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GENERATING EQUALITY AND
ELIMINATING POVERTY,
THE SWEDISH WAY

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ABSTRACT

Sweden has a remarkable record in reducing inequality and virtually eliminating poverty.

This paper shows that:

1) Sweden achieved its egalitarian income distribution and eliminated poverty largely because of its system of earnings and income determination, not because of the homogeneity of the population nor of its educational system.

2) In the job market Sweden is distinguished by a relatively egalitarian distribution of hours of work among those employed, which may be an interrelated part of the Swedish economic system, and until the recent recession, by a high employment rate.

3) Tax and transfer policies contribute substantially to Sweden's overall distribution record. In contrast to many social welfare systems, Sweden's is largely a workfare system, providing benefits for those with some work activity.

4) Part of Sweden's historic success in maintaining jobs for low wage workers while raising their wages resulted from policies that directly or indirectly buttress demand for low skill workers, notably through public sector employment.

5) Sweden's tax and transfer policies have maintained the position of lower income workers and families, including those with children, during its recent economic decline.

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Sweden has a remarkably egalitarian distribution of income and low rate of poverty. The living standards of the poor are closer to those of median citizens than in other advanced countries. Until the 1992-93 depression, Sweden combined a narrow distribution of earnings and skill differentials with high employment. Wage differentials rose in Sweden when centralised bargaining weakened in the 1980s and joblessness jumped in 1993, but the country maintained a low rate of poverty and avoided the growth of an underclass and the homelessness that developed in the United States and United Kingdom. Indeed, so successful has been Sweden's "war on poverty" that the statistical concept of a poverty rate is not part of Swedish public discussion.

What explains Sweden's egalitarian income distribution and success in eliminating poverty? What enabled the country to pay high wages to persons in the lower parts of the earnings distribution without generating mass loss of jobs? How will changes in the welfare state and the 1992-93 economic and financial crisis affect distributional outcomes? Can Sweden maintain its record in generating equality and eliminating poverty into the 21st century?

This paper examines these questions. Section I documents the distributional record of Sweden relative to those of other advanced countries. To see if Sweden's distributional record comes from a homogenous population or the system of income determination, section II examines how persons of Swedish descent fare in the relatively unregulated American labor market; and how persons of non-Swedish descent fare in Sweden. Sections III and IV explore supply-side and demand-side factors that potentially enabled Sweden to combine high employment and a narrow earnings distribution. Section V considers the potential

consequences of market-oriented reforms in the welfare state on Sweden's elimination of poverty.

Although a large proportion of the welfare state budget goes to pensioners, we consider only the non-pensioner population, working age adults and children. One reason we do this is that most advanced countries have greatly reduced poverty among the elderly, so that Swedish outcomes here are not so distinct, although in fact reduction in poverty among the elderly in Sweden exceeds that in most other countries (Coder, et al, 1989; Kangas and Palme, 1993). A second reason is that an analysis of how the Swedish welfare state treats pensioners would lead us into complicated issues regarding the effect of state-funded pensions on savings rates, life-cycle allocations of time and income, and inter-generational accounting, and so on that would greatly extend our investigation.

We reach six major conclusions:

1) Sweden achieved its egalitarian income distribution and eliminated poverty largely because of its system of earnings and income determination. In support of this conclusion, we note that the narrow income distribution in Sweden cannot be attributed to an exceptionally homogeneous population: the descendents of Swedes in the United States exhibit as much inequality and poverty as do other Americans while persons of foreign ancestry in Sweden have an income distribution comparable to persons of Swedish parentage. The narrow income distribution also cannot be attributed to an exceptionally low return to skills due to market forces: Sweden has a less educated work force than the United States, which, all else the same, should have yielded high returns to labor skills, contrary to fact. By contrast, changes in earnings inequality in Sweden over time mirror changes in wage-

setting policies, and taxes and transfers massively affect the income distribution. While a market-driven system of wage and income determination might not produce as much inequality in Sweden as in the United States, the high level of inequality found among persons of Swedish descent in the U.S. suggests that the increase in inequality would be considerable.

2) Sweden's distinct record of labor outcomes has historically gone beyond compression of earnings differentials. Compared to other advanced European countries, what was unusual, prior to the 1992 recession, was not Sweden's low inequality in earnings as its high rate of employment. Compared to the United States, another high employment rate country, Sweden is distinguished by a relatively egalitarian distribution of hours of work among those employed as well as by a compressed wage structure. Indeed, the egalitarian distribution of hours of work -- work-sharing of sorts -- contributes as much to Sweden's egalitarian earnings distribution as does its compressed distribution of hourly pay. The association of relatively egalitarian distributions of wages and hours of work may be interrelated and necessary components of the traditional Swedish economic system.

3) Tax and transfer policies contribute substantially to Sweden's overall distribution record. Factor income inequality is much greater than earnings inequality, because some people are out of the job market, capital income is unequally distributed, and because Sweden's income maintenance system gives considerable financial support to those who have worked but are currently not working or not working full-time. In contrast to many social welfare systems, Sweden's is largely a workfare system, with few poverty trap programs: By contrast, changes in earnings inequality in Sweden over time mirror changes in wage-

which face the great difficulty of making work pay more than welfare for those eligible for benefits. In the 1980s taxes and transfers largely offset trends toward greater inequality in factor incomes.

4) Policies and practices that equalise opportunities appear to be less important in producing Sweden's egalitarian earnings distribution than many observers would like to believe. The dispersion of years of schooling is greater in Sweden than in the United States. On standardized international tests, the distribution of scores for young Swedes is similar to the distribution of scores for young persons in other advanced societies, though more compressed than those in the United States, an outlier in inequality in this respect. The greater equality of parental incomes in Sweden than in the United States contributes modestly to the overall greater equality of incomes in Sweden. The implication is that policies that tend to equalise opportunities for the young do not explain much of Sweden's exceptional distribution record.

5) Part of Sweden's historic success in maintaining jobs for low wage workers while raising their wages resulted from policies that directly or indirectly buttress demand for low skill workers. One important factor was the expansion of public sector employment. While the public sector does not hire disproportionate numbers of low skill workers, it greatly increased its share of such workers from 1968 to 1991. Another mode of buttressing demand for low skill workers has been public subsidisation of employment for the 2 percent or so of the population that is counted as disabled. We also note that Sweden pays for or subsidises indirectly the high wages of less skilled workers through high prices in non-traded goods and services in the private sector, as well as in the public sector. Reforms that reduce those

prices should put downward pressure on the wages of low paid workers. More speculatively, we direct attention to the possible link between the compressed distribution of hours worked and demand for low wage labor. In some situations, mandated vacation time, extensive payment for time not worked such as parental leave, and high income taxes that discourage additional work will create demand for additional employment. Reforms that induce some Swedes, say the more skilled, to work additional hours may reduce demand for labor for others.

6) Changes in the 1980s/early 1990s toward a more market-driven economy raised inequality modestly but maintained the relative disposable income of low-income families with children. While the 1990s Swedish economic crisis put great strain on government budgets and the welfare system, Sweden's social safety net is so high that on-going and potential future changes are unlikely to threaten its successful elimination of poverty. The child benefits program, in particular, offers a fruitful tool to offset the effects of increased inequality in factor incomes on children.

I. The Swedish Record

"the Welfare State system (is) a major achievement of modern civilization ... (it has) mitigated, or even eliminated destitution among people with extremely low lifetime income." (Lindbeck 1992, p 115, 97)

"In 1980 the disposable income in Sweden was probably more equally distributed than it has been in any market economy" -- (Korpi, 1993)

The basic fact about Swedish income distribution that makes fans of such disparate social scientists as Assar Lindbeck and Walter Korpi is that income is more narrowly distributed and poverty lower in Sweden than in most other countries. Figure 1 documents the low inequality in Sweden using data based on the Luxembourg Income Study. The figure

measures inequality by the ratio of household disposable income adjusted for family size¹ for persons in the top decile of the income distribution to those in the bottom decile. Sweden, Finland, Norway and Belgium have the lowest inequality in household incomes.² The United States has the highest inequality.

What lies behind Sweden's relatively egalitarian distribution of incomes and correspondingly high living standards for those in the bottom rungs of the distribution?

Disposable income per person can be decomposed in various ways to lay bare the anatomy of the income distribution. Wages, hours worked, family composition, taxes and transfers, all affect disposable income. Since labor earnings are the prime source of personal incomes, it is natural to begin with the distribution of wages and hours worked.

wages and work

Table 1 summarises the distributions of hourly earnings and annual earnings in Sweden from the Level-of-Living Survey, a panel study of individuals conducted in Sweden³ in 1968, 1974, 1981, and 1991 in terms of two statistics: the ratio of the earnings of the 90th percentile worker to the 10th percentile worker; and the ratio of the earnings of the 10th percentile worker to the median earnings. The 90/10 ratio measures the overall spread of the earnings distribution: it is our indicator of overall inequality. The 10/50 ratio measures how close the lower paid are to the median: it is our indicator of the earnings gap for the least productive and thus of relative poverty.

The distribution of hourly earnings in Sweden shown in the table is narrow by American standards. The 90/10 hourly earnings ratio for men in 1991 of 2.03 is roughly one-third the 90/10 ratio found in 1989 for the U.S. in the Current Population Survey (5.63)!

The 10/50 ratio of 0.76 contrasts with a 0.37 ratio for the United States reported in OECD (1993). While the distribution of annual earnings in Sweden is considerably wider than the distribution of hourly earnings, this distribution is also narrow compared to the U.S. The 90/10 differential in annual earnings for men of 3.91 in Sweden contrasts to a 10.0 differential in the United States, and the 10/50 differential of 0.41 is half that in the United States.⁴

Contrasting the Swedish and American earnings distributions can give a misleading picture of where Sweden's distribution fits relative to those of other advanced countries. This is because, as figure 1 suggests, the United States is an outlier in distributional outcomes, with extraordinarily high inequality (Freeman, 1994; OECD, 1993). In fact, Sweden's earnings distribution is only modestly more compressed than the distribution in most OECD countries (see figure 2). The 90/10 spread of inequality is lower in Sweden than elsewhere, but the 10/50 ratio in Sweden is comparable to those for several European countries, such as the Netherlands, Italy, and Belgium and is only slightly greater than for Germany or Denmark. The compression of earnings in Sweden is not as extraordinary as some analyses might lead one to believe (Flanagan, 1987). Rather, what was extraordinary, at least until the rise of unemployment in 1992-1993, is that Sweden combined low inequality with high levels of employment.

