v36	net return of income tax from treasury office plus taxes on other income.	life annuity from investment;life annuity from real estate	accident or disability insurance and disability payments from own insurance	na

Table 3.10 Family gap means.

	Single(1)					Married(2)				
	Mean	Minimum	Maximum	Range	99th percentile	Mean	Minimum	Maximum	Range	99th percentile
France	1.47	0.63	1.63	1.00	1.8	1.21	1.00	1.27	0.27	1.13
Poland	1.44	1.4	1.58	0.18	1.38	1.39	1.31	1.41	0.10	1.28
Sweden	1.07	0.15	1.38	1.23	1.38	1.30	1.08	1.13	0.05	1.33
United States	1.93	1.34	2.18	0.84	2.22	1.43	1.21	1.50	0.29	1.42

Full-Time, Full-Year Workers

	Single(1)					Married(2)				
	Mean	Minimum	Maximum	Range	99th percentile	Mean	Minimum	Maximum	Range	99th percentile
France	1.49	0.84	1.64	0.80	1.76	1.21	1.00	1.26	0.26	1.09
Poland	1.36	1.12	1.38	0.26	1.56	1.47	1.27	1.34	0.07	1.66
Sweden	1.04	0.13	1.1	0.97	1.41	1.30	1.13	1.34	0.21	1.32
United States	1.71	1.44	1.73	0.29	2.01	1.43	1.33	1.42	0.09	1.82

Note: (1) Ratio of income of single women without children to income of lone mothers'.

(2) Ratio of married women without children to income of married women with children.

Table 3.11 Family gap means with and without benefits.

	Single			Married		
	S	SM	Gap	MN	MM	Gap
France						
Income	98020	66905	1.47	124082	102132	1.21
Income - Benefits	84797	43163	1.96	107217	86227	1.24
Earnings (N/A)						
Net Earnings	95887	48676	1.97	113634	89088	1.28
Net Earnings + Benefits	107275	73675	1.46	129283	104713	1.23
Poland						
Income	13812	9615	1.44	16793	12065	1.39
Income - Benefits	9210	5828	1.58	13382	10126	1.32
Earnings	11851	7446	1.59	16067	11431	1.41
Net Earnings	9480	6061	1.56	12225	9727	1.26
Net Earnings + Benefits	14631	10835	1.35	16071	12314	1.31
Sweden						
Income	115405	107858	1.07	181226	139500	1.30
Income - Benefits	80618	46325	1.74	153766	95559	1.61
Earnings	142627	64669	2.21	234739	151333	1.55
Net Earnings	93541	38540	2.43	151666	93950	1.61
Net Earnings + Benefits	116825	107888	1.08	177849	136694	1.30
United States						
Income	26620	13818	1.93	34863	24381	1.43
Income - Benefits	25218	11068	2.28	33563	23470	1.43
Earnings	32646	13895	2.35	42968	29421	1.46
Net Earnings	26994	12431	2.17	34541	24418	1.41
Net Earnings + Benefits	28339	15691	1.81	35802	25443	1.41

S - Single Women
SM - Single-Mothers
MN - Married without children
MM - Married Mothers

Table 3.12 Family gap means with and without benefits (full-time, full-year workers).

	Single			Married		
	S	SM	Gap	MN	MM	Gap
France						
Income	100612	67632	1.49	124179	102480	1.21
Income - Benefits	88344	44351	1.99	107955	87037	1.24
Earnings (N/A)						
Net Earnings	101249	51299	1.97	115148	90067	1.28
Net Earnings + Benefits	111084	75389	1.47	129650	105167	1.23
Poland						
Income	15114	11130	1.36	19573	13331	1.47
Income - Benefits	11091	8203	1.35	16870	11829	1.43
Earnings	12714	8235	1.54	18948	13241	1.43
Net Earnings	10317	6811	1.51	13687	11370	1.20
Net Earnings + Benefits	15075	11154	1.35	17156	13438	1.28
Sweden						
Income	112826	108296	1.04	181279	139014	1.30
Income - Benefits	73875	42651	1.73	154168	95399	1.62
Earnings	136815	64415	2.12	234951	151477	1.55
Net Earnings	88983	38284	2.32	152183	94182	1.62
Net Earnings + Benefits	115077	110550	1.04	178024	136448	1.30
United States						
Income	30598	17944	1.71	39232	27434	1.43
Income - Benefits	29882	16294	1.83	38385	26789	1.43
Earnings	37395	18076	2.07	48758	33692	1.45
Net Earnings	30837	16175	1.91	39024	27911	1.40
Net Earnings + Benefits	31720	18706	1.70	39980	28735	1.39

S - Single Women
SM - Single-Mothers
MN - Married without children
MM - Married Mothers

Table 3.13 Correlation coefficients between the size of the family gap and benefit components.

Full-Time, Full-Year

	Benefit difference	Benefit share
France	-0.63	-0.73
Poland	-0.49	-0.61
Sweden	-0.09	-0.55
United States	-0.59	-0.59

Note: Benefit Share-benefits as a percent of income for single mothers.
Benefit difference=single women benefit share-lone mothers' benefit share.

Table 3.14 Employment gap means.

	Single						Married				
		S	SM	Gap	Ranking	FG Ranking	MN	MM	Gap	Ranking	FG Ranking
France	3	80.91	67.30	13.61	3	3	73.11	62.50	10.61	3	1
Poland	4	76.14	59.12	17.02	4	2	67.61	62.50	5.11	2	4*
Sweden	2	78.46	74.55	3.91	1	1	87.20	83.93	3.27	1	2
United Sta	1	87.87	76.59	11.28	2	4	86.29	74.04	12.25	4	3*

S - Single Women MN - Married without children FG-Family Gap
SM - Single-Mothers MM - Married Mothers
*-Poland, United States for full-time, full-year workers

Table 3.15 Inequality results by marital status and the presence of children.

France 1994

	Married						Single				
	No Children			With Children			No Children			With Children	
	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings
Gini	na	0.320	0.263	na	0.337	0.256	na	0.340	0.273	na	0.342
I(0): Mean Log Deviation	na	0.220	0.129	na	0.224	0.109	na	0.258	0.130	na	0.271
I(1) Theil entropy	na	0.178	0.122	na	0.195	0.116	na	0.207	0.134	na	0.198
CV	na	0.637	0.547	na	0.676	0.536	na	0.701	0.582	na	0.622
1/2CV^2	na	0.203	0.149	na	0.228	0.144	na	0.246	0.170	na	0.194

Poland 1999

	Married						Single				
	No Children			With Children			No Children			With Children	
	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings
Gini	0.410	0.379	0.263	0.369	0.361	0.270	0.342	0.362	0.239	0.372	0.395
I(0): Mean Log Deviation	0.321	0.282	0.114	0.252	0.236	0.121	0.207	0.239	0.093	0.268	0.269
I(1) Theil entropy	0.484	0.249	0.123	0.256	0.240	0.140	0.199	0.226	0.099	0.239	0.264
CV	2.529	0.781	0.561	0.932	0.880	0.676	0.695	0.738	0.484	0.769	0.789
1/2CV^2	3.197	0.305	0.157	0.434	0.387	0.229	0.241	0.272	0.117	0.296	0.311

Sweden 1995

	Married						Single				
	No Children			With Children			No Children			With Children	
	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings
Gini	0.267	0.284	0.172	0.294	0.328	0.148	0.299	0.339	0.176	0.392	0.518
I(0): Mean Log Deviation	0.154	0.111	0.043	0.208	0.145	0.037	0.299	0.101	0.068	0.540	0.042
I(1) Theil entropy	0.134	0.155	0.058	0.157	0.199	0.041	0.182	0.243	0.071	0.279	0.461
CV	0.533	0.561	0.380	0.582	0.610	0.302	0.582	0.687	0.416	0.700	0.908
1/2CV^2	0.142	0.158	0.072	0.169	0.186	0.046	0.169	0.236	0.087	0.245	0.413

USA1997

	Married						Single				
	No Children			With Children			No Children			With Children	
	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings	With Benefits	Earnings	Net Earnings
Gini	0.366	0.337	0.315	0.379	0.341	0.315	0.387	0.361	0.327	0.458	0.435
I(0): Mean Log Deviation	0.287	0.229	0.178	0.289	0.232	0.176	0.330	0.282	0.201	0.534	0.486
I(1) Theil entropy	0.250	0.213	0.186	0.268	0.216	0.185	0.283	0.242	0.199	0.364	0.326
CV	0.833	0.748	0.710	0.875	0.761	0.717	0.910	0.802	0.744	0.933	0.853
1/2CV^2	0.347	0.280	0.252	0.383	0.290	0.257	0.414	0.321	0.277	0.435	0.364

Table 3.16 Inequality rankings among countries.

Earnings

	Married								Single							
	No Children				With Children				No Children				With Children			
	Poland	France	US	Sweden	Poland	France	US	Sweden	Poland	France	US	Sweden	Poland	France	US	Sweden
Gini	1	-	2	3	2	-	1	3	2	-	1	3	3	-	1	2
I(0): Mean Log Deviation	1	-	2	3	2	-	1	3	2	-	1	3	3	-	2	1
I(1) Theil entropy	1	-	2	3	2	-	1	3	2	-	1	3	3	-	1	2
1/2CV^2	1	-	2	3	2	-	1	3	2	-	1	3	2	-	1	2

Net Earnings

	Married								Single							
	No Children				With Children				No Children				With Children			
	Poland	France	US	Sweden	Poland	France	US	Sweden	Poland	France	US	Sweden	Poland	France	US	Sweden
Gini	1	3	2	4	1	3	2	4	1	3	2	4	3	4	2	1
I(0): Mean Log Deviation	1	3	2	4	1	3	2	4	3	2	1	4	3	2	1	4
I(1) Theil entropy	1	3	2	4	1	3	2	4	3	4	2	1	3	4	2	1
1/2CV^2	1	3	2	4	1	3	2	4	2	3	1	4	3	4	2	1

With Benefits

	Married								Single							
	No Children				With Children				No Children				With Children			
	Poland	France	US	Sweden	Poland	France	US	Sweden	Poland	France	US	Sweden	Poland	France	US	Sweden
Gini	2	2	1	4	2	3	1	4	3	2	1	4	2	3	1	4
I(0): Mean Log Deviation	3	2	1	4	2	3	1	4	3	2	1	4	2	3	1	4
I(1) Theil entropy	2	3	1	4	2	3	1	4	3	2	1	4	2	3	1	4
1/2CV^2	2	3	1	4	2	3	1	4	3	2	1	4	2	3	1	4

Note: 1-most unequal, 4-least unequal

Table 3.17 Reduction in inequality due to taxes and benefits by marital status and the presence of children.

France 1994

	Married						Single					
	No Children			With Children			No Children			With Children		
	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total
Gini	na	0.057	0.057	na	0.081	0.081	na	0.068	0.068	na	0.122	0.122
I(0): Mean Log Deviation	na	0.090	0.090	na	0.115	0.115	na	0.127	0.127	na	0.191	0.191
I(1) Theil entropy	na	0.056	0.056	na	0.079	0.079	na	0.073	0.073	na	0.111	0.111
CV	na	0.090	0.090	na	0.140	0.140	na	0.119	0.119	na	0.159	0.159
1/2CV^2	na	0.053	0.053	na	0.085	0.085	na	0.076	0.076	na	0.087	0.087

Poland 1999

	Married						Single					
	No Children			With Children			No Children			With Children		
	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total
Gini	0.031	0.117	0.147	0.009	0.091	0.099	-0.021	0.124	0.103	-0.022	0.153	0.131
I(0): Mean Log Deviation	0.039	0.168	0.207	0.016	0.114	0.131	-0.032	0.146	0.114	-0.001	0.175	0.174
I(1) Theil entropy	0.234	0.126	0.361	0.017	0.100	0.117	-0.027	0.127	0.100	-0.026	0.167	0.142
CV	1.747	0.220	1.968	0.052	0.203	0.256	-0.043	0.254	0.211	-0.020	0.319	0.299
1/2CV^2	2.891	0.148	3.039	0.047	0.158	0.206	-0.031	0.155	0.124	-0.016	0.201	0.185

Sweden 1995

	Married						Single					
	No Children			With Children			No Children			With Children		
	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total
Gini	-0.017	0.112	0.095	-0.034	0.180	0.146	-0.040	0.163	0.123	-0.126	0.391	0.265
I(0): Mean Log Deviation	0.043	0.068	0.111	0.063	0.108	0.171	0.198	0.032	0.230	0.498	0.010	0.508
I(1) Theil entropy	-0.021	0.097	0.076	-0.042	0.157	0.116	-0.061	0.172	0.111	-0.182	0.434	0.252
CV	-0.028	0.181	0.153	-0.029	0.308	0.280	-0.105	0.271	0.165	-0.208	0.681	0.472
1/2CV^2	-0.015	0.085	0.070	-0.017	0.141	0.124	-0.067	0.149	0.083	-0.168	0.387	0.219

USA1997

	Married						Single					
	No Children			With Children			No Children			With Children		
	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total	Taxes	Benefits	Total
Gini	0.029	0.022	0.051	0.038	0.025	0.064	0.026	0.033	0.059	0.023	0.109	0.132
I(0): Mean Log Deviation	0.058	0.052	0.110	0.056	0.057	0.113	0.048	0.081	0.130	0.048	0.291	0.339
I(1) Theil entropy	0.037	0.027	0.064	0.052	0.030	0.082	0.041	0.043	0.083	0.039	0.147	0.185
CV	0.085	0.038	0.123	0.114	0.044	0.158	0.109	0.058	0.166	0.080	0.202	0.282
1/2CV^2	0.067	0.028	0.095	0.093	0.033	0.126	0.093	0.044	0.137	0.071	0.152	0.224

Note:
Column 'Taxes' refers to the reduction in earnings inequality as a result of taxes.
Column 'Benefits' refers to the reduction in net earnings inequality as a result of benefits.