Figure 3 shows how Sweden and other advanced OECD countries stack up in these two dimensions of labor market performance. The X-axis gives the 10/50 earnings ratio. The Y axis gives the employment-population rate for adults aged 15-64. Sweden lies at the far right in inequality and at the top in employment-population rate. By contrast, several low

inequality European countries, such as the Netherlands, Belgium, Italy, Germany had low employment rates. Some of the differences in the figure reflect differences in female labor force participation associated with the locus of "household production" activities (German and Dutch women produce comparable goods in the house as Swedish women produce in the public sector). Others are traceable to differences in the distribution of hours worked, to be described shortly. But comparisons of male inequality and participation show a similar pattern, with Sweden characterised by high employment and low inequality.

Wage dispersion in Sweden has changed over time. The figures in table 1 show a decrease in inequality from 1968 to 1974 and through 1981, consistent with wage-setting policies in the period. This was the era of "solidaristic wage policy", when the negotiated pay settlements reduced differentials along virtually all dimensions. By contrast, inequality widened from 1981 to 1991, as wage bargaining became increasingly decentralised. Hibbs reports a similar pattern for blue collar LO workers: falling inequality from 1970 through the early 1980s, followed by an increase in inequality. The decline in the 90/10 spread from 2.44 to 1.93 in the table is substantial, but what most impresses us is the moderate change in the 10/50 gap in both the 1970s period of decreasing inequality and the 1980s period of increasing inequality. In 1968, before the push for equalisation, low decile Swedish earners had 71% of median hourly earnings; in 1981 at the peak of solidaristic wage policies, these workers earned 79% of the median; in 1991, with more decentralised wage-setting, they had 76% of median earnings.

distribution of hours worked

Consider two economies with the same structure of wages. In economy I, high wage

workers work many hours while low wage workers work few hours (possibly due to substitution effects in labor supply behavior). In economy II, high and low wage workers work the same hours over the year. Inequality of annual earnings in economy I will be greater than in economy II because the distribution of hours worked is unequal and correlated with hourly wages.⁵ These considerations raise the following question: does the distribution of hours worked among Swedes contribute to the country's low level of inequality in annual earnings?

Table 2 summarises data on hours worked in Sweden and in the United States. The top part of the table gives the division of hours worked in the economy by employment status. Line 1 shows that hours worked per adult are moderately less in Sweden than in the United States: a gap of 0.10 ln points. Line 2 shows that while both countries have high employment to population rates, the Swedish employment rate exceeded the American rate by 0.08 ln points. Hours worked per adult are higher in the United States not because more Americans than Swedes work over the year, but because those who work put in more hours. The differential in hours worked for workers is a huge 0.19 ln points. One important reason for this differential is that Swedes take at least 5-6 weeks vacation time (legally, each person has the right to 5 weeks, as of 1993, plus many public holidays), while Americans take 2 weeks -- a 3 to 4 week difference that creates a .06 to .08 ln point difference in annual hours worked. Whatever its cause, lines 1-3 show that workhours are distributed more equally among adults in Sweden than in the United States.

The second part of the table gives the distribution of annual hours worked among those with positive hours. The data here are *hours paid-for* rather than hours worked, and

thus exceed the hours in the first part of the table. Column 1 gives data for men and women in Sweden; columns 2 and 3 contrast men in Sweden with men in the United States. The decile ratios show that hours worked is more equally distributed in Sweden than in the United States. The 90/10 spread in hours is 2.42 for both sexes and 2.43 for men in Sweden, which compares with 3.03 in the United States.

The final part of the table decomposes the variance of ln annual earnings in each country into the part due to the variance in ln hourly pay, the part due to the variance in hours worked, and twice their covariance. The surprising fact that emerges is that the difference in the variance of annual earnings between men in Sweden and the United States is due as much to the variance in annual hours as it is due to the variance in ln hourly pay. The implication is that there is more to the story of equalisation in Sweden than compression of wage differentials: **the high proportion employed and distribution of hours among those working contributed substantially to the relatively egalitarian distribution of earnings.**

household and disposable incomes

Relative equalisation of labor market incomes is only part of the Swedish income distribution story. The income individuals have for consumption depends on taxes and transfers, family structure, numbers of earners and children, and the like. Sweden's welfare state tax and transfer policies greatly affect the extent to which inequality in market earnings is transformed into inequality in disposable incomes.

Table 3 presents information on the distribution of factor incomes: labor earnings and capital market earnings; and disposable incomes, which depend on taxes and transfers as

well, for non-elderly persons from 1967 through 1992. We have derived these statistics from data on household incomes and persons in households as follows: we calculate incomes per equivalent person using Swedish equivalence scales;⁶ allocate the same income to each individual in the family; and then measure inequality among **individuals** of a given type -- adults or children.⁷ In this way we give the same weight to every person irrespective of the size of the family: a family with 4 people, for instance, gives 4 observations for the income distribution. Some may question the use of equivalence scales in income distribution measurement for adults, because the adults choose the number of children, which enters their utility function. This is a valid point for adults, but not for children, who do not make these choices. In any case, we have used equivalence scales for both adults and children.

We place greater stress on inequality and relative poverty among children than among adults, because the welfare state presumably has a more justifiable role to play in the well-being of children. Some adults will have a low economic standard due to their choice of hours and effort of work, and will reduce hours and effort the greater the welfare benefits. Children, by contrast, create no such moral hazard problem. To the extent that low incomes during childhood adversely affect the formation of human capital, moreover, relative poverty among children may have deleterious consequences for national productivity over the long run.

There are four messages in the table.

First, comparing the measures of inequality and relative poverty of factor incomes in table 3 with the comparable measures of labor market earnings in table 1, we see that factor incomes are far more unequally distributed than hourly wage rates or annual earnings. The

90/10 spreads in table 3 are on the order of 8-9 to one, roughly double the spreads in annual earnings in table 1; while the 10/50 measures of relative poverty are around 0.20, which is about half the 10/50 differentials in annual earnings. There are three reasons for this: the inclusion of people out of the labor market, who have low factor incomes; the inclusion of capital incomes, which are unequally distributed⁶; and the exclusion of sick pay and parental allowances from factor incomes even though these benefits are closely tied to previous work. In the Appendix we show that a measure of income that includes these benefits is more equally distributed than our measure of factor income.

Second, the table shows a huge difference between inequality in disposable incomes per person and in factor incomes. The 90/10 measure of inequality in disposable incomes is about a fourth as great as the comparable measure of inequality in factor incomes. Thus, inequality in disposable income is closer in magnitude to the inequality in hourly earnings in table 1 than it is to inequality in annual earnings. For instance, in 1990 the 90/10 spread in disposable incomes per person is 2.49, which contrasts to a 4.88 spread in annual earnings and a 2.05 spread in hourly earnings. That Sweden's tax and transfer policies produce a very different distribution of disposable income than factor income is not a new finding. Lindbeck's 1983 study of the Swedish income distribution showed a "much more uneven distribution of factor income than of disposable income" (Lindbeck, 1992, p 62), which led him to conclude that "redistributive policies in Sweden must be regarded as quite successful on the basis of egalitarian values" (p. 62). Our data confirm this conclusion.

Third, the data shows two patterns of change in inequality over time. From 1967 to 1975-78 inequality in disposable incomes falls, despite increases in factor income inequality.

This reflects the egalitarian policies of the period, which included high marginal taxes, a large increase in local taxes, and an extension of transfers and publicly provided services in the government budget. Consistent with this, Gustafsson and Uusitalo show a large increase in the redistributive effects of public transfers over the same period. The second pattern is an upward trend in factor income inequality from the late 1980s through 1991, followed by an even sharper jump in 1992, presumably due to the increase in unemployment.⁹ This has, however, only a modest effect on disposable income inequality. Whereas from 1989 to 1992 the 90/10 differential in factor incomes nearly doubles, the 90/10 differential in disposable incomes increased by just 6%. Factor income inequality was three times as great in 1991 as in 1967, but disposable income inequality is less! Swedish tax and transfer policies prevented the trend toward increased factor income inequality from widening the distribution of disposable incomes, even in 1992 when unemployment rose substantially.

The fourth result is that tax and transfer policies acted to equalise disposable income between children and reduce the relative poverty among them. The 10/50 ratio in column 8 is nearly constant at about two-thirds the median throughout the period covered in the table. This, despite rising inequality and relative poverty per person in factor incomes among families with children, as among all families. The major transfer policies here are child allowances and parental leave. During the 1980s child allowances were raised in real terms and a progressive component introduced, which gives extra amounts for the third and next children. Both the increased amount and greater progressivity of the transfers for larger families have equalizing effects on the distribution of disposable incomes among children. The 1991 increase in child allowances that was part of the tax reform of that year explains

why the relative poverty rate of children did not increase from 1990 to 1991 despite the increased relative poverty for persons in terms of factor incomes in that period.

For comparison, we estimated income per person in families with children in the United States in 1989, using the Swedish equivalence scales to adjust for family size. The resulting distribution of income per person showed a much wider distribution of income among children than in Sweden. In the U.S. the income of children in the bottom decile of the distribution of per person income associated with children was 33% of the median of that distribution.¹⁰ Over time, child poverty rates rose from 14.2% in 1973 to 19.9% in 1990 (U.S. Bureau of the Census, 1993, table 718), as earnings differentials widened and Aid to the Families of Dependent Children fell in real terms.

These findings are consistent with previous research on the distribution of income among children in Sweden. Analyses based on data from the Luxembourg Income Study show that Sweden in the 1980s was particularly successful in generating equality and reducing poverty among children (Coder, et al, 1989). Danziger and Jantti (1993a, 1993b) find that Sweden's tax and transfer system eliminated relative poverty (defined as 40% of the median income in their study) among children, in contrast to the modest effects of American transfer policies. Poverty among children with single parents is rare in Sweden, both because of high labour force participation among lone mothers and because of the transfer system. What is new in table 3 is the evidence that Sweden's redistributive system maintained the relative income of these families in the early 1990s, when factor income inequality began to increase.

Should one view the divergence between factor income inequality and disposable

income inequality in table 3 as a good thing or as a bad thing? On the plus side, the divergence shows the efficacy of Swedish transfer and tax policies in buffering low income citizens against a market trend toward a decline in their relative economic position -- which is what a social welfare scheme focused on relative well-being is supposed to do. On the other side, by breaking the link from market earnings to disposable income, such a redistributive system adversely affects work incentives, as Lindbeck has stressed in his critical assessment of the welfare state. And as the gap between factor income inequality and disposable income inequality grows, as it did in the late 1980s-early 1990s, the necessary transfers also have to rise, adversely affecting government budgets and increasing deadweight losses from tax or deficit financing.

the transfer programs

What are the transfer programs that so greatly affected the distribution of disposable income in Sweden?

There are many programs, each of which merits detailed analysis beyond our study. We distinguish three types of programs according to their relation to work:

poverty trap programs. These are programs that are antithetical to work in that they go to people who are not working or who earn below a certain amount, require no previous work for eligibility, and are reduced or lost if the person gets a job or increases market earnings. The archetype is a means-tested benefit.

work-fare programs. These are programs that increase the incentive to work because only persons who work can use them, but that can have negative effects on hours worked when the person attains eligibility. An example is the subsidized child-care program that is limited to families where parents work at least halftime. Other work-fare transfer programs give money to workers who are not working but who had to work previously to be eligible -

- work injury insurance, sickness cash benefits, and parental leave payment.

income effect programs. These are programs that have an income effect on working by providing money for persons regardless of their work activity. An example is the child allowance program that goes to anyone who fits the criterion regardless of their work.

Table 4 gives expenditures on the major transfer programs classified under these three headings. **Medical care** is practically free to all citizens and is one of the largest transfer programs, with expenditures for persons exclusive of pensioners of 2.6% of GNP. It is financed out of general taxes and not counted as part of personal income. While individuals pay for part of **dental care** through fees, some dental expenses are subsidised, accounting for an additional 0.4% of GNP. The public expenditure on medical care creates an income effect on the labor supply decision.

Sickness cash benefits and work injury insurance are work-related transfers since eligibility requires a previous period of work. Both programs replace a constant fraction of previous earnings up to a limit which is exceeded by less than ten percent of all workers. The replacement rate for sickness benefits was 90 percent until it was reduced in early 1991. The replacement rate for the work injury insurance has been similar to that for sickness. Together, the two programs cost 3.0 percent of GNP.

The ultimate safety-net is means-tested **social assistance**. This is a poverty-trap program, although the social authorities require that the benefit-recipient actively seek work at the employment office and accept suitable jobs. In 1991 0.4 percent of GNP was spent on social assistance. Another means-tested transfer, of about equal magnitude, is the **housing allowance** that is determined by the income of the family, the wealth, the rent, and the number of children.¹¹

We next turn to the programs designed for certain groups. The **disability pension** amounts to 1.9 percent of GNP. Most disability pensions are given for medical reasons, even though workers above 60 years of age can be granted such for labor market reasons. We describe the program as a poverty-trap because disability pensions are purportedly sensitive to regional or cyclical labor market conditions. Still, many persons with disability pensions have such severe medical problems that the work disincentive of the disability pension will have no effect on behavior. Active labor market measures that provide jobs, training, and rehabilitation for the disabled are work-fare programs, by our definition. The expenditure on these measures are 0.8 percent of GNP. Around 2 percent of the work force is employed with some form of subsidy for disability.

The policies for the unemployed consist of "passive" benefits and active measures that provide jobs, training and employment service. **Unemployment benefits** have a work disincentive effect, but this is counteracted by **temporary jobs and training slots** offered to the unemployed at employment offices. A benefit claimant who refuses to accept such jobs (or other jobs) can be denied further unemployment benefits (see Bjorklund and Holmlund, 1991).

Programs for families with children are extensive. They are designed to stimulate work by both parents. The **day-care system**, which covers the majority of children, is a work-fare program that encourages both parents to work, since both must work (or study) to qualify for day-care slots. Parents pay a fee for the child but 80-90 percent of the costs are subsidized. Most local authorities set lower fees for the second and third child of the same family, and for single parents. The **child-allowance** (paid to the mother) is, as noted, an

income effect program. The **parental leave program** offers the level of the sickness benefit for a year for parents who have a work history and much lower support for parents who have not worked before the birth of the child, and thus counts as work-fare.¹² There is also a **temporary parents cash benefit** paid to parents who stay home to care for sick children or for visits to the child's day-care or school. This is designed to facilitate parents combining work with parenting. Finally, there is a **maintenance allowance** paid by the government if the noncustodial parent does not meet his obligations. This program costs the government around 0.2% of GNP.

All told, table 4 shows that 16 percent of GNP is spent on the listed programs. Nearly half of the listed expenditures are work-fare programs; a bit over a quarter are for programs that have an income effect on work; and a quarter are for programs that have a poverty-trap component. What is impressive is that so much of the Swedish welfare system is work-based.

what an egalitarian income distribution means

How does Sweden's distributional record translate into the economic lives of people? To answer this question, we contrast the living standards of someone in the 10th percentile of the earnings/income distribution in Sweden with a comparable person in the U.S. To compare Swedish and American incomes, we use the purchasing power parity statistics of the OECD for 1990 rather than highly volatile exchange rates. In 1990 real gross domestic product per head was 26% higher in the United States than in Sweden (OECD, 1992, p 27), so that on average Americans had a higher living standard than Swedes. To estimate how well low decile Swedish and American men fared, we have calculated the 1991 hourly pay in

Swedish kroner of a 10th decile Swedish man and then adjusted this pay for the greater inequality in pay in the U.S. and for difference in overall living standards, to see how much 10th decile American men would make in SEK purchasing power units. The results, shown in figure 4A, indicate that, because of the narrower distributions of pre-tax earnings in Sweden, bottom decile Swedish workers earned 62 SEK per hour in 1991 -- 59% more than the 39 SEK per hour that a bottom decile American worker was paid in that year!¹³

Similarly, we have estimated the 1990 income (adjusted for OECD equivalence scales) of Swedish adults, 20-64, and of children, 0-17 years of age; and then adjusted these incomes for the greater inequality in the U.S. and the higher living standard. Figure 4B shows that low decile adults in Sweden had disposable incomes exceeding that of low decile adults in the United States by 50% and that low decile children in Sweden had disposable incomes exceeding that of low decile adults in the United States by 42%. The greater component of public consumption in Sweden than in the United States, and the likelihood that public consumption is more equally distributed than private consumption, suggests that even these contrasts understate the difference in living standards of persons and children in the lower part of the Swedish and American income distributions.

Elimination of poverty among people low in the income distribution in Sweden compared to the poverty among people low in the income distribution in the wealthier United States is a major social achievement, per the Lindbeck and Korpi quotes with which we introduced this section.

II. System or Swedes?

"Comparisons of Sweden and the U.S. are misleading. Sweden is a small country with an homogeneous population. U.S-Swedish differences reflect the greater heterogeneity

of Americans. Shouldn't Sweden be compared to Minnesota rather than to the U.S. as a whole?" -- a critic

To deal with this criticism, we have developed a more refined counterfactual to assess the effects of Sweden's supposedly homogeneous population as opposed to its income determination system on distributional outcomes. Our ideal counter-factual experiment would be to move a random sample of Swedes to the United States (and Americans to Sweden) and to contrast the distribution of their incomes after some time with that of peers back home. Such an experiment would eliminate population homogeneity as a cause of differences in distributions and isolate the effect of skill formation, wage setting, taxes and transfers. The closest we can come to this ideal with existing data is to contrast the income of persons of Swedish descent in the United States with that of persons in Sweden; and the income in Sweden of Swedes with non-Swedish ancestry with that of Swedes with Swedish-born parents.

To identify persons of Swedish background in the United States for our test of "system vs Swedes" we used the ancestry question in the 1990 United States Census of Population. In 1990 the question was: "What is this person's ancestry or ethnic origin?" The coding allows persons to report two ancestry-groups (for example, German-Irish). If the person gave Swedish and a second group as their ancestry, we categorised them as being of partial Swedish descent; if they gave only Swedish as their ancestry, we categorised them as being of full Swedish descent.¹⁴ The 1990 Census contains the records of 53,468 men of Swedish ancestry. In addition, we extracted a random sample of 98,181 Americans irrespective of ancestry in 1990. On the Swedish side, we have data from the LNU survey of persons with Swedish parentage who grew up in Sweden (which eliminates immigrants and

the children of immigrants).

Table 5 presents the results of our analysis in terms of the 90/10 and 10/50 decile hourly earnings ratios for male workers.¹⁵ The line labelled Swedes in Sweden gives these measures for persons of Swedish ancestry raised in Sweden. The lines labeled Swedish Descent in U.S. shows the inequality and relative poverty for persons of full and mixed Swedish descent in the United States. Finally, the line labelled U.S. gives figures for all persons in the United States. The results are clear: persons of Swedish descent living in the U.S. have an earnings distribution similar to that of other Americans -- a distribution utterly unlike that of Swedes in Sweden.¹⁶ By comparing people from the same ancestry, the table isolates the effect of systems of income determination on distributions.¹⁷

We cannot do the counterfactual of how the descendants of American immigrants fare in Sweden: there are too few such persons. We can, however, examine how adults born of all immigrants fare in Sweden. Contrary to the image of homogeneous Sweden, in 1991 in the LNU survey 15% of Swedish residents aged 20-64 reported that one or two of their parents were not Swedish citizens at birth: roughly three-quarters of these people reported that the language at home was something other than Swedish; and half said it was a non-Nordic language. In the 1970s and 1980s, the fraction of the Swedish population with immigrant background roughly doubled: in 1974 8.1% of Swedes aged 20-64 had at least one non-Swedish parent whereas in 1991 15.1% reported having at least one non-Swedish parent.