Table 3.18 Decomposition of disposable income for single women by income source by country (CV).

FRANCE 1994*	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	0.927	na	0.004	0.106	-0.037	1.000	0.665	na	0.120	0.221	-0.006	1.000
Proportion Contribution to Total Inequality	1.099	na	-0.001	0.003	-0.101	1.000	0.715	na	0.006	0.339	-0.061	1.000
Cov(IS,DPI)	0.886	na	-0.028	0.008	-0.280	1.000	0.738	na	0.020	0.535	-0.234	1.000
CV	0.702	na	6.083	1.704	5.161	0.524	0.624	na	1.177	1.230	17.299	0.428

POLAND 1999	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	0.803	-0.137	0.009	0.318	0.007	1.000	0.682	-0.108	0.055	0.366	0.004	1.000
Proportion Contribution to Total Inequality	0.956	-0.133	-0.006	0.159	0.024	1.000	0.806	-0.066	-0.012	0.261	0.011	1.000
Cov(IS,DPI)	0.866	-0.466	-0.071	0.302	0.165	1.000	0.829	-0.313	-0.075	0.468	0.097	1.000
CV	0.686	1.042	4.836	0.827	10.138	0.499	0.767	1.042	1.595	0.820	14.353	0.538

SWEDEN 1995	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	1.192	-0.410	0.020	0.174	0.024	1.000	0.583	-0.236	0.259	0.367	0.027	1.000
Proportion Contribution to Total Inequality	1.422	-0.338	-0.004	-0.100	0.020	1.000	0.685	-0.330	0.042	0.189	0.414	1.000
Cov(IS,DPI)	0.839	-0.639	-0.018	-0.147	0.122	1.000	0.450	-0.571	0.068	0.210	0.579	1.000
CV	0.583	0.529	4.089	1.606	2.860	0.410	0.701	0.659	0.639	0.660	7.060	0.269

UNITED STATES 1997	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	1.183	-0.205	0.010	0.038	-0.026	1.000	0.916	-0.096	0.076	0.137	-0.031	1.000
Proportion Contribution to Total Inequality	1.370	-0.386	-0.007	-0.006	0.029	1.000	1.163	-0.223	-0.036	0.065	0.032	1.000
Cov(IS,DPI)	0.957	-0.873	-0.147	-0.045	0.100	1.000	0.904	-0.693	-0.266	0.222	0.108	1.000
CV	0.910	1.627	3.536	2.498	8.607	0.753	0.933	2.223	1.202	1.419	6.316	0.664

Note: IS-Income Source, DPI-Disposable Income CV-Coefficient of Variation

*- 'Earnings' implies earnings net of taxes.

Table 3.19 Decomposition of disposable income for married women by income source by country (CV).

FRANCE 1994*	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	0.899	na	0.005	0.119	-0.023	1.000	0.861	na	0.076	0.074	-0.012	1.000
Proportion Contribution to Total Inequality	0.950	na	-0.004	0.081	-0.027	1.000	1.037	na	-0.023	-0.008	-0.006	1.000
Corr(IS,DPI)	0.879	na	-0.089	0.179	-0.108	1.000	0.924	na	-0.181	-0.031	0.022	1.000
CV	0.637	na	4.541	2.000	5.681	0.530	0.676	na	0.862	1.785	12.792	0.518

POLAND 1999	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	0.923	-0.118	0.003	0.187	0.004	1.000	0.922	-0.108	0.031	0.149	0.006	1.000
Proportion Contribution to Total Inequality	1.003	-0.005	0.000	0.001	0.001	1.000	1.012	-0.037	-0.009	0.029	0.005	1.000
Corr(IS,DPI)	0.991	-0.072	-0.021	0.007	0.031	1.000	0.951	-0.218	-0.128	0.109	0.076	1.000
CV	2.414	1.184	5.091	1.348	13.380	2.203	0.915	1.254	1.789	1.417	9.485	0.793

SWEDEN 1995	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	1.288	-0.456	0.006	0.137	0.024	1.000	1.073	-0.407	0.167	0.136	0.030	1.000
Proportion Contribution to Total Inequality	1.593	-0.538	-0.005	-0.127	0.078	1.000	1.730	-0.720	-0.046	-0.087	0.122	1.000
Cov(IS,DPI)	0.919	-0.814	-0.069	-0.258	0.425	1.000	0.858	-0.855	-0.100	-0.141	0.329	1.000
CV	0.534	0.576	4.924	1.425	3.013	0.396	0.582	0.641	0.843	1.399	3.773	0.310

UNITED STATES 1997	No Children						With Children					
Income Source	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI	Earnings	Taxes	Family Benefits	Other Benefits	Other Income	DPI
Factor Shares in DPI	1.218	-0.239	0.002	0.031	-0.013	1.000	1.195	-0.203	0.012	0.028	-0.031	1.000
Proportion Contribution to Total Inequality	1.332	-0.392	-0.002	0.001	0.061	1.000	1.348	-0.382	-0.010	-0.001	0.044	1.000
Cov(IS,DPI)	0.947	-0.851	-0.095	0.005	0.178	1.000	0.958	-0.813	-0.219	-0.008	0.155	1.000
CV	0.833	1.390	6.031	3.222	19.699	0.721	0.875	1.716	2.701	2.859	6.702	0.743

Note: IS-Income Source, DPI-Disposable Income CV-Coefficient of Variation

*- 'Earnings' implies earnings net of taxes.

Figure 3-1.1 Income distribution for females- France 1994.

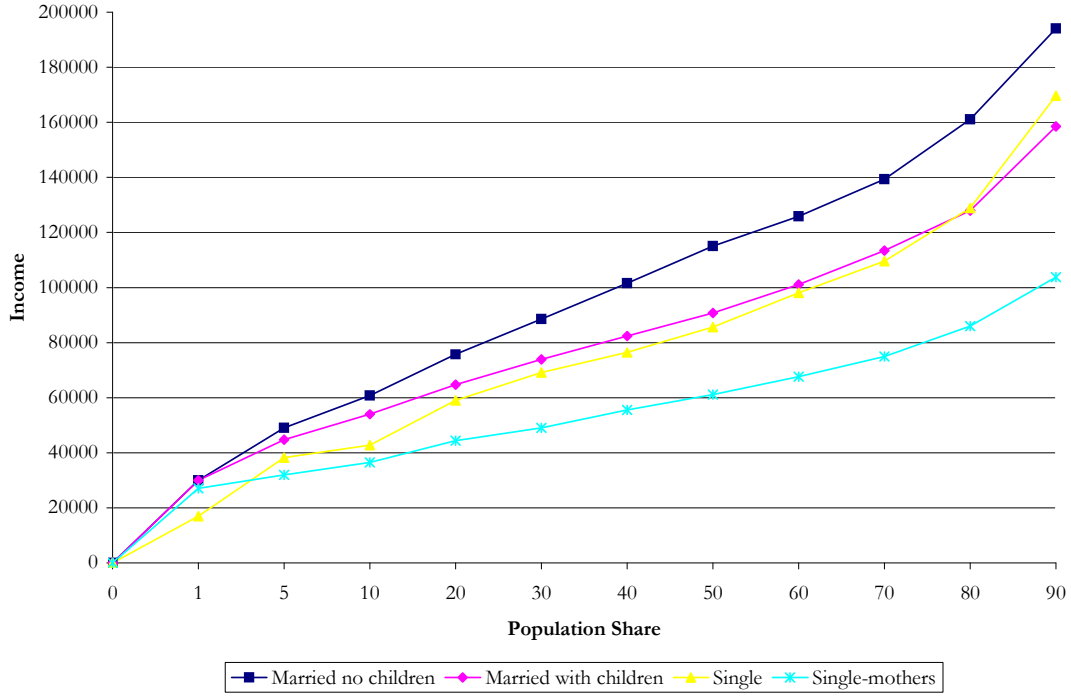


Figure 3-1.2 Income distribution for females- Poland 1999.

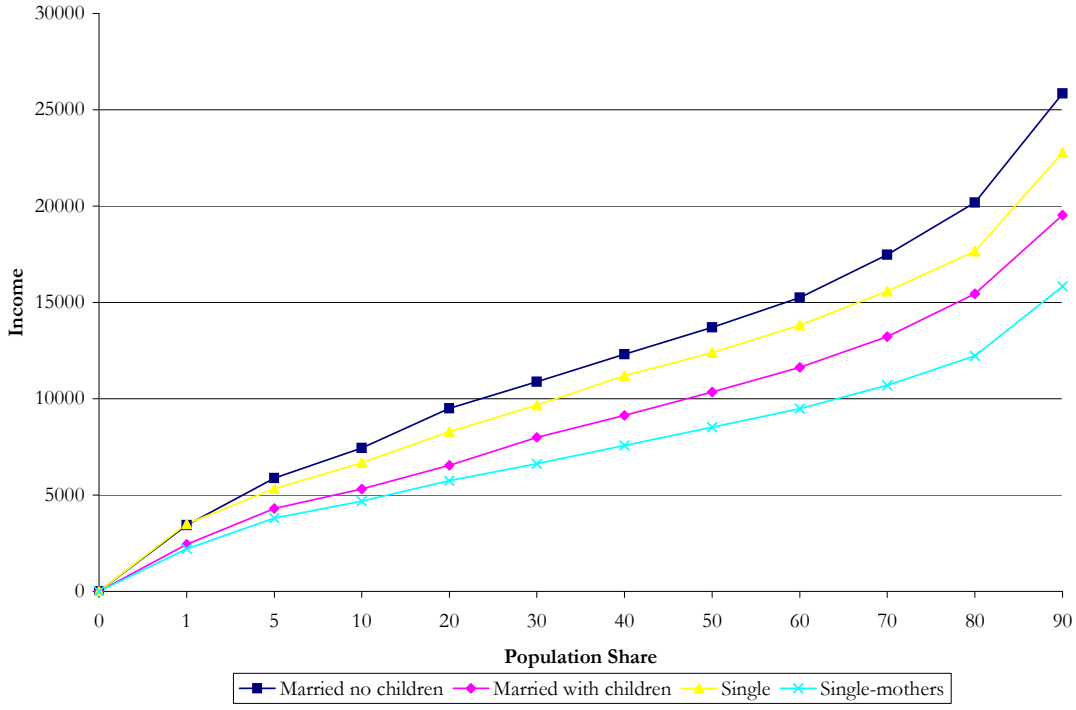


Figure 3-1.3 Income distribution for females-Sweden 1995.

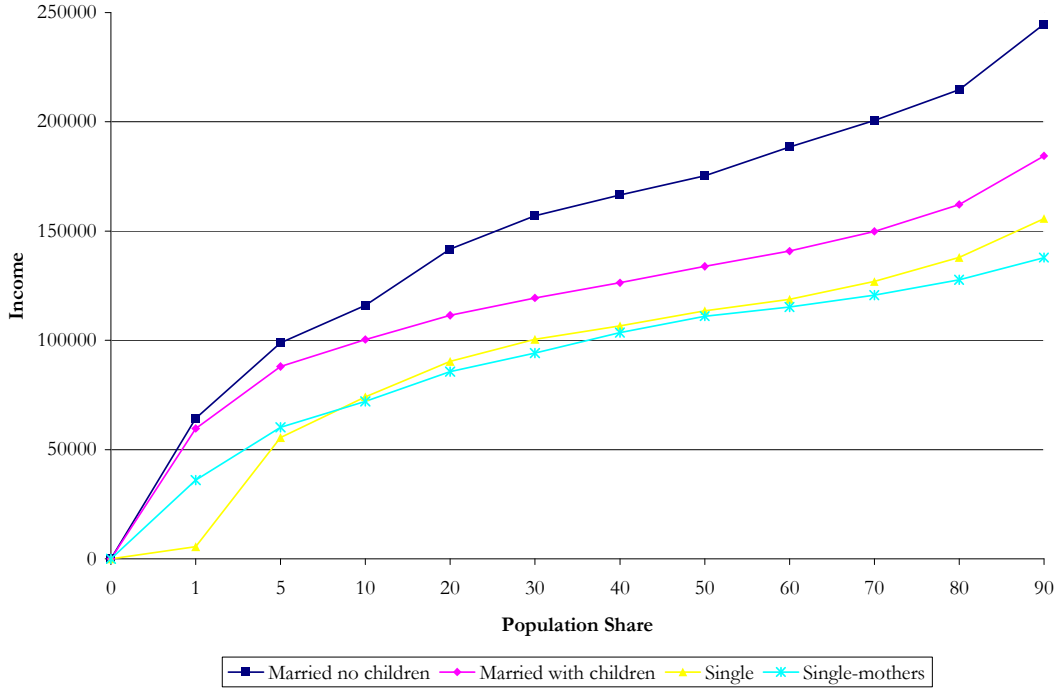


Figure 3-1.4 Income distribution for females-USA 1997.