We tabulated the hourly earnings distribution for all adults 20-64 who reported that at least one parent was not Swedish at birth (the line labelled non-Swedes in Sweden in table 5) and for the subset who reported that the language at home was neither Swedish nor another

Nordic tongue (the line labelled non-Nordic in Sweden in table 5). For both groups the 90/10 and 10/50 ratios of earnings are comparable to those for persons with parents born in Sweden.¹⁸ The Swedish system of wage determination produces a dispersion of earnings among those with foreign parentage which is comparable to that of other Swedes, though annual earnings are somewhat more unequally distributed among immigrants than among the native-born.

We conclude that the compressed income distribution in Sweden does not come from some inherent homogeneity of Swedes, but rather from the Swedish system of determining skills and productivity and the wages and income rewards associated with such. This conclusion leads us naturally to the question of what that system actually does to compress incomes and eliminate poverty.

III. The Supply Side of the Swedish System

We use a supply-demand framework to examine how Sweden combined low wage inequality and a high employment rate for so many years. Our main contrast is with the high employment/high inequality United States, though we occasionally consider low employment/low inequality EEC countries as well.

An Egalitarian Skill Distribution?

There are two basic ways in which Swedish practices might produce an egalitarian distribution of skills that supports a compressed wage structure: through egalitarian family incomes, which should act to reduce inequality in human capital formation at home; and through an egalitarian distribution of daycare and public school resources. To capture how these factors might affect outcomes, we use a production function that relates various

background resources to the output of the market skills of young persons:

(1) Skill of young = f(family resources; public resources; genetics; random factors)

Equation (1) represents the transmission and augmentation of skills across generations as a simple reduced form linking resources to outcomes. We use it to examine the likely effects of the distribution of resources in one generation on the distributions of skills in the next. We have already seen that family resources in terms of disposable income among children is relatively equally distributed in Sweden. Children living with only one parent also fare reasonably well in terms of incomes (Danziger and Jantti, 1993a and 1993b) in contrast to the high poverty rates for them in the United States. A sceptic might, however, argue that equalisation of disposable income has contributed to the breaking down of the nuclear family, with deleterious consequences for children. We find it difficult to put much credence into this claim, for the basic reason that the Swedish record in family composition is "normal". The percentages of families with children with only a single parent in the early 1980s were: Sweden, 14.2%, Great Britain, 13%; Belgium and the Netherlands, 12.3%; Switzerland, 12%; Germany, 11.4%; France, 10.2%; Ireland, 7.1%; and the U.S., 26.0% (Ermisch, 1990). Data from LIS reported by Danziger and Jantti (1993b) tell a similar story: 14.8% of children in Sweden did not live with two parents in the 1980s compared to 12.5% in Canada, 10.5% in the Netherlands, and 23% in the U.S.

Moreover, for Sweden at least the most important change in family conditions over time has been an improvement in the economic conditions of families with children rather than an increase in single-parent families. This evidence comes from three questions about conditions during childhood on the Level of Living Surveys for different cohorts: whether

persons grew up with both biological parents (until age 16); whether their family had "economic difficulties" when they were growing up; and whether their family had "family conflicts". The results, summarised in figure 5, show: a decline in the proportion brought up with both biological parents from 85% for those born in the late 1890s through the 1960s, followed by a drop to around 80%; an upward shift in the proportion reporting family conflicts; and, most striking, a drop in the proportion reporting economic difficulties from around 40% for the earliest cohort to less than 10 percent for those born from 1950 to the 1970s. There is evidence, moreover, that these childhood conditions affect adult outcomes: Lundberg (1993) found that adverse outcomes on all three childhood conditions variables have adverse effects on physical and mental health in adulthood, controlling for the social class of the father.

Public resources that are most likely to affect skill formation among the young are also relatively equally distributed in Sweden. The public day care system ("dagis") for children from 1 to 7 years old contributes to equal conditions during childhood. This system, run by the local governments, was built up in the 1970s and 1980s. It offers highly subsidized places for children when both parents work (or study) at least part-time. In addition, the social authorities can place children with problems or from families with problems at the centers. Special resources are available for children with physical or social problems. Since the "graduates" of the day care system have not yet entered the labor force in large numbers, we do not know how the system affects job performance. But two studies based on different data have found that children who participate have higher cognitive performance and are more likely to choose the academic track in high school than

nonparticipant children with similar parental background (Andersson 1989; Jonsson, 1994).

School resources are also relatively equally distributed. Private schools are rare; and public resources are allocated so that "the size of the parents wallet shall not influence the school quality of the child". National tests are given to check that all schools meet certain standards. Special resources are geared toward the least able pupils. An egalitarian attitude toward allocation of school resources is shared across the political spectrum. It is also embodied in proposed voucher systems designed to allow parents greater choice in schooling. Swedish voucher plans restrict the ways in which parents can "top up" vouchers with private spending.

Has the relatively egalitarian distribution of family or public resources been important in Sweden's attaining egalitarian labor market outcomes? Our answer, derived from crude measures of the distribution of skills and estimates of the effect of family background on labor market outcomes, is, surprisingly, that these are not major factors in Sweden's distributional record.

Consider first the distribution of the simplest indicator of human capital, years of schooling. In an \ln earnings equation, the variance of \ln earnings depends on the variance of schooling, the variance of returns to schooling and their covariance. If Swedish wage compression rested primarily on a compression of skills, one might expect an especially small variance in years of schooling. But in fact the dispersion of years attained in Sweden is greater than in the United States. Our calculations produce a variance of years attained in Sweden of 12.25 for persons aged 25-64 in the LNU survey. The variance of years attained in the United States was 8.96 for men in the same age group.¹⁹

Years completed is, to be sure, a crude measure of the resources spent on schooling, much less of human capital formed in that process. In the U.S. there is huge variation in the quality of schooling among schools and in achievement scores across (as well as within) schools. In some school districts, some high school graduates may be nearly illiterate. The evidence shows that Sweden has a relatively egalitarian expenditure on non-university schooling. Variation in test scores across Swedish schools is much less than the variation of test scores across American schools or across the schools in many other countries.²⁰

But equalisation of school spending and of test scores among schools (as well as equalisation of other public resources and of disposable incomes) has not produced a particularly narrow distribution of achievement scores among Swedish students, according to test scores from the International Association for the Evaluation of Educational Achievement (IEA). Table 6 presents IEA statistics on the science achievement of 14 year old students. Columns 1-5 give the quartile scores in Sweden, the U.S. and other countries included in the 1988 study; and the mean score of the bottom quartile and the bottom quartile of that group (roughly the lowest 6 percent of students). Column 6 and 7 give ratios gives ratios of test scores for the 75th percentile student to the 25th percentile student and of the scores for the 25th percentile to the median. To facilitate comparisons, we give the average of the scores for all advanced OECD countries save Sweden and the United States as well as the scores for each country. The table shows that 14 year old students have a more narrow distribution of science scores in Sweden than in the United States, but that the distribution of scores among Swedish students is normal. In each statistic Sweden has just about the average for all the countries, whereas the U.S. evinces greater dispersion.

While scores on school achievement tests are far from ideal measures of the dispersion in "economic ability" that presumably contributes to earnings inequality, the distributions in the table lend no support to the notion that by equalising opportunities among children, Sweden greatly eased the path of equalising outcomes in the labor market.

the role of family background

Consider next the possible effect of Sweden's compression of family income differences on the economic outcomes of children, as captured in a simple relation linking sons earnings (Y) to fathers earnings (X):

$$(2) \quad \ln Y = a + b \ln X + u$$

Taking variances yields a relation between variation in backgrounds and the b coefficient to earnings inequality:

$$(3) \quad \text{Var} (\ln Y) = b^2 \text{var} \ln (X) + \text{var} u$$

The variance of the ln earnings of fathers in Sweden in the LNU ranges from 0.24 to 0.32 over the period 1967-1973, for an average of 0.29 (Bjorklund and Jantti, table 1). This compares to variances in the US PSID in 1967-1971 that range from 0.34 to 0.76, for an average of 0.50 (a much smaller variance than the Census-based estimate in table 5 for all US men). Given an estimate of b we can readily calculate how much earnings inequality would rise in Sweden or fall in the US if Swedes and Americans had the same dispersion of fathers' earnings. To estimate b, we rely on correlations between fathers and sons earnings in the two countries from Bjorklund and Jantti. They obtain fathers-sons correlations for the U.S. (based on different years and estimating techniques) that cluster around 0.40 compared to correlations for Sweden of about 0.25 (Bjorklund and Jantti, p 18).

We combine these estimates in table 7 to assess how much the difference in variance of fathers' incomes between the U.S. and Sweden could account for the difference in the variance of sons' incomes. For simplicity (and to obtain as large an estimate of the contribution of background as possible) we assume a stable earnings distribution, so that the variance of sons' earnings is the same as that of fathers'. (In fact, the variance of sons' earnings is greater in both Sweden and the U.S. than of fathers' earnings, potentially reflecting life-cycle factors and trends toward increased earnings inequality.) Line 1 of the table gives the estimated variance of ln earnings: 0.50 in the US compared to 0.29 in Sweden. Lines 2 and 3 give the estimated correlation coefficients in the two countries and the correlation squared. These figures in turn give us the estimated contribution of the variation in fathers' earnings to sons' earnings in line 4 and, by subtraction, the residual variance in line 5. The difference in residual variances of 0.15 is 71% of the difference in initial variances, implying that at most 29% of the gap in variances could be due to this background factor.

Lines 7-8 record the variance in earnings that would be found in Sweden or the U.S. under the counter-factuals that each country had the others' variance in fathers' earnings, but its own intergenerational earnings correlation; and that each had the others' intergenerational correlation but its own variance in fathers' earnings. These calculations show that giving each group the others variance in fathers' earnings has a relatively modest effect on the final variance. If Americans had the Swedish dispersion of fathers' earnings, dispersion of earnings would fall to 0.47 -- .03 points of the 0.21 point gap. If Swedes had the American dispersion of fathers' earnings, the dispersion of earnings would rise to 0.30 -- a .01 change.