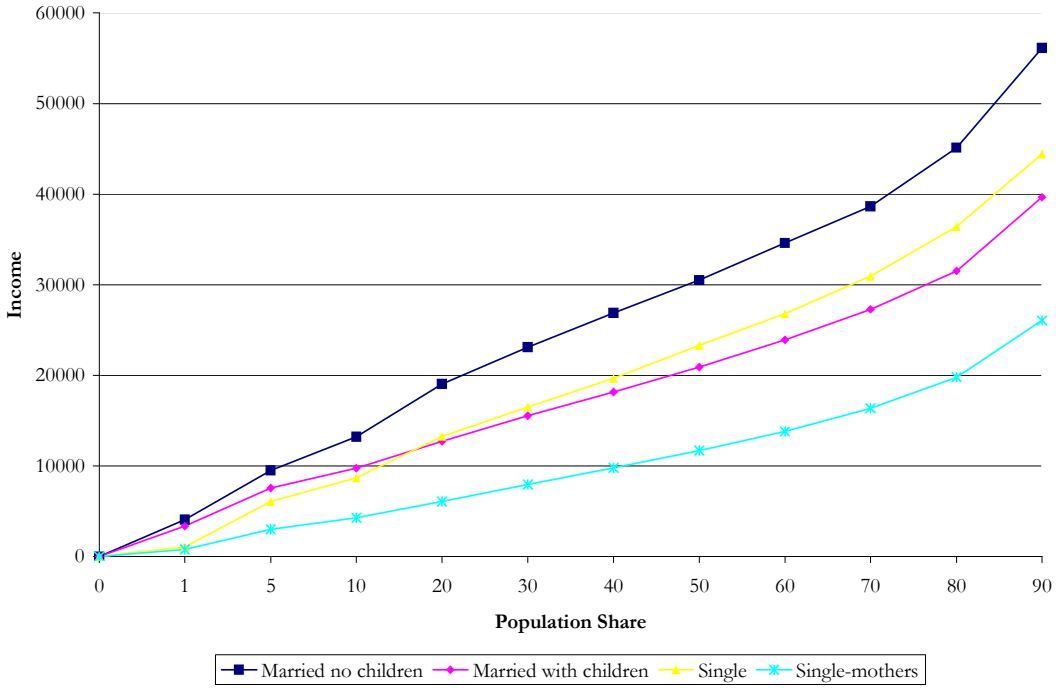


Figure 3-2.1 Income distribution for females (full-time, full-year workers)- France 1994.

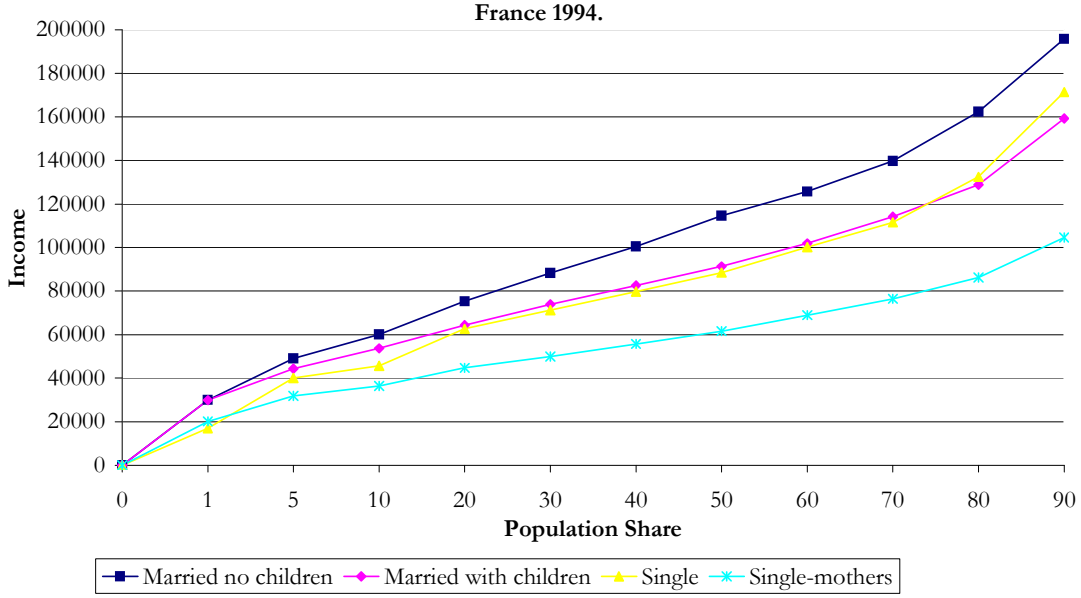


Figure 3-2.2 Income distribution for females (full-time, full-year workers)- Poland 1999.

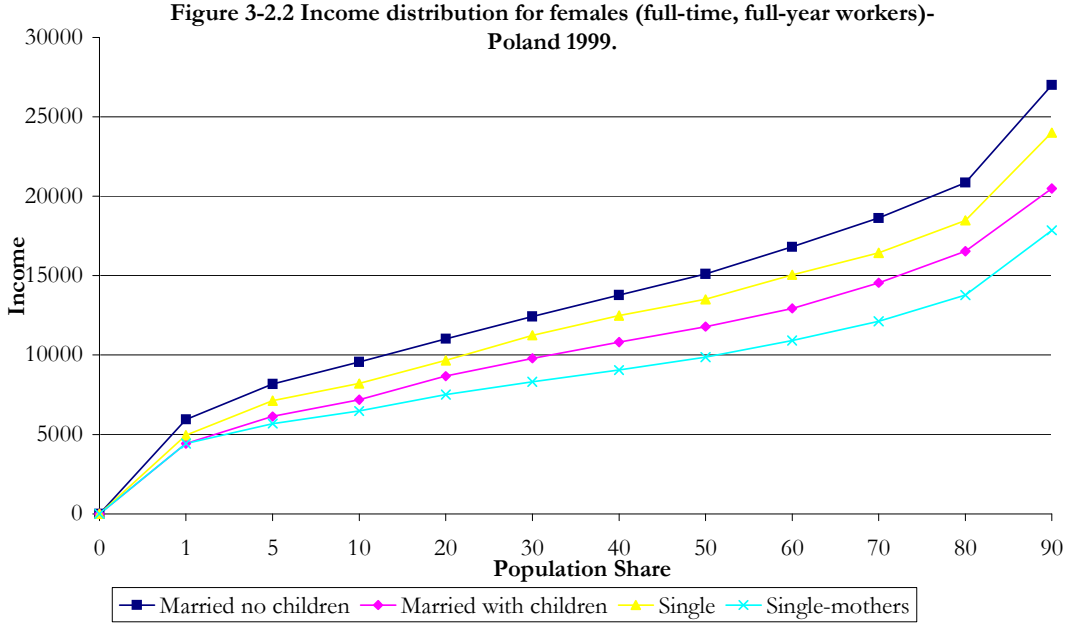


Figure 3-2.3 Income distribution for females (full-time, full-year workers)- Sweden 1995.

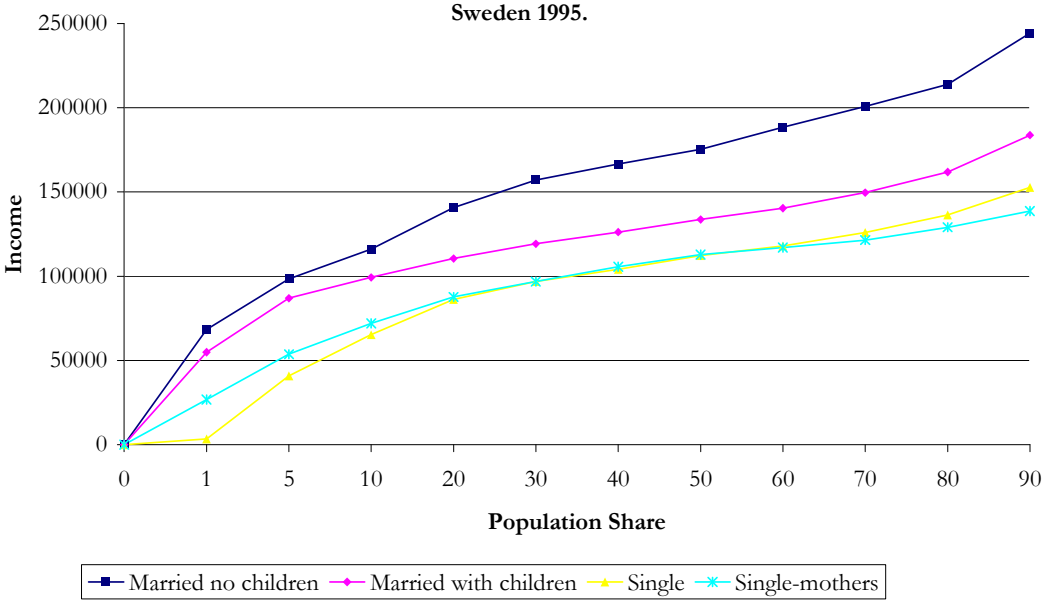


Figure 3-2.4 Income distribution for females (full-time, full-year workers)- United States 1997.

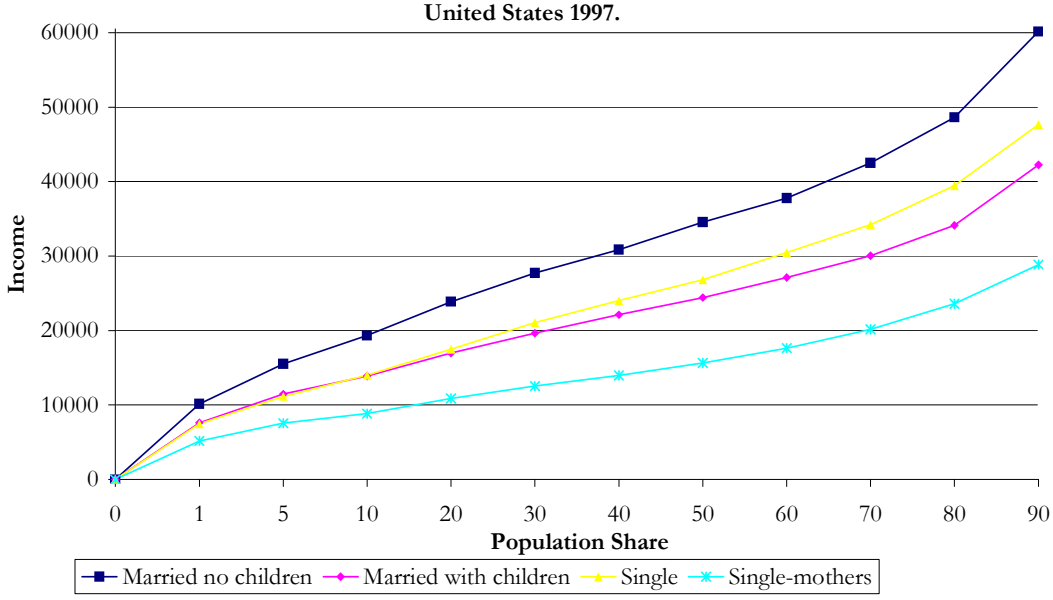


Figure 3-3.1 Family gap in income across the distribution-France.

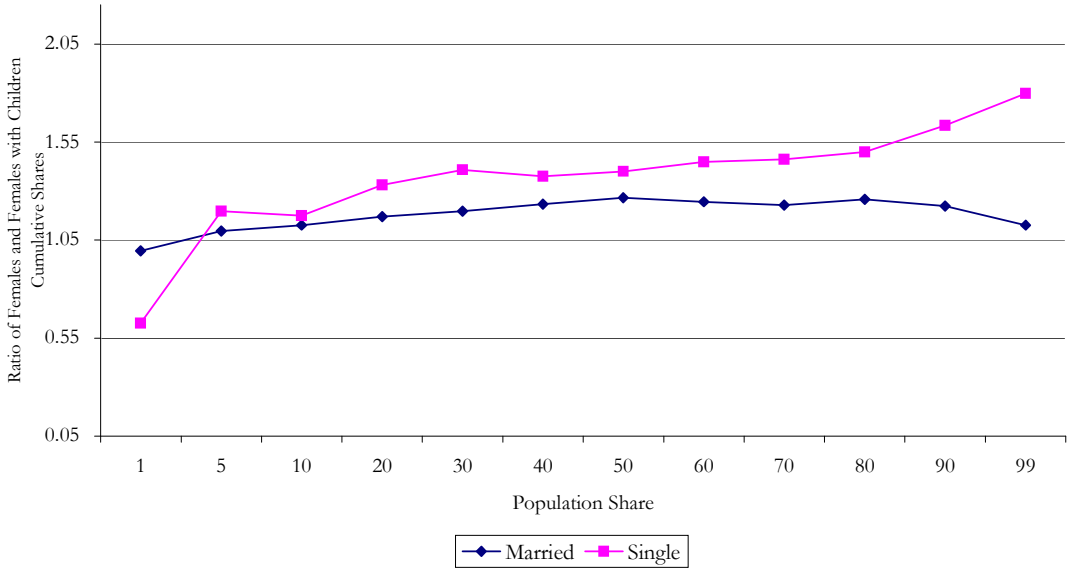


Figure 3-3.2 Family gap in income across the distribution-Poland.

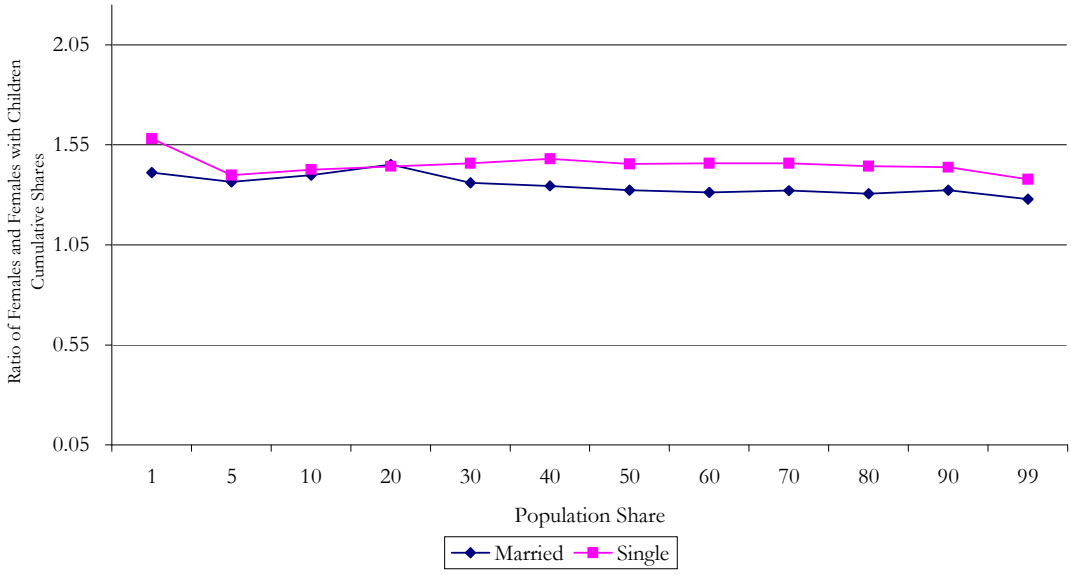


Figure 3-3.3 Family gap in income across the distribution-Sweden.

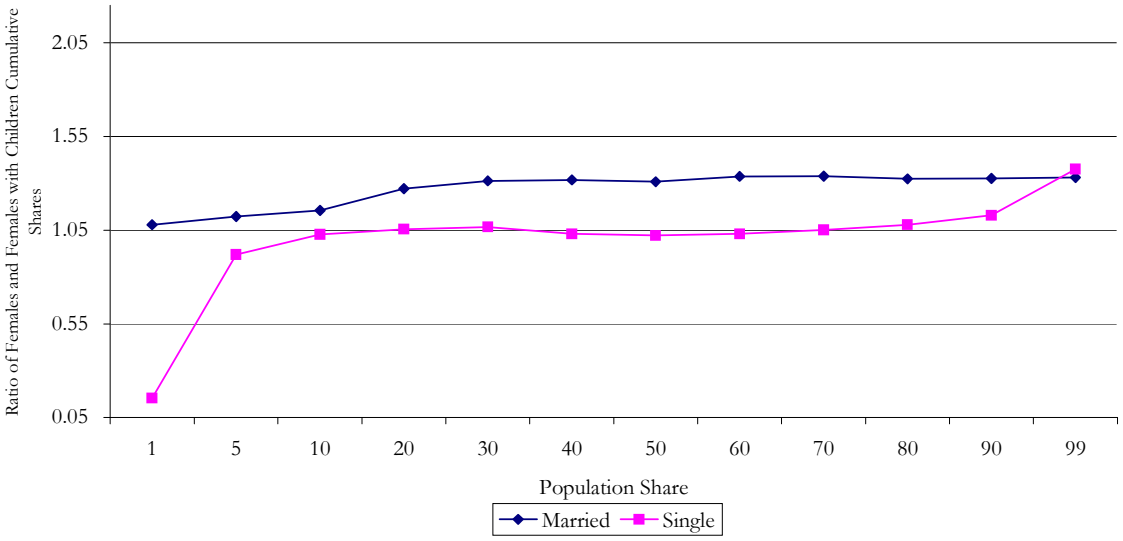


Figure 3-3.4 Family gap in income across the distribution-United States.

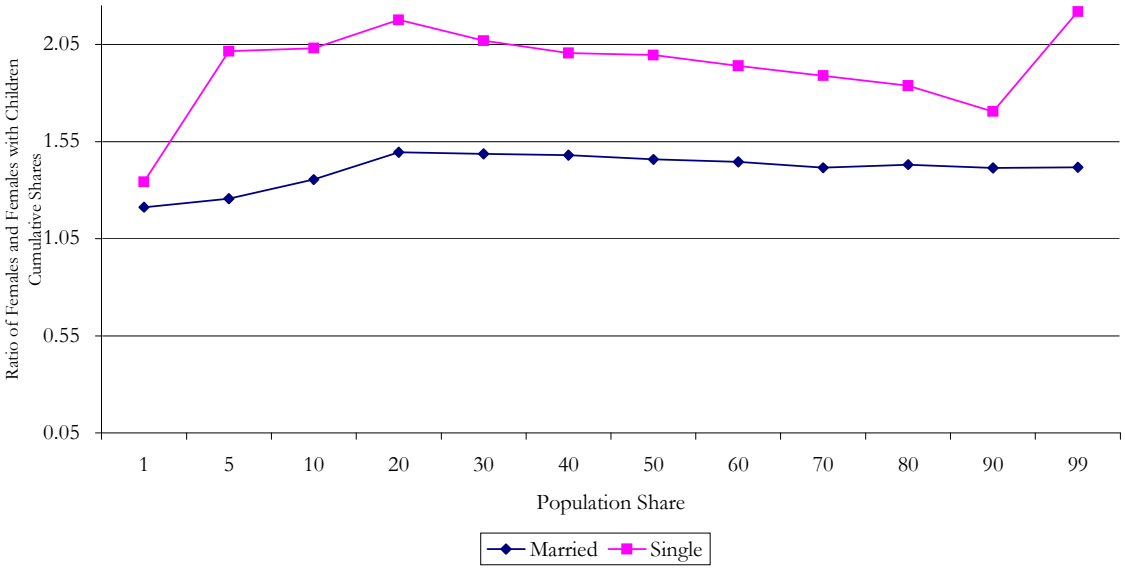


Figure 3-4.1 Family gap in income across the distribution for single females.

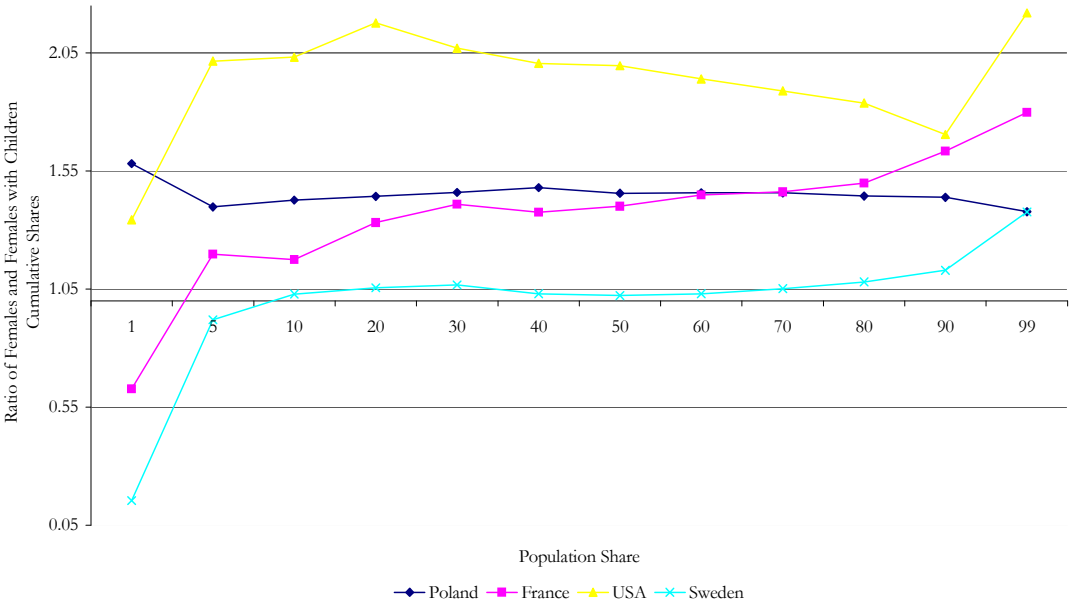


Figure 3-4.2 Family gap in income across the distribution for married females.

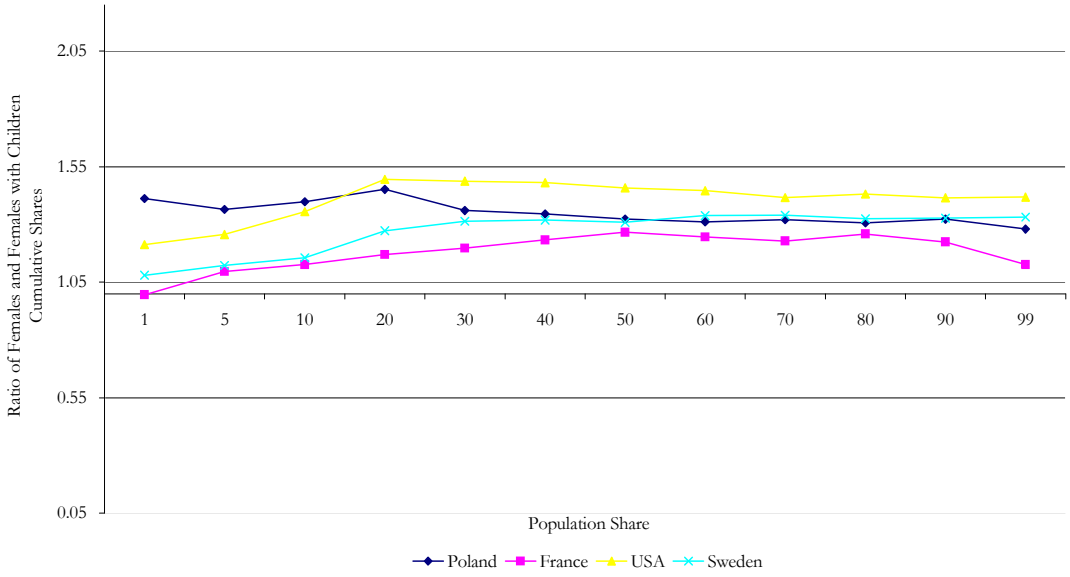


Figure 3-5.1 Family gap in income across the distribution for single females (full-time, full-year workers).

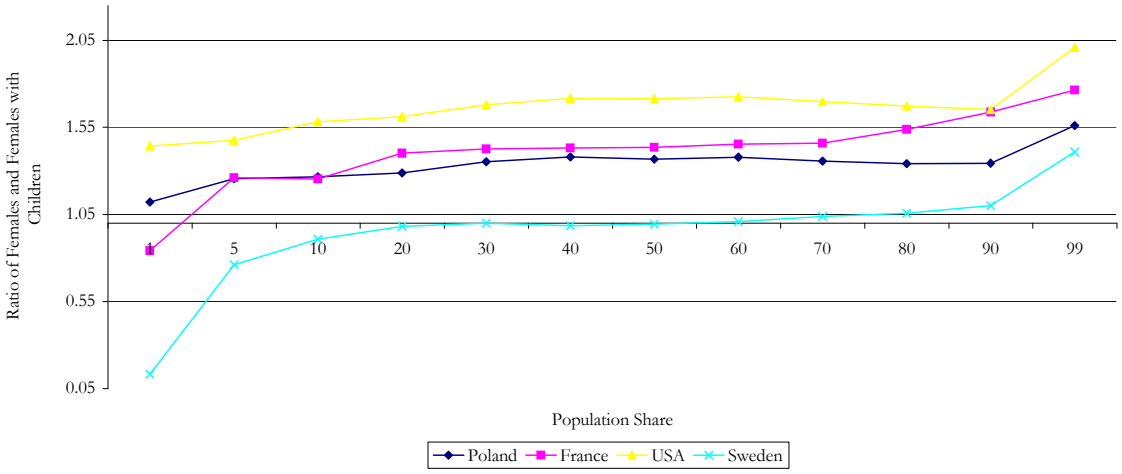
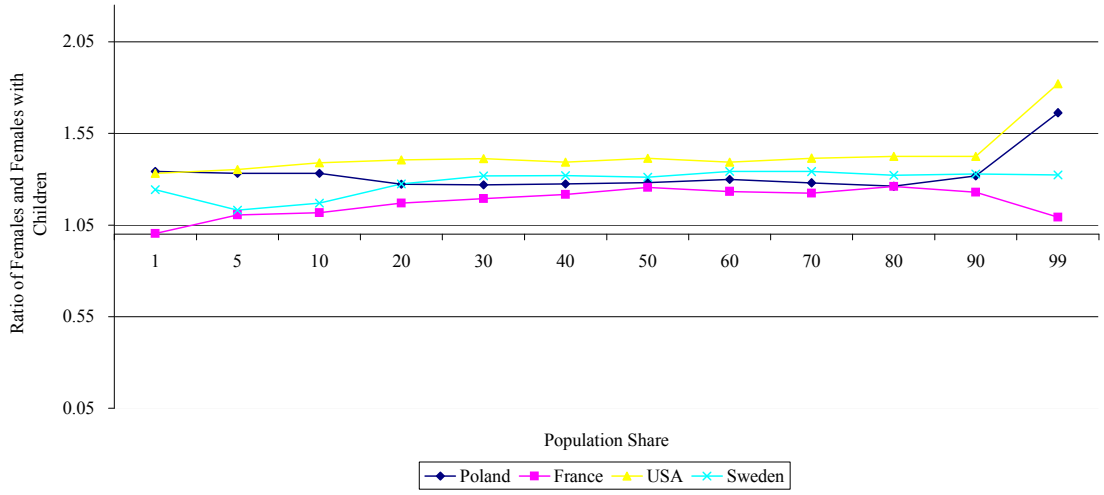


Figure 3-5.2 Family gap in income across the distribution for married females (full-time, full-year workers).