Changing to the other country's intergenerational correlation in line 8 has a bigger effect on the final variances of earnings, raising the Swedish variance of the ln earnings of the son by .04 ln points (from .30 to .34). Finally, taking the full effect of the other country's contribution of background in line 9 still leaves unexplained the bulk of the gap in the variance in sons' earnings between the countries. With the contribution of background to inequality in the U.S., the variance of ln earnings of sons in Sweden would rise from .29 to .35, far short of the .50 variance of ln earnings in the U.S. At most we can attribute 30% of the difference in the variance of sons earnings to differences in the contribution of backgrounds.²¹

The lower father-son earnings correlation in Sweden than in the U.S. in the table is open to alternative interpretations. A human capital interpretation might be that Sweden's higher provision of social goods and use of day-care facilities for children reduces the contribution of family in the production of their children's human capital. Another interpretation would also be that the smaller effect of fathers' income on earnings is part of Sweden's compression of wages that reduce the effects of skill on earnings, including skills obtained from parents. Another interpretation would be that Sweden has been more successful in equalising opportunities.

However one interprets the difference in intergenerational income mobility, table 7 shows that **equalisation of parental earnings produces only limited equalisation of outcomes**. Equalisation of background or opportunities is not sufficient to give the narrow distribution of earnings, much less of incomes, observed in Sweden. To produce an egalitarian earnings distribution requires direct intervention in the income determination

process.

IV. Demand Side Contributions

Who demands less able workers in Sweden at relatively high pay? What programs or policies augment demand for these workers?

the public sector?

One widely mentioned possibility is that the public sector operates as an employer of last resort, hiring people who could not obtain comparable paying jobs in the private sector.

To explore this hypothesis, we tabulated the proportion of workers employed in the public sector from the Level of Living Surveys of 1968, 1974, 1981, and 1991, categorising level of skill in three ways. First, we use low education, specifically whether persons aged 45 and older at most completed the "folkskola" -- which means that they have 6 or 7 years of schooling -- as an indicator of low skill.²² In 1968, roughly one-third of the population of older workers were in this category but 1991 just about 15% or so had such little schooling. Thus, the extent to which the group is low-skilled increases over time. Second, we use the quartile distribution of workers by their wages. We use quartiles rather than deciles for reasons of sample size. Third, we use the health status of individuals based on their self-reported mobility from three questions: "Can you walk 100 meters relatively quickly without trouble?"; "Can you run 100 meters without much trouble?"; and "Can you walk up and down stairs without trouble?" We classify respondents who give yes to all questions as having normal mobility; those who answer no to one or two questions as having reduced mobility; and those who answer no to all three as having severely limited mobility. Approximately 10% to 15% of the population reports some mobility restriction, with the fraction declining

over time.

Table 8 shows the proportion of workers in these groups working in the public sector. The percentage of less educated older workers employed in the public sector tends to be below the percentage of all workers in the public sector, especially for men. Men with earnings in the low quartile are also no more likely to be in the public sector than men elsewhere in the earnings distribution in 1991 and less likely to be in the public sector in other years. Women with low-quartile earnings are less likely than other women workers to be in the public sector in all years. As for those with low physical mobility, in 1981 and 1991 persons with reduced mobility are no more likely to work for the public sector than other workers. Women with severely limited mobility were, however, more likely to be public sector workers in those two years, as are men with severely limited skills in 1991. However, interpreting these figures, note that the employers of the 2 percent or so of the labor force that is handicapped or disabled receive special subsidies; about half are employed in sheltered workshops in a government run corporation (Samhall) and half in other worksites whose wages the state subsidises in part. Samhall is part of the public sector, and the figures for those with severely limited mobility may reflect this fact.

That low skill workers are no more likely to be employed in the public sector in 1991 than other workers does not, however, mean that the public sector employment has not buttressed demand for them. The pattern in most countries is for low skill workers to be underrepresented in the public sector, so that finding equal representation is surprising. As the last column in table 8 shows, moreover, the proportion of low skill workers in the public sector increased from 1968 to 1991. We interpret the trend upward and their proportionate

representation in Sweden as signs that the public sector has, indeed, been a greater demander of their labor than in other countries.

the disabled or handicapped

Handicapped or disabled workers are likely to have lower productivity than other workers, and in many countries these workers are among the poorest. In Sweden, they have relatively normal incomes. Determining how Sweden does this provides an important insight into the Swedish workfare system and clues into the way the Swedish system treats other, less clearly defined, low productivity groups.

Sweden seeks to get the disabled jobs at wages above their marginal product. As noted, Samhall employs a substantial proportion of these workers; it pays the normal rate for a job, and receives half of its budget from the state rather than from the sales of goods. In normal years about one-half of the budget of the Swedish Labor Market Board is spent on the employment of disabled/handicapped workers. Table 9 records the work time of people in Sweden with differing levels of disability, as measured by responses to the questions on mobility in 1981 and 1991. A high proportion of people with reduced or severely limited mobility work, with relatively high contracted hours: only 5% or so below the hours worked by persons with normal mobility. This implies that short working hours has not been the method by which the disabled have gotten jobs in Sweden. However, the panel C data on sickness days shows that those with reduced or severely limited mobility take many more sickness days than others -- three to five times as much among men and two to three times as much among women.

Figures on sick days display the two sides of a welfare state that makes benefits

contingent on working. On the one side, the sickness pay program maintains the incomes of those who suffer disabilities. On the other side, the program gives workers disincentive to work once they have a job. Take the disincentive effect first, as economists are often do. If we assume that the typical full-time Swedish worker takes 5 weeks of vacation and 2 weeks holiday, he or she would work 45 weeks a year. The figures for people with normal mobility show that in 1981 they took an additional 3 weeks of sickness, giving 42 weeks of actual time worked in a year (which is about the 1654 or so hours reported for full-time workers in OECD, 1990, table 1.4). This is an extraordinarily high rate, as in most countries people have much less sick-time; American workers average about a week in work days lost because of sickness (U.S. Bureau of the Census, 1992, table 188). OECD statistics show that 6.1% of Swedish worktime is lost due to illness versus 1.2% of U.S. worktime (OECD, 1991, table 6-3). As there is no reason to believe Swedes are more sickly than non-Swedes (expected life spans would suggest the opposite; and occupational illness is, if anything, lower than in other countries (OECD, 1990, chapter 4), we interpret this as reflecting economic responsiveness to incentives. Under the pre-reform Swedish sick-leave system, sick time was paid exclusively by the government, so neither workers nor firms had an incentive to minimise sick time. Indeed, the opposite was probably true in many situations. Just as seasonal employers in the U.S. and their prospective workers know that part of the job involves several months of unemployment insurance during the off-season, Swedish employers may have found that implicitly approving that workers exploit the sick time system made their workplace more attractive to employees.

To see the redistributive part of Swedish sickness pay policy, assume that the

difference in sickness days between workers with reduced or severely limited mobility and those with normal mobility workers is in fact due to physical problems. Limited mobility men take roughly 9 weeks of sickness beyond what normal mobility men take, so that they work just 33 weeks over the year or 21% less than normal mobility men. Does this produce a 21% or so difference in annual earnings, or a large difference in hourly earnings? To answer this question, we regressed the \ln hourly earnings and \ln annual earnings of Swedish workers on age, age squared, years of schooling, and dummy variables for mobility status in 1981. We estimate that the hourly earnings of men with reduced mobility were just $-.06$ \ln points lower than for men with normal mobility, with a standard error of $.04$; similarly, we estimate that the hourly earnings of men with severely limited mobility was just $-.02$ with a standard error of $.04$. For annual earnings, we found no difference by mobility status: the regression coefficients (standard errors) were $.02$ ($.09$) for severely limited mobility and $.00$ ($.07$) for those with reduced mobility.

Save for the fact that women work fewer hours on average because they are more likely to work part-time than men, results for women are the same. In 1991 the typical female worker contracted for 42 weeks of full-time work ($= 1680/40$); in 1981 she worked 37.3 weeks ($= 1490/40$). Assuming that she took 5 weeks of vacation time and 2 weeks of holiday time, she worked 30.3 weeks in 1981. Table 8 shows that she also took 3.5 weeks of sickness days, so that she worked about 27 weeks full-time over the year. The woman with reduced mobility worked about 5 weeks less than this (22 weeks) whereas the woman with severely limited mobility worked nearly 10 weeks less (17 weeks of full-time labor). Thus, those with less than normal mobility worked 19% to 37% less than women with

normal mobility. But neither the hourly wages nor annual earnings of women with mobility limitations were lower than those of women without mobility limitations.

Our results are not peculiar to the LNU survey or our definitions of work disability: Wadensjo reports similar results in the 1978 Living Conditions Survey (Wadensjo, table 14.6). At a cost of excessive use of sickness days by non-disabled workers, Sweden's sickness pay system has kept disabled/handicapped workers close to the median of the annual earnings distribution.

By contrast, consider how workers who are handicapped or disabled fare in the U.S. For this purpose, we use the 1990 U.S. Census of Population, which asks workers the following:

Because of a health condition that has lasted for 6 or more months, does this person have any difficulty --

- a. going outside the home alone, for example, to shop or visit a doctor's office?
- b. taking care of his or her own personal needs, such as bathing, dressing, or getting around inside the home?

In addition, the U.S. Census asked:

Did this person have a physical, mental, or other health condition that lasted for 6 or more months and which --

- a. limits the kind or amount of work this person can do at a job?
- b. prevents this person from working at a job?

To parallel the Swedish mobility questions we defined disabled workers in three ways. Our first group of disabled workers consists of persons who answered "yes" to any health/physical condition question. Twelve percent of U.S. men aged 20-64 answered yes at least once. This compares to 11% of the Swedish men whom we categorised as having some mobility limitation. Our second group consists of those who answered yes to at least two of these health/physical questions; this is comparable to our definition in the Swedish data of

persons being severely limited, and in fact 3% of U.S. men were in this category, just as 3% of Swedish were in the comparable category. Our third group consists of men who answered yes only once to the three questions; this is comparable to our definition in the Swedish data of persons having reduced mobility.