APPENDIX

A.3.1 Measure of Vertical Inequality

One type of measures used in inequality analysis are the relative measures. Besides satisfying the Pigou-Dalton condition (transfer from poor to rich should increase the inequality measure) these measures are invariant to permutations (symmetry), population replication and are mean independent (do not change due to scalar multiplication). The coefficient of variation, the Gini coefficient and the Theil measure are among some of the measures that belong to this family.

These measures differ in their relative sensitivity in income transfers. Let's assume we have a population $i=1,\ldots n,$ with income y_i, weight w_i, and mean μ. The coefficient of variation (*CV*) is defined as the ratio of the standard deviation relative to the mean and it attaches equal weights to transfers of income at different income levels. The Gini coefficient is defined as the ratio between the area between the line of uniformity and the Lorenz curve to the area under the line of uniformity or,

$$G = \frac{1}{2n^2\mu}\sum_{i=1}^{n}\sum_{j=1}^{n}\left|y_i - y_j\right| = 1 - \frac{1}{n^2\mu}\sum_{i=1}^{n}\sum_{j=1}^{n}\min\left(y_i - y_j\right) =$$

$$= 1 + \frac{1}{n} - \frac{2}{n^2\mu}\left[y_1 + y_2 + ... + ny_n\right] = \qquad \text{where } y_1 \geq y_2 \geq \ldots \geq y_n \qquad (1)$$

$$= 1 + \frac{1}{n} - \frac{2}{n^2\mu}\sum_{i=1}^{n}\left[n - i + 1\right]y_i \qquad (2)$$

Its' sensitivity depends not on the size of income levels, but on the number of people between the rankings and because it is based on a rank-order system it violates the

'independence of irrelevant alternatives.'[21] The Gini coefficient is most sensitive to changes about the mode. It can also be looked at as the expected difference, in a relative sense, between two incomes drawn at random from the income distribution.

The Theil measure belongs to the Generalized Entropy class of measures. This class is defined by:

$$GE(a) = \frac{1}{a(1-a)}\left[\left[\sum_{i=1}^{n} f_i \left(y_i / \mu \right)^a \right] - 1\right], \text{ for } a \neq 0, a \neq 1,$$

where $f_1 = w_i / N$ and $N = \sum_{i=1}^{n} w_i$. For data that are unweighted, $w_i = 1$ and $N = n$

GE(1) is the Theil index and GE(0) the mean log deviation:

$$GE(1) = \sum_{i=1}^{n} f_i \left(y_i / \mu \right) \log\left(y_i / \mu \right)$$

$$GE(0) = \sum_{i=1}^{n} f_i \log\left(\mu / y_i \right)$$

GE(2) is half of the squared coefficient of variation. This family of measures differs in their sensitivity to transfers at different parts of the distribution with respect to *a*. For example, as *a* becomes more positive, *GE(a)* becomes more sensitive to income differences at the top of the distribution, and the more negative *a* is, the measure is more sensitive to differences at the bottom of the distribution. As it was mentioned before, *GE(2)* is said to exhibit transfer neutrality, because a given transfer between two persons at equal fixed income distance in the

[21] For an example and more on this see Sen (1997)

distribution will have the same effect, whether it occurred at the top or bottom of the distribution.

The use of Lorenz curves and concentration curves allows to determine whether benefits have an equalizing effect on the income distribution. The concentration curve developed by Mahalanobis (1960) and Kakwani (1977), indicate the cumulative share of benefit going to different income groups. Unlike the Lorenz curve where people are ranked according to the amount of benefit they receive, in the concentration curve they are ranked according to their disposable income. If everyone receives the same amount we would have a straight line with a 45-degree angle. If the curve is above the line then the lower income groups receive a greater share of social benefits. If the concentration curve will lie inside the Lorenz curve for disposable income (benefit rises less steeply) this would imply that the benefit contributes to reducing the overall inequality.

A.3.2 Recent Changes in Female Labor Market Activity

During the 1980s-1990s many changes took place in the female labor market. During this time more women entered the work force due to financial pressures, increased return-rising wages and changing social norms. At the same time fertility and marriage rates declined, and women continued postponing childbearing.

A.3.2.1 Labor Force Participation of Women in OECD countries.

The labor force participation[22] of females during the last 20 years increased in many countries. Females labor market attachment increased for all age groups including for the 25-54 age group-the most productive age group. By identifying three types of rates of

[22] The number of females employed and unemployed is considered to be the number participating in the labor force.

change we can distinguish a high rate of increase in women labor force participation (15 percentage points or more), a stable increase (10-15 percentage points) and a low increase (less than 10 percentage points) (See Table A.3.3). An exception is Poland, where labor force attachment decreased for all age groups.

The highest increase in labor force participation occurred in the Netherlands as it increased by 28 percentage points to 64.5 percent of working age females. Similarly to other countries this has been attributed mostly to an increase in labor force participation of females aged 25 to 54 (up 35 points). Unlike other countries the Netherlands also exhibited a substantial increase in the labor force attachment of young females, which by 2000 was one of the highest in this group. In other countries young females labor force participation decreased or remained at a similar level throughout the 1980 and 1990 most likely in favor of pursing higher education.

A stable increase in female participation rates took place in Canada, the United States, Belgium and Germany. With the exception of the United States (only 12 points) participation rates increased by 20 percentage points among females aged 25 to 54. This does not indicate American women in this age range have been worse off. It only means that by the year 2000 European and Canadian women had labor force participation rates comparable to those in the US or in other words in the past 20 years other countries have been able to catch with US rates. In European and North American countries a disparity exists among younger females. In the former the participation rates are over 20 percentage points lower than in the latter.

A low rate of increase in participation rates is observed in Japan, France, Italy and the United Kingdom. This for the most part is attributed to a lower increase in labor force participation of females 25-54 and a low increase or even decrease in the participation of

younger females. The labor force attachment of females' aged 25-54 is the highest in Canada and France (78.6 and 78.4) and the lowest in Japan and Italy (66.5 and 53.9).

In all countries, except France, females aged 55-64 increased their labor market attachment, but by 2000 the rates varied widely by country from 16% in Belgium to 52% in the United States. These differences may in part be explained by the differences in the retirement age across countries.

A.3.2.2 Employment Rates

Women's employment rates more so than men's vary with family status. Country-specific policies may have an encouraging or discouraging effect on females work patterns. Over the past two decades though, the employment rates of families with children under 20 have increased in all countries (see Table A.3.4). In the early eighties, the United States and France exhibited the highest percentage of working females in different family types, but since then many countries have caught up to similar levels. The increase among married mothers has been particularly high (over 20%) in Belgium, Germany, the Netherlands and the United Kingdom.

Since the early eighties lone-parent families have become more prevalent in all countries, and apart from Canada are more common with older children present in the household. This suggests, couples are more likely to stay together when younger children are present in the household. The most dramatic increase of lone-parent households has been in the United Kingdom; they have been steadily increasing in Western Europe and lingering at the same rate of five percent in Southern Europe. Single-parent families in the eighties, a majority of which are still female-headed, had a very high rate of participation in the labor market in France, Italy and Luxembourg. Since then, in nearly all countries, the tendency has been for more single-parents to enter the workforce particularly with older children present in the

household with the United States at the top of the list. Interestingly and perhaps motivated by family policies this tendency reversed in France.

The disparity between the employment rate of all mothers and the employment rate of women without children in most countries has decreased over time and is the lowest in France and Italy. The rate of convergence is shown in Figure A.3.4 with the employment rate of mothers with children under 20 years old exceeding the employment rate of women without children only in Greece and Italy. This may be explained in part by the female retirement age in those countries. The greatest convergence took place in the Netherlands and the United States, a big jump also occurred in the early nineties in Germany as a result of unification. This is not as much the case when we compare households with small children only. Overall, the statistics show that in the late nineties childbearing hinders labor market participation to a lesser extent then in the past 20 years, regardless of the extent of family policy in each country. The 'family gap' at least in employment rates, is diminishing for females with children under 20. The 'family gap' in employment for small children (see Table A.3.5) is much larger and in some countries, such as France, it has been increasing.

Table A.3.4 Employment rates in families (in percentages)(1).

		Employment Rate in Couple Families			Employment Rate of			
	Year	Parents	Mothers	Proportion of parent families who are lone-parents	Lone-Parents	All women without children	All Mothers	
						(1)	(2)	(2)-(1)
United States(2)	1999	80.88	69.60	24.25	75.67	75.21	70.53	-4.7
	1989	78.50	69.94	21.65	65.08	71.35	62.20	-9.1
	1984	73.65	56.46	20.27	63.56	66.46	51.22	-15.2
Canada(3)	1999	78.09	69.95	21.93 (4)	68.30	.	.	
	1989	76.13	64.28	16.96	64.61	.	.	
	1983	69.40	53.46	15.40	58.95	.	.	
Japan(5)	1999	.	48.12	.	.	.	.	
	1994	.	49.78	.	.	.	.	
	1989	.	47.42	.	.	.	.	
Europe								
Austria	1999	78.49	67.09	11.50	81.01	61.99	68.47	6.5
Belgium	1999	67.05	69.46	11.76	56.85	58.32	67.79	9.5
	1989	72.08	53.18	8.31	52.48	43.79	52.75	9.0
	1983	66.79	44.32	5.93	57.12	37.49	44.64	7.2
Finland	1998	.	.	14.45	72.49	.	.	
	1995	.	.	15.77	61.49	.	.	
France	1999	76.12	64.28	13.18	67.56	64.66	64.49	-0.2
	1989	73.74	57.81	10.17	72.81	60.63	58.91	-1.7
	1983	72.93	54.84	9.11	77.80	59.93	56.31	-3.6

(1) Data is restricted to single-family households with no one over 60 present. A child is defined as being under 20 unless otherwise stated. In Europe, people with a job, but not at work (for example due to maternity leave) are excluded.

(2) Children are defined as 18 years or younger.

(3) For households with or without children.

(4) For households with children only.

(5) Mothers aged 25-54 and children under 17 are included only.

(6) Includes own and adopted children till 16 as well as non-working children in education till 25.

Source: Calculations based on OECD provided data from Eurostat and national authorities unless otherwise stated.

Table A.3.4(continued) Employment rates in families (in percentages)(1).

		Families			Employment Rate of			
	Year	Parents	Mothers	Proportion of parent families who are lone-parents	Lone-Parents	All women without children	All Mothers	
						(1)	(2)	(2)-(1)
								0.0
Germany	1999	75.60	62.28	13.58	67.19	67.29	62.59	-4.7
	1989	67.97	43.88	10.26	64.72	60.66	45.27	-15.4
	1984	66.88	42.51	9.80	63.61	57.95	43.80	-14.2
Greece	1999	69.43	49.23	5.38	67.03	43.17	49.85	6.7
	1989	66.93	43.13	5.12	61.69	40.36	43.60	3.2
	1983	62.83	35.14	5.11	65.37	38.62	35.63	-3.0
								0.0
Ireland	1997	61.07	42.39	10.63	43.22	58.33	42.25	-16.1
	1989	51.30	24.52	7.24	30.29	50.58	24.57	-26.0
	1983	50.75	18.97	4.29	44.21	49.30	19.52	-29.8
Italy	1999	66.15	44.23	6.01	69.92	43.07	45.32	2.3
	1989	65.40	40.05	4.88	67.96	37.95	40.99	3.0
	1983	64.92	36.28	4.50	72.56	34.63	37.26	2.6
Luxembourg	1999	70.65	49.62	8.85	78.36	59.52	51.60	-7.9
	1989	65.07	36.14	6.95	73.66	43.93	37.96	-6.0
	1983	61.59	30.71	5.24	75.23	40.99	32.05	-8.9
Netherlands	1999	77.61	64.25	11.29	63.95	67.94	63.77	-4.2
	1989	63.70	38.32	9.88	41.58	52.92	37.96	-15.0
	1983	56.29	27.71	7.78	36.27	49.55	27.67	-21.9
Poland (6)	1999	74.84	64.95	10.17	.	.	.	
	1994	73.92	63.87	10.46	.	.	.	
Portugal	1999	80.29	71.24	6.82	83.07	62.03	71.85	9.8
	1989	74.48	59.13	6.57	71.79	49.24	59.64	10.4
	1986	70.28	52.89	5.78	65.77	43.93	53.32	9.4
Spain	1999	63.42	40.52	4.29	67.63	41.44	41.48	0.0
	1989	56.14	27.64	2.97	60.21	30.61	28.36	-2.3
	1986	.	22.61	2.86	56.51	28.41	23.29	-5.1
United Kingdom	1999	78.44	69.96	23.07	51.17	74.34	65.66	-8.7
	1989	73.96	60.59	13.71	46.35	70.84	58.37	-12.5
	1983	66.98	49.97	10.48	49.43	64.91	49.48	-15.4

(1) Data is restricted to single-family households with no one over 60 present. A child is defined as being under 20 unless otherwise stated. In Europe, people with a job, but not at work (for example due to maternity leave) are excluded.
(2) Children are defined as 18 years or younger.
(3) For households with or without children.
(4) For households with children only.
(5) Mothers aged 25-54 and children under 17 are included only.
(6) Includes own and adopted children till 16 as well as non-working children in education till 25.
Source: Calculations based on OECD provided data from Eurostat and national authorities unless otherwise stated.

Table A.3.5 Employment rates in families with children under 6 (in percentages)(1).

		Employment Rate in Couple Families			Employment Rate of			
	Year	Parents	Mothers	Proportion of parent families who are lone-parents	Lone-Parents	All women without children	All Mothers	
						(1)	(2)	(2)-(1)
United States(2)	1999	77.4	60.6	19.7	67.7	75.2	61.5	-13.7
	1989	74.6	55.7	17.8	47.5	71.4	54.0	-17.4
Canada(3)	1999	78.1	70.0	25.5(4)	68.3	.	.	
	1989	76.1	64.3	17.2(4)	64.6	.	.	
Japan(5)(7)	2000	.	33.3	.	.	.	.	
	1990	.	35.9	.	.	.	.	
Europe								
Austria	1999	78.9	65.7	9.0	76.1	62.0	66.5	4.5
Belgium	1999	68.9	71.8	9.1	49.2	48.9	69.5	20.6
	1989	75.8	57.8	5.9	40.9	43.8	56.7	12.9
Finland	1998	74.2 (7)	57.7 (7)	7.4	64.9	.	58.8 (7)	
	1995	68.4 (7)	53.8 (7)	12.4	32.9	.	53.3(7)	
France	1999	72.9	56.8	8.7	51.6	64.7	56.2	-8.5
	1989	71.9	52.2	7.0	60.8	60.3	52.6	-7.8

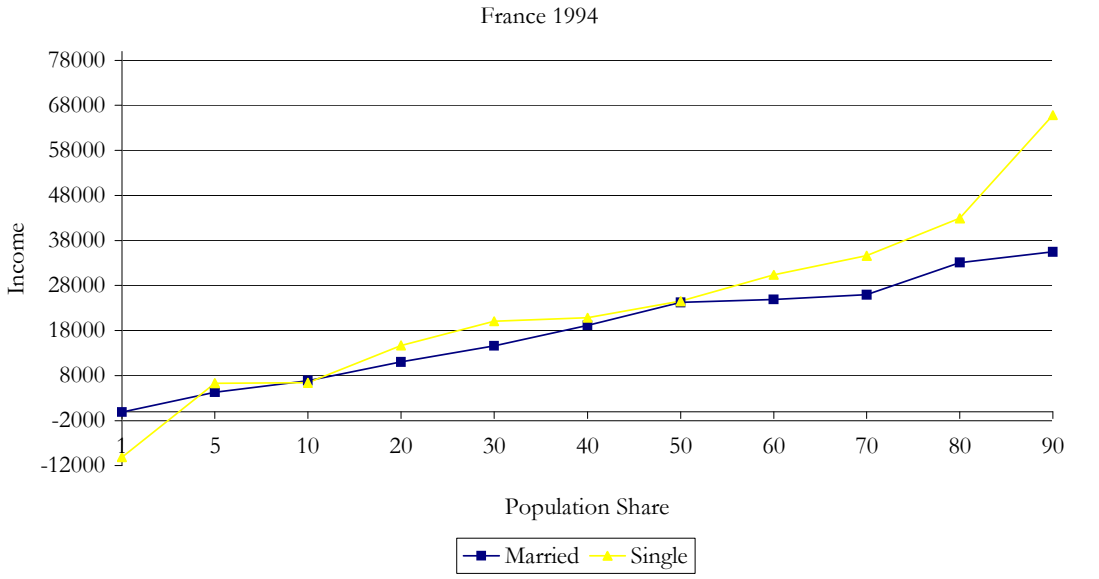
(1) Data is restricted to single-family households with no one over 60 present. A child is defined as being under 20 unless otherwise stated. In Europe, people with a job, but not at work (for example due to maternity leave) are excluded.
(2) Children are defined as 18 years or younger.
(3) For households with or without children.
(4) For households with children under 6 only.
(5) Mothers aged 25-54 and children under 17 are included only.
(6) Includes own and adopted children till 16 as well as non-working children in education till 25.
(7) Unable to reproduce these figures with the data provided, then source is OECD Employment Outlook (2001) Chapter 4.
(8) Mothers aged 25-54.
Source: Calculations based on OECD provided data from Eurostat and national authorities unless otherwise stated.

Table A.3.5 (continued) Employment rates in families with children under 6 (in percentages)(1).

		Employment Rate in Couple Families			Employment Rate of			
	Year	Parents	Mothers	Proportion of parent families who are lone-parents	Lone-Parents	All women without children	All Mothers	
						(1)	(2)	(2)-(1)
Germany	1999	70.9	51.4	10.3	49.7	67.3	51.1	-16.2
	1989	64.5	35.3	7.5	48.8	60.7	35.9	-24.8
Greece	1999	71.3	48.4	2.9	63.2	43.2	48.6	5.5
	1989	68.3	41.4	2.9	66.5	40.4	41.5	1.1
Ireland	1997	64.5	45.5 (7)	10.0(7)	35.2(7)	58.3(7)	44.4(7)	-13.9
	1989	52.4	25.8	5.9	20.6	50.6	25.3	-25.3
Italy	1999	68.0	44.9	3.6	72.3	43.1	45.68	2.6
	1989	67.6	40.7	3.9	65.5	37.9	41.25	3.4
Luxembourg	1999	70.4	46.1	5.7	74.1	59.5	47.39	-12.1
	1989	66.7	35.9	3.9	59.1	43.8	36.56	-7.3
Netherlands	1999	77.9	62.3	6.6	38.7	67.7	60.71	-7.0
	1989	61.8	32.5	6.7	22.7	52.9	31.68	-21.2
Portugal	1999	80.6	70.2	5.1	82.9	62.0	70.56	8.5
	1989	75.1	59.1	4.3	68.1	49.2	59.01	9.8
Poland (6)	1999	68.2(7)	49.5(7)	4.8	33.3(7)	63.0(7)	47.6(7)	-15.4
	1994	67.5(7)	47.5(7)	5.8	37.2(7)	58.1(7)	49.9(7)	-8.2
Sweden (7)(8)	2000	.	.	.	64.6	.	77.8	
	1990	.	.	.	85.9	.	86.6	
Spain	1999	65.9	41.5	2.2	64.9	41.4	41.8	0.4
	1989	58.7	29.5	1.9	62.8	30.6	29.8	-0.8
United Kingdom	1999	75.1	61.3	21.8	36.8	74.3	55.76	-18.6
	1989	66.5	45.3	13.3	27.5	70.6	42.66	-27.9

(1) Data is restricted to single-family households with no one over 60 present. A child is defined as being under 20 unless otherwise stated. In Europe, people with a job, but not at work (for example due to maternity leave) are excluded.
(2) Children are defined as 18 years or younger.
(3) For households with or without children.
(4) For households with children under 6 only.
(5) Mothers aged 25-54 and children under 17 are included only.
(6) Includes own and adopted children till 16 as well as non-working children in education till 25.
(7) Unable to reproduce these figures with the data provided, then source is OECD Employment Outlook (2001) Chapter 4.
(8) Mothers aged 25-54.
Source: Calculations based on OECD provided data from Eurostat and national authorities unless otherwise stated.

Figure A.3-1.1 Absolute difference in Income Distribution for Childless Women and Women with Children.



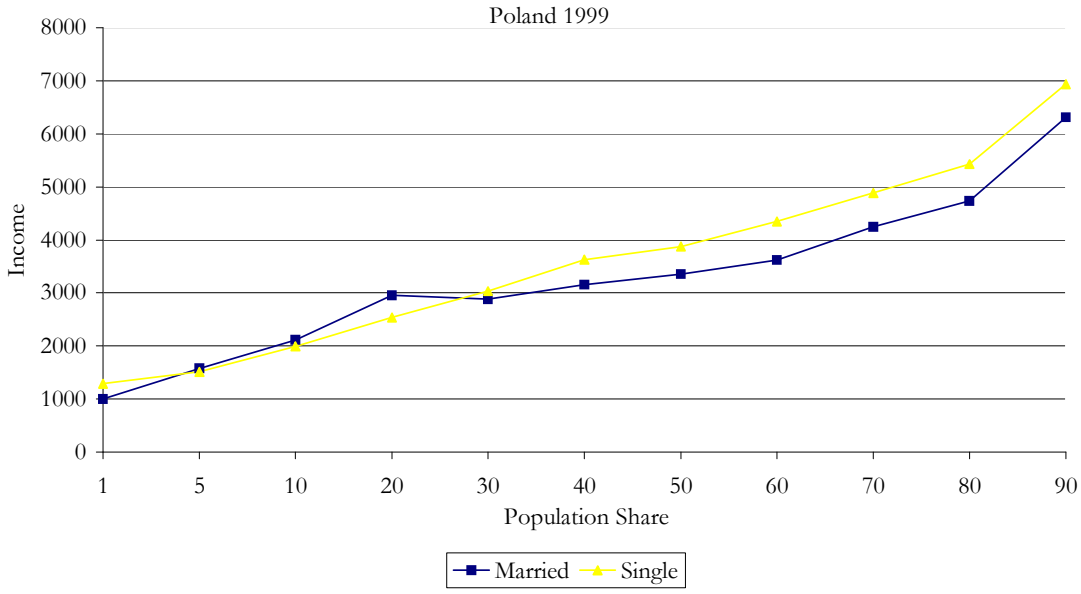
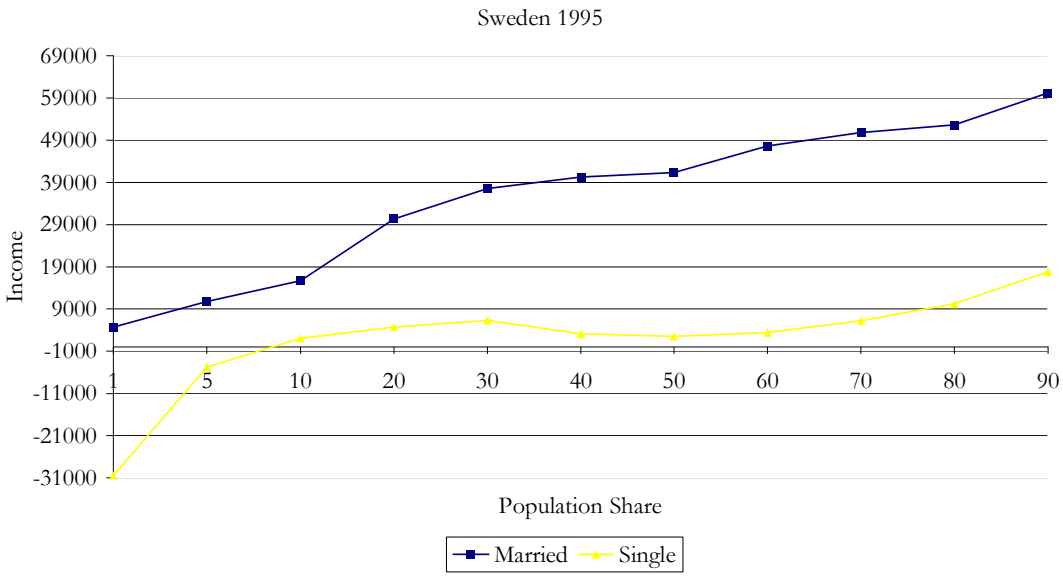


Figure A.3-1.2 Absolute difference in Income Distribution for Childless Women and Women with Children.