The U.S. data show that in the U.S. work disability has a massive adverse effect on whether or not the worker was employed in the survey week.²³ Workers with no disability had an 85% employment rate (which compares to the 90% rate in Sweden), but those with at least some disability had a 45% employment rate (which compares to 68% in Sweden). Only 22% of the men who answered yes two or more times to the disability questions worked (which compares to 63% in Sweden). To see how the disabled fared in terms of earnings, we regressed the ln hourly earnings and ln annual earnings of American men on age, age squared, years of schooling,²⁴ and dummy variables for disability status and obtained huge negative coefficients and small standard errors. We estimate that the hourly earnings of men with some disability was -.16 (standard error of .01) ln points lower than for men with normal mobility; and that the annual earnings of men with some disability was -.49 (standard error of .01) ln points lower than for men with normal mobility.

earnings equalisation, relative prices, shadow wages

If low skill workers are paid more in Sweden than they would be paid in a more market-driven system of wage-setting, someone must foot the bill for the higher wages of those workers. In the case of the disabled, it is clear that the rest of society pays by subsidising their employers or their sickness days. Might something similar be true of other low skill workers? Does Sweden "pay" for its egalitarian wage policies and full employment

through higher prices for the goods produced by the less skilled?

In traded goods, where the price of the commodity is given on world markets, it is presumably not possible to shift the cost of higher wages for the less skilled to consumers. In non-traded goods and services, however, a large share of the increased wages for the less skilled may very well be borne by consumers. If this were the case, we would expect the prices of commodities or services produced by low wage workers to be relatively higher in Sweden than in the U.S., which does not have a compressed wage structure. By contrast, if the compressed wage structure was due solely to a compressed skill distribution, we would not expect to find such a pattern, since the cost of an efficiency unit of labor would be no higher in Sweden than in the U.S.

We have not explored the relation between relative prices and the share of low skill labor across sectors, and can only report glimmers of evidence on this possible relation. Comparative dollar price levels of final expenditures from the OECD show that Sweden has high relative prices in one non-traded sector that hires relatively many low skilled workers restaurants, cafes, and hotels. The comparative dollar price in Sweden is 1.27 times the price of GDP in purchasing power parity terms while in the U.S. it is 0.84 (OECD, 1990, table 2.6) -- a 51% difference in relative prices. In that sector, moreover, labor costs are 73% of value added compared to 50% in the United States. By contrast, in the finance sector, where workers are relatively skilled, labor's share is 36% of value added in the U.S. compared to 31% in Sweden (OECD, National Accounts, 1989). To the extent that high collectively bargained wages for low skilled workers are passed on to Swedish consumers in the form of high prices, the consumers are "indirectly" subsidising those workers.

Finally, and more speculatively, consider the possible effect of the compression of hours worked in Sweden on demand for less able workers. Could it be that Sweden has generated demand for less productive workers by effectively reducing hours worked by more productive substitute workers, creating an implicit system of work-sharing? On the supply side, assume that high marginal taxes, the 5 week mandated vacation, holiday time, the incentive to call in sick, and parental leave all reduce the hours worked by more able Swedes. This implies that on the demand side of the market, a firm that would like to hire 2600 hours from Mr. Able finds that Able is willing to work only 1600 hours, unless he is paid a substantial premium. If that premium exceeds his value to the firm, the firm will try to get the extra 1000 hours from someone else. In effect, the firm faces a shadow cost for an extra hour of a more productive worker far above the hourly wage. What will the firm do? Hire Mr. Less Able to take up the slack. By this argument, Swedish policies to compress wages and provide incentives to work less than the contracted hours has produced massive "work-sharing". Raising the shadow price for skilled workers relative to less skilled workers can, in principle, "undo" the effect of wage compression in reducing demand for the less skilled. Is there any evidence that creating incentives that limit the hours worked by the more able increases the demand for labor of other workers? What plausibly might happen to the demand for less able Swedes if, say, the more able worked 30% more hours than they currently do (which would give the upper decile of Swedes the same hours worked as in the United States)?

We have not estimated the demand for labor necessary to answer these questions, but draw the readers' attention to studies of the trade-off between hours worked and

employment, which suggest that for workers doing similar work our hypothesis is on the right track. Houpis' (1993) summary of studies of the hours/employment trade-off for the United Kingdom, United States, Belgium, and Sweden (Pencavel and Holmlund 1988) shows a uniform tradeoff with elasticities that range around 0.7. That is, a 10% reduction in hours worked is associated with increases in the number employed of about 7%.²⁵ Applied to the entire economy, these estimates suggest that there is a substantial hours-employment trade-off consistent with an "implicit work-sharing" explanation of part of the puzzle identified in figure 2: how Sweden managed to combine full employment and a narrow wage distribution.²⁶

V Conclusion: Consequences of Reforms and Crisis

This paper has documented the great success of the Swedish welfare state in eliminating poverty and reducing inequality and in combining low dispersion in wages and high employment. Our evidence suggests that much of the success in reducing poverty was due to Sweden's tax and transfer systems; and that the combination of high employment and low wage inequality was associated with factors that directly or indirectly twisted labor demand in favor of less skilled workers. We have also advanced an interpretation of the Swedish experience that highlights the compression of hours worked on the demand for less skilled workers.

The redistribution and elimination of poverty did not come without cost to Sweden. The huge welfare state that developed in the 1970s and 1980s had both a direct cost in terms of high taxes and indirect costs in the form of excess burdens and disincentives (see Aronsson and Walker). As Sweden entered the 1990s, there was widespread opinion among

economists that the nation should withdraw from some of its welfare state commitments: the costs of some programs at least seemed to exceed their benefits. The economic crisis and huge budget deficits of the early 1990s also seemed to demand cutbacks in welfare state programs.

How far has Sweden already gone in this "withdrawal from dangerous territory"? What are consequences for the elimination of poverty? How far can Sweden go in reducing the excesses of the welfare state without seriously threatening the great success of that state in eliminating poverty?

The policy reforms put into place through 1992 do not appear to threaten seriously the country's reduction of poverty. The 1991 tax reform reduced the progressivity of the system, but mitigated the effects on lower income families through higher child allowances and housing allowances. Our table 3 showed a sizeable rise in inequality (the 90/10 spread) of disposable income from 1990 to 1991 but no increase in relative poverty (the 10/50 spread). The rise in inequality did not continue in 1992 even though factor income inequality became much more unequal due in large part to increased unemployment.

There have been a substantial number of budget cuts since 1991 that are difficult to describe with a single statistic, and we shall accordingly discuss only a few, to give the flavour of the ongoing reforms and some of the suggested changes. To help our discussion we use table 10, which gives the distributional profile of three important transfers: sickness benefits, unemployment benefits (UI plus KAS), and child allowances. The table shows the importance of these transfers in the four quartile groups of the distributions of adjusted disposal income for the adults age 20-64 and children aged 0-17 on whom we have focused.

When the share of income attributable to a given transfer is greater for those with low incomes than for those with high incomes, the transfer reduces relative inequality and lowers relative poverty. Conversely, when the share of income from a transfer is smaller for those with lower incomes than for those with higher incomes, the transfer is regressive.

The table shows that for adults aged 20-64 the share of disposable income attributable to sick pay is rather evenly distributed among income classes: the fraction of disposable income for adults is roughly the same in the highest quartile group as in the lowest quartile group.²⁷ This presumably reflects the widespread use of sickness benefits in Sweden noted earlier. Unemployment benefits constitute a larger proportion of the disposable income of low income than high income persons, but given the low rate of unemployment in 1990, such benefits are just a minor share of the income of any adult group. The unemployment benefit share of disposable income is likely to be higher for all groups in 1992-1994 when unemployment rose sharply, and we would guess that the share would rise more for low income than high income persons, but our data are silent on this point. The most progressive benefits are child allowance benefits, which constitute a much larger proportion of the income of low quartile persons than of high quartile persons.

The bottom part of the table shows that for children 0-17 years of age all of the benefits, including sick pay (for the parents of children), are a considerably higher proportion of disposable income for those from low income families than for those from higher income families. Sickness benefits paid to the parents of children in the lowest quartile account for 25 percent of disposable income compared to 11 percent of disposable income paid to parents whose children are in the highest quartile. Thus, with the exception of sickness benefits for

all adults, the transfers in the table are progressive, generally highly so.²⁸

How are these benefit systems changing? What are the likely consequences of change for the distribution of incomes?

The sickness benefit system has undergone several changes. In March 1991 the replacement rate for sickness was reduced from 90% to 65% for the first three days, left at 90% until the 90th day, then reduced to 80% thereafter. In 1992 employers were required to pay for the first two weeks of sickness benefits, giving them an incentive to monitor the program. In 1993, a waiting period of one day was introduced, so that the worker would also lose something by calling in sick. At this writing, there is discussion of further reductions in the replacement rate to 70% or to as low as 50%. These changes will reduce the earnings of disabled or sick workers, but according to the calculations in table 10 are not likely to change inequality or relative poverty. However, they will redistribute income against children in the lower quartile of the distribution unless reductions in benefits disproportionately increase the work time of low income parents.

In 1993 benefits to unemployed workers were also reduced. The replacement rate dropped from 90 percent to 80 percent and a waiting period of one-week was introduced. Similarly, the benefits paid in various training and temporary job programs were also lowered modestly. Some policy-makers and analysts favor further reductions in replacement rates to 70% or 60%. Read conservatively, the figures in table 10 suggest that this will increase inequality but may have little effect on relative poverty, since the second quartile receives a similar fraction of disposable income in unemployment benefits as the first. However, we are loathe to make any strong statement on this due to the massive change in

unemployment, which could easily affect the distribution of benefits.

By contrast with sickness pay and unemployment benefits, there have been no reductions in child allowances, although some analysts have proposed such. In 1991, in fact, child allowances were raised to counteract the consequences of the tax reform on children with parents in the lower part of the income distribution. As child allowances are the most progressive transfer in table 10, they are an extremely well-targeted benefit, helping children from low income homes much more than those from high income homes. Reductions in child allowances, and in particular discontinuation of the progressive part of the benefit, would raise overall inequality and relative poverty, potentially substantially.²⁹ Indeed, the low-income profile of this transfer is so distinct that it is an appealing strategy to raise it, in order to counteract the effects of other reductions in welfare state benefits on the well-being of children. This was, indeed, the strategy in the 1991 tax reform.

Another important set of changes have been the imposition of fees for public services. For instance, the fee for child care has been raised substantially. Local governments, who have been forbidden to raise taxes for several years, have been forced to cut expenditures or raise fees. Again, however, our sense is that these changes are more "tinkering" on the edges rather than a major backing away from the welfare state.

A sanguine reading of the on-going changes is that, while they may lower the Swedish safety net, that net is so high that it will require something akin to a revolution to endanger Sweden's success in eliminating poverty: Mrs Thatcher cutting the net with a pair of scissors, not the Economics Commission's 113 suggested changes, however one views them. A less sanguine reading of the changes is that over the long run some developments

(lower taxes, less statutory vacation time, for instance) may reduce the twist in labor demand toward the less skilled that tied work, a compressed wage structure, and welfare so closely together in the country. If the 1993 increase in Swedish unemployment marks the beginning of an era of relatively high unemployment, moreover, the welfare state taxes and transfers that have been such an important part of Sweden's way of generating equality and eliminating poverty could become so costly that the country will respond with further reductions in these programs, with far greater effects on income distribution than those we have documented in this study.

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FIGURE 1: Household Income Inequality in OECD Economies - Mid 1980s

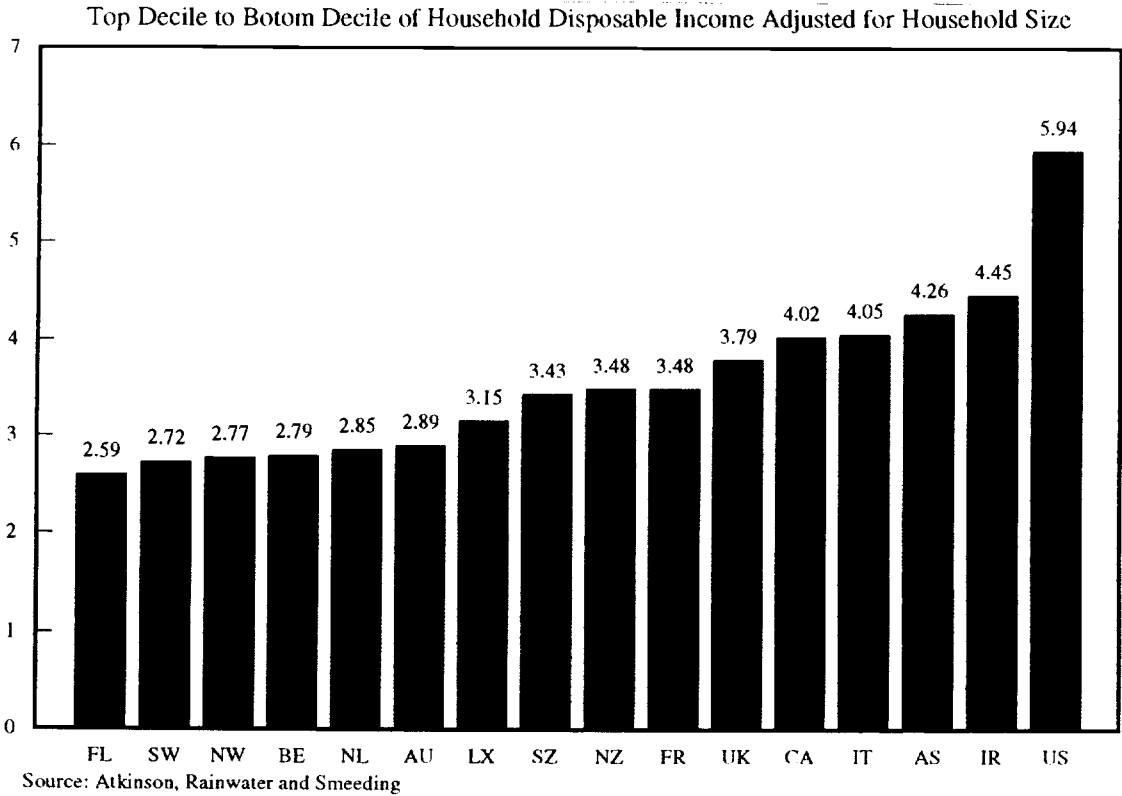
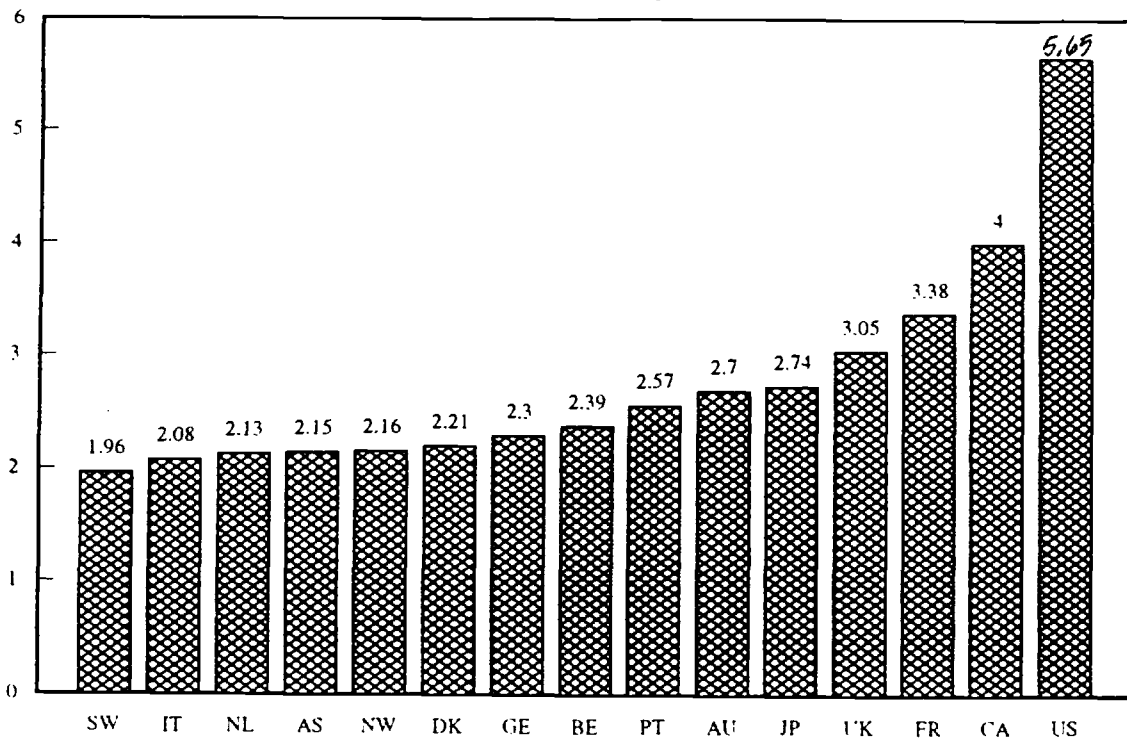