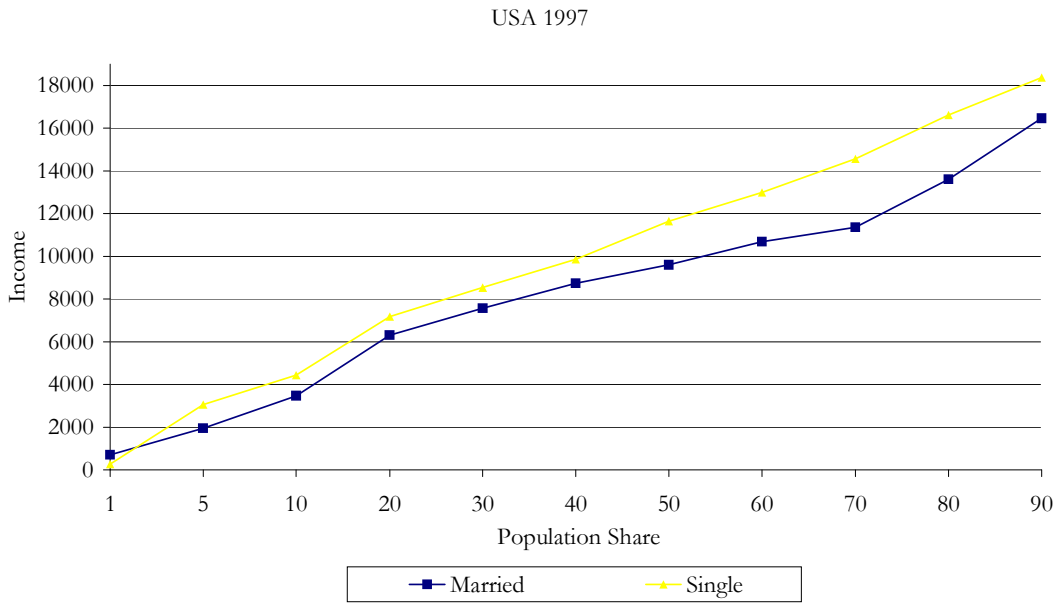
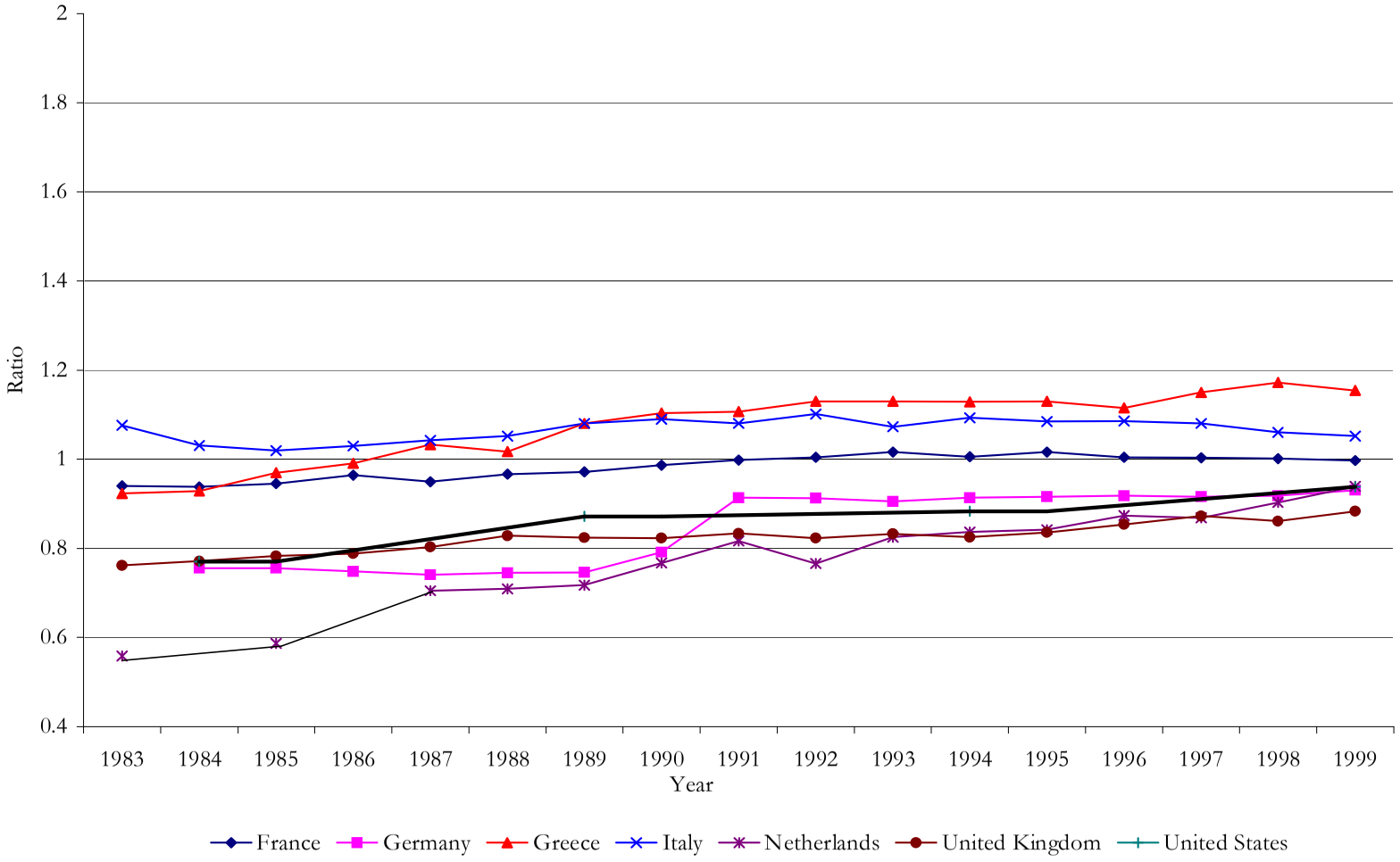
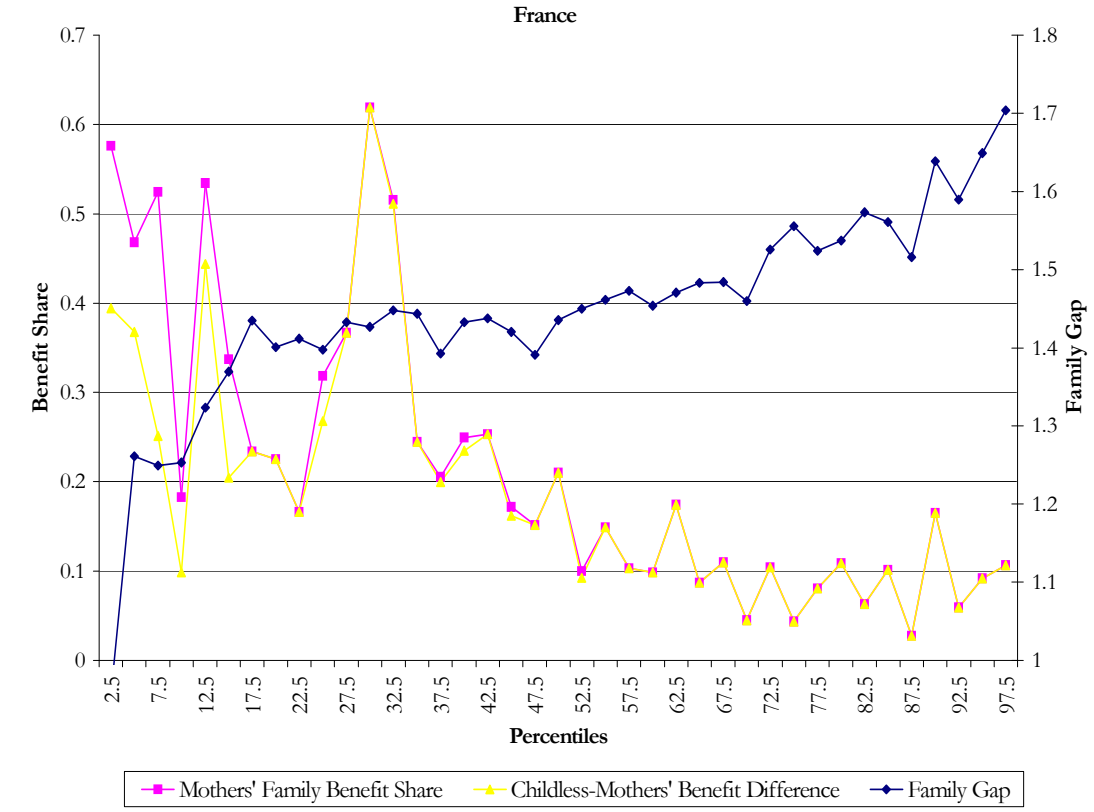


Figure A.3.2 Ratio of Mothers and Women without Children Employment Rates.



Source: OECD provided data from Eurostat and national authorities.

Figure A.3-3.1 Family Gap and Benefit Shares for Single Women by Country.



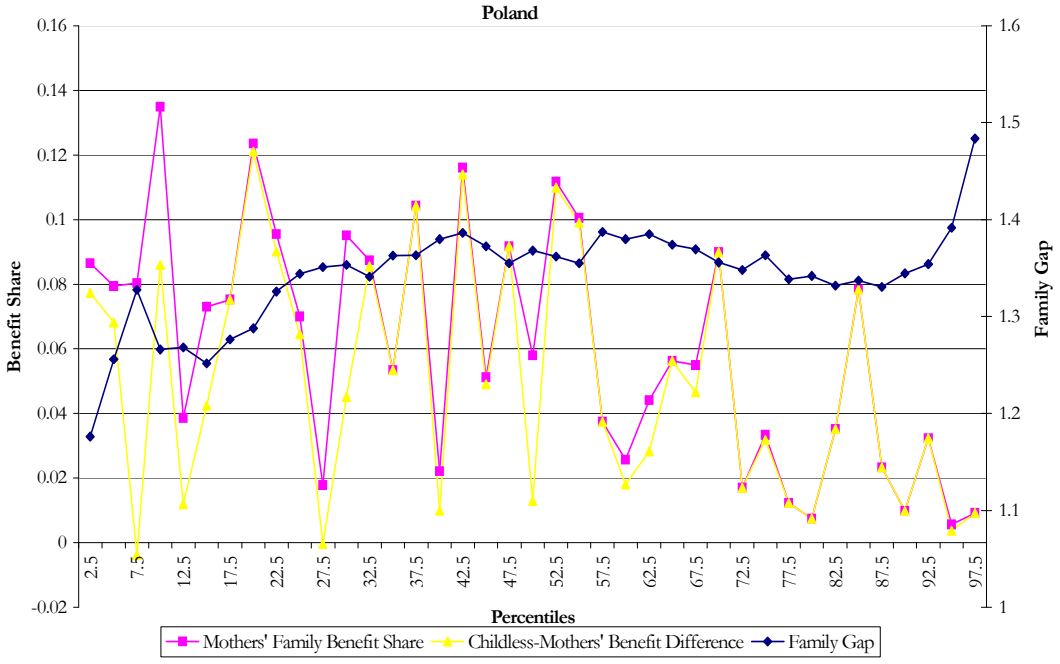
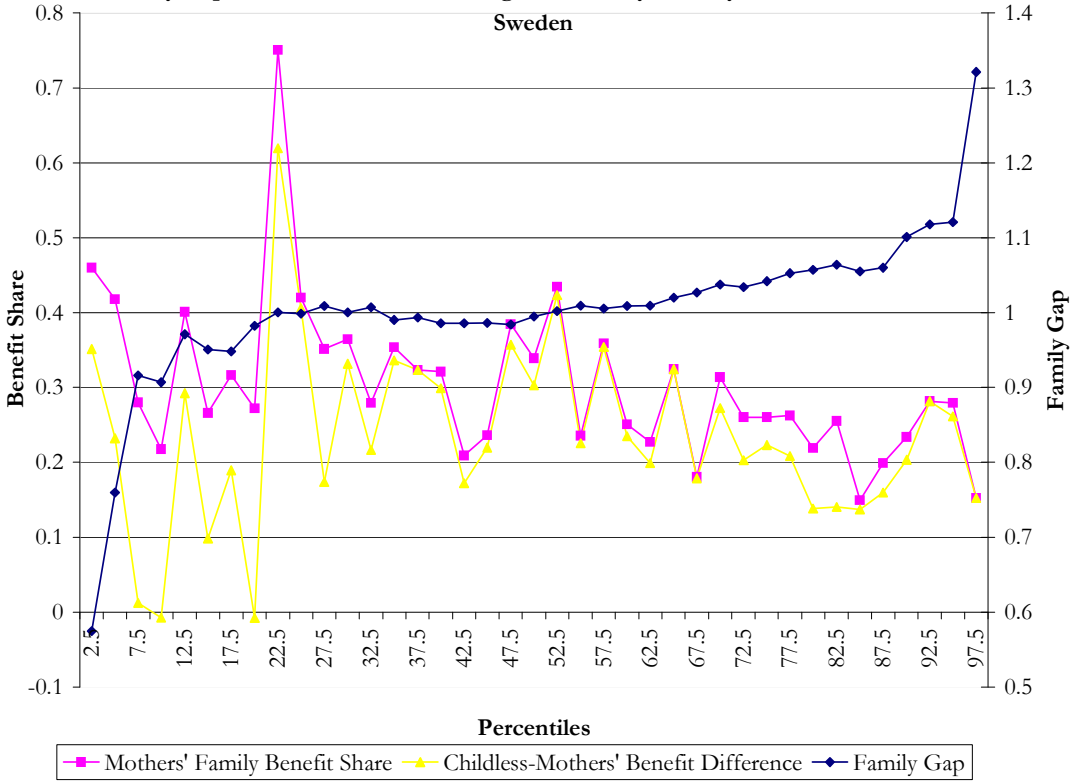


Figure A.3-3.2 Family Gap and Benefit Shares for Single Women by Country.



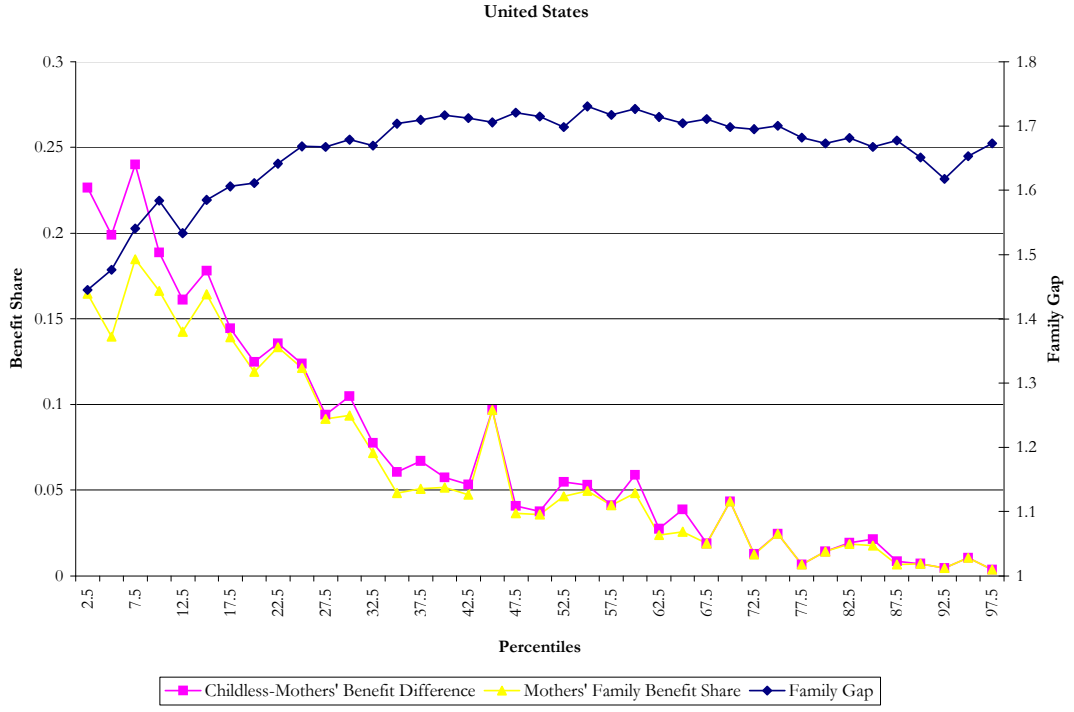


Figure A.3-4.1 Lorenz Curves-France 1994.

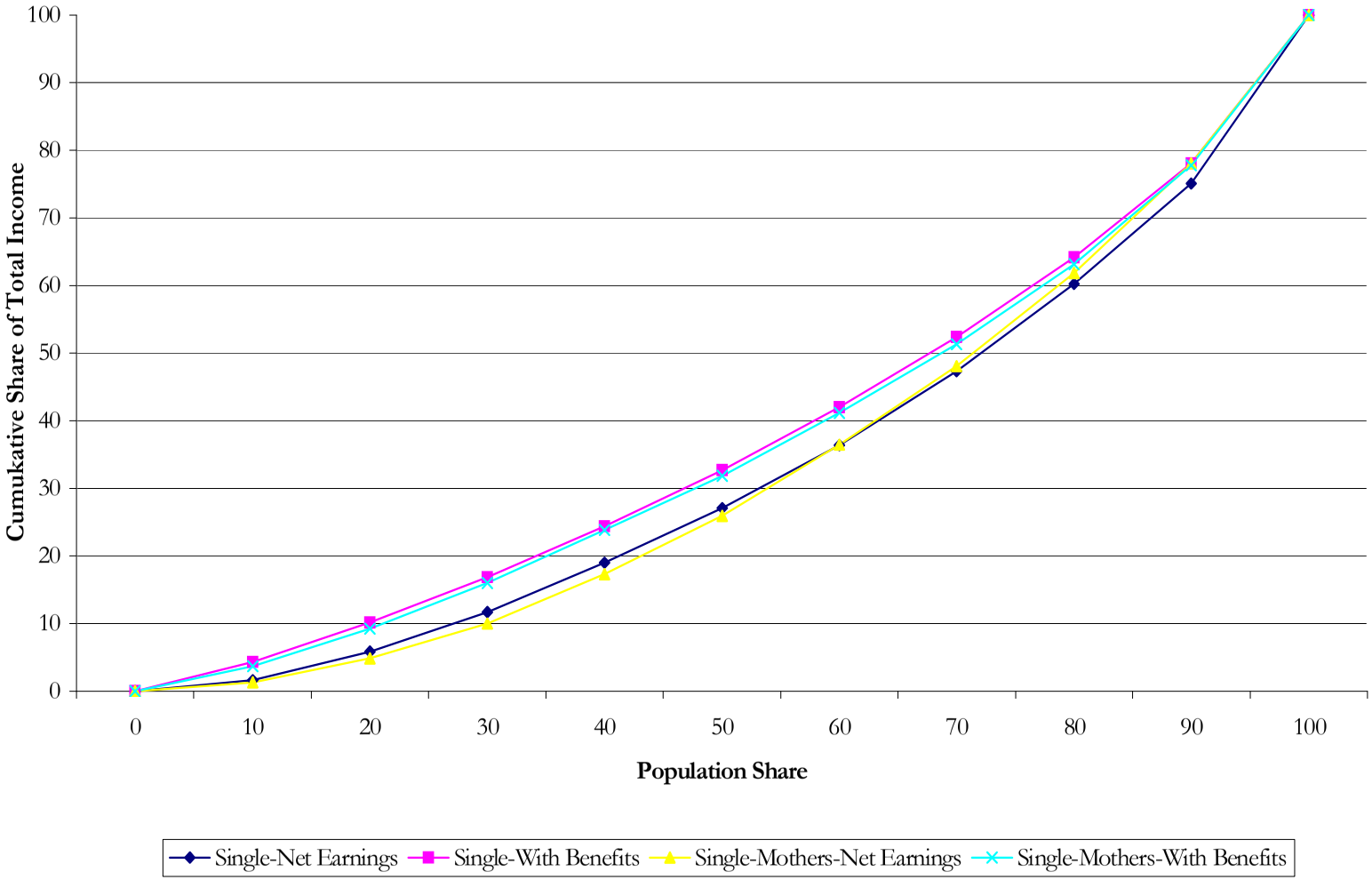


Figure A.3-4.2 Lorenz Curves-Poland 1999.

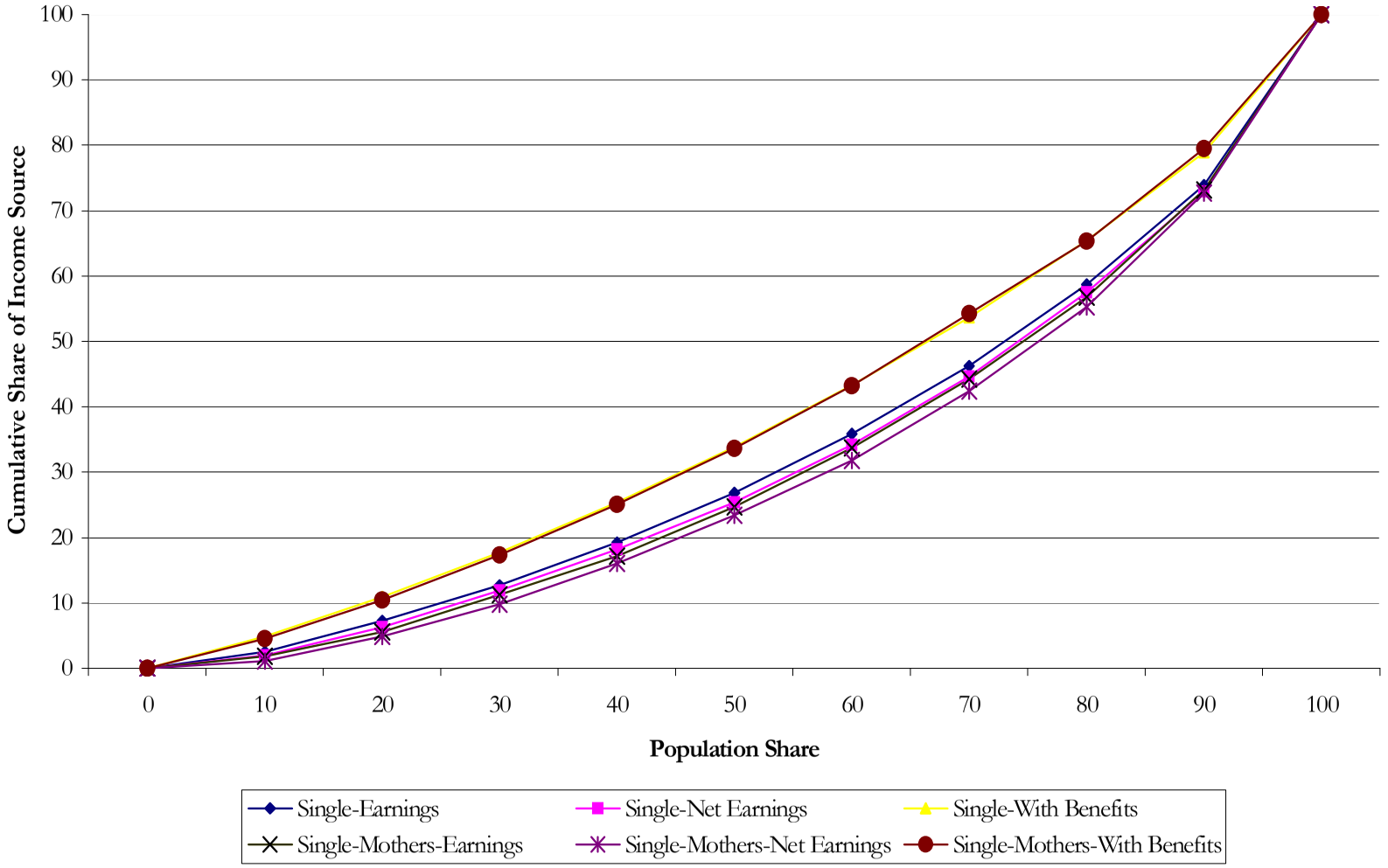


Figure A.3-4.3 Lorenz Curves-Sweden 1995.

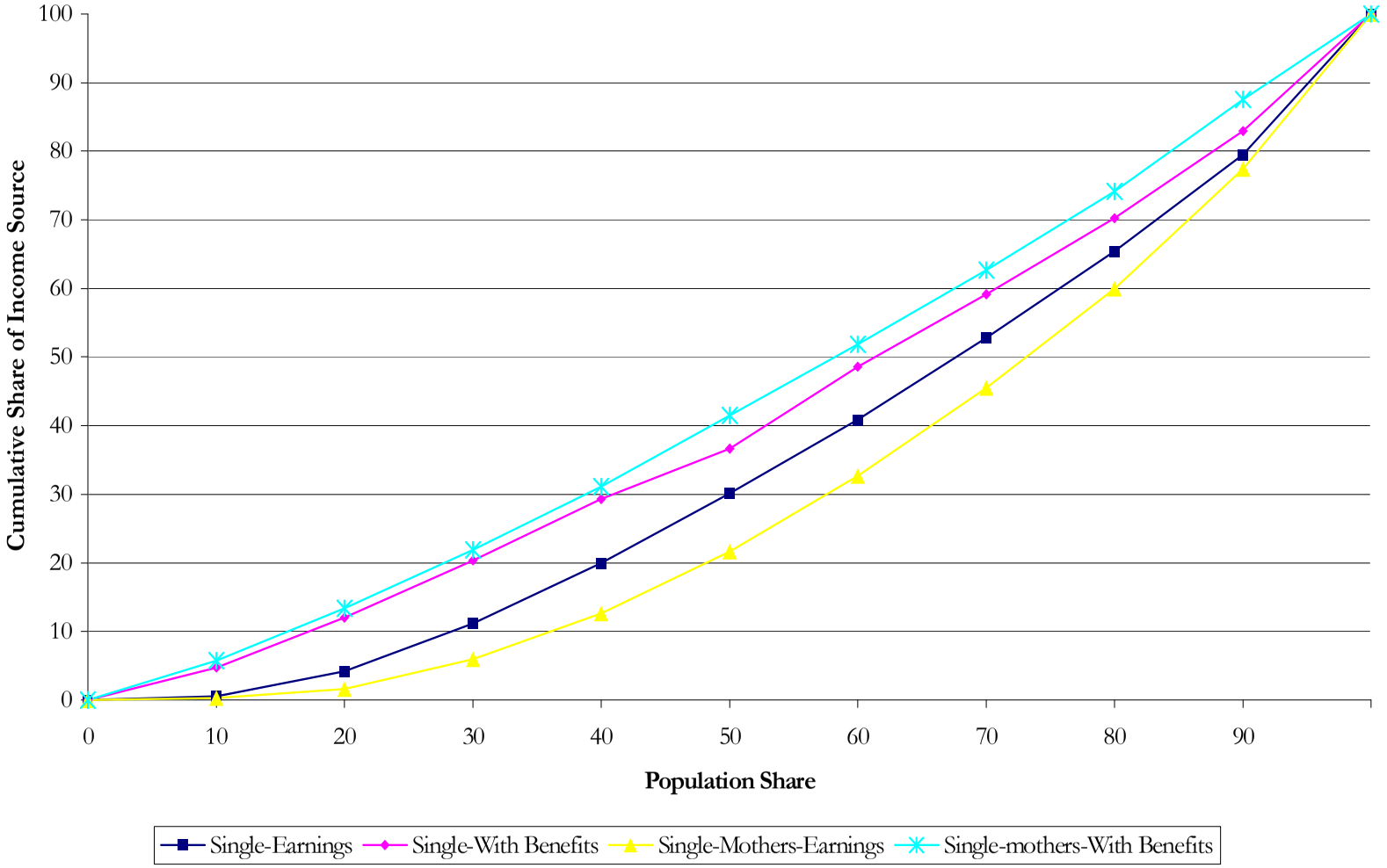


Figure A.3-4.4 Lorenz Curve- USA 1997.