FIGURE 2: Spreads of Earnings Differentials

A) Inequality: 90/10 percentiles



B) Low Paid: 10/50 percentiles

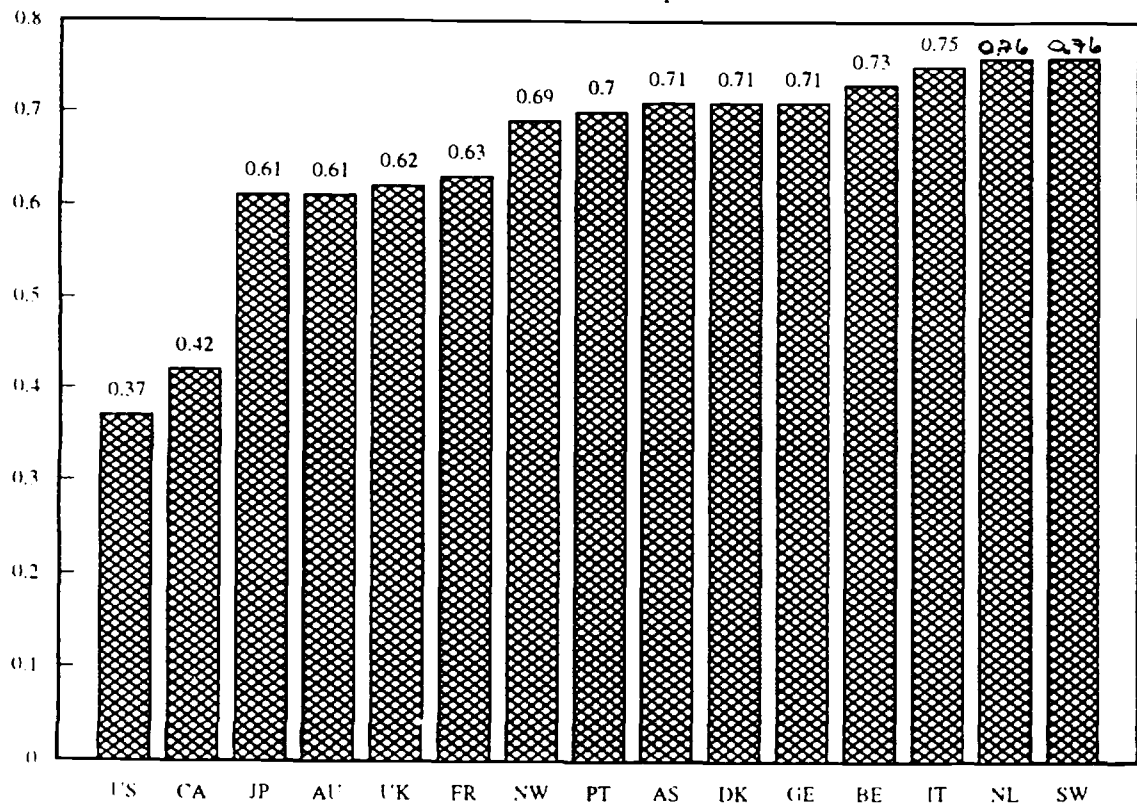


FIGURE 3: Earnings Inequality and Employment Rates

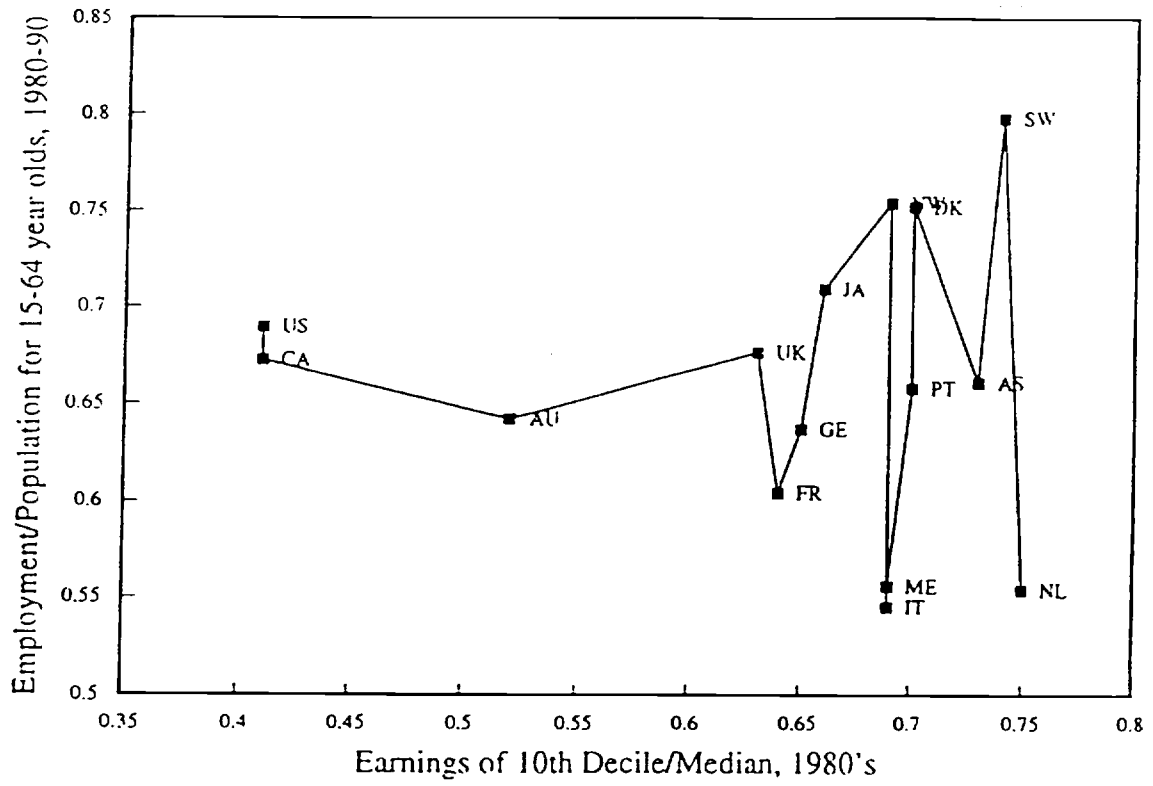


FIGURE 4A: GDP per Head and Hourly Earnings for Men of the 10th Decile Persons in Sweden and U.S., 1990/91

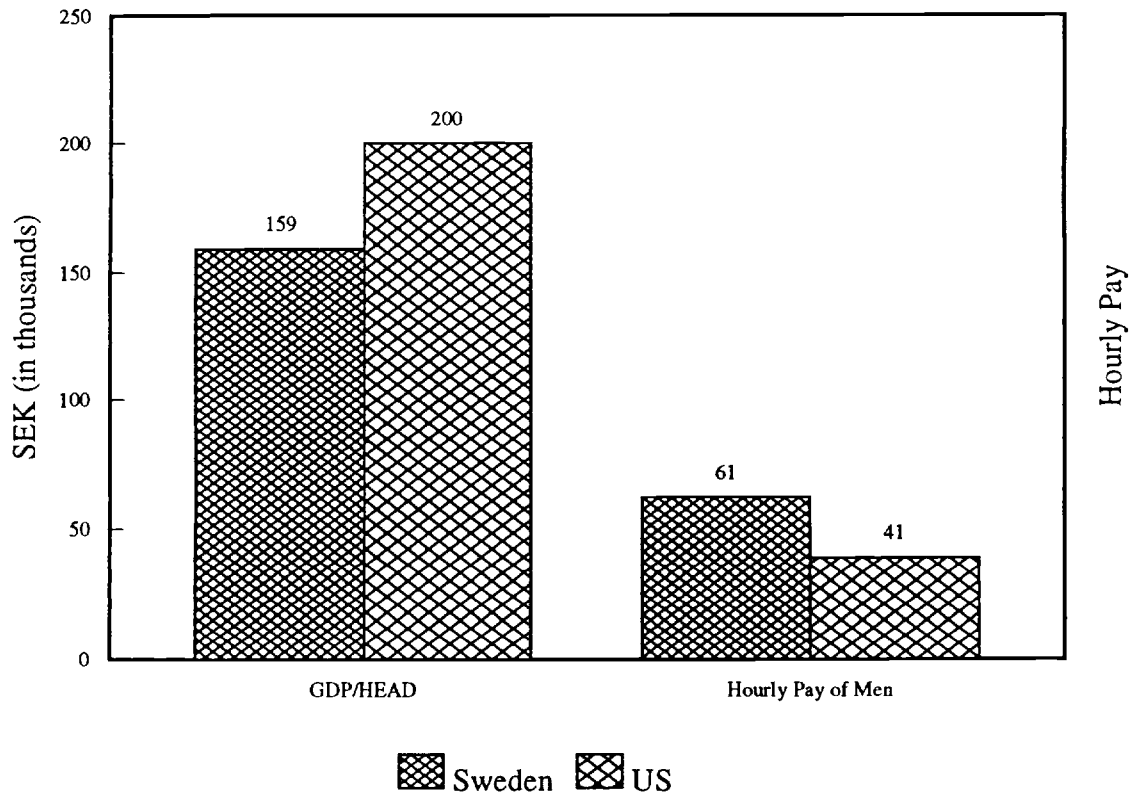
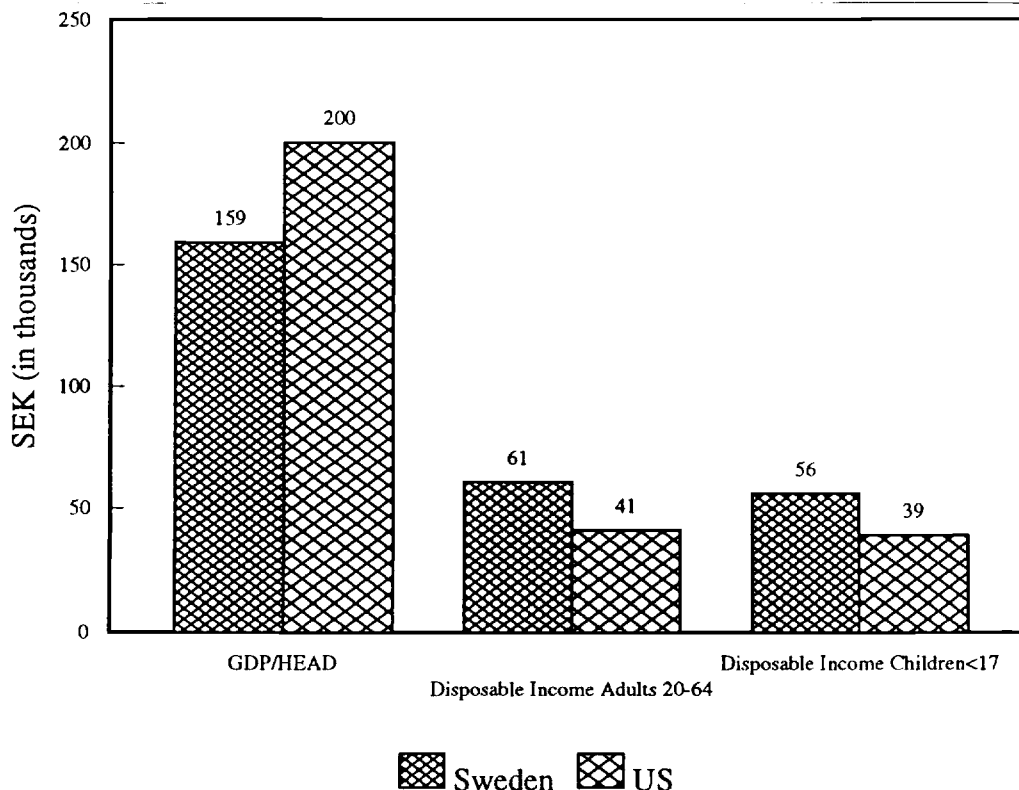


FIGURE 4B: GDP per Head and Incomes of the 10th Decile Persons in Sweden and U.S., 1990/91



SOURCES: (to Figures 4A and 4B) GDP per head from OECD, 1990, tables 1.3 and 3.1.

Hourly pay, Sweden -- our calculation from LNU for male workers. U.S., estimated from data in OECD 1993 as follows: table 5.2 shows that the hourly pay of a 10th decile American worker was 0.38 of the U.S. median in 1989 whereas the hourly pay of a 10th decile Swedish worker was 0.76 of the median in the same year. We multiply the 62 SEK by $.38/.76$ to obtain the earnings a 10th decile American would have if Sweden had the U.S. earnings distribution. Then we multiply this figure by 1.26 to account for the higher overall income per head in America as shown in the GDP per head figures.

Disposable income of adults, 20-64. Sweden -- our calculation from LNU based on OECD equivalence scales. U.S. estimated from calculations based on the Luxembourg Income Survey done by Markus Jantti. These calculations show that in 1986 the 10th decile adult had disposable income, adjusted for OECD equivalence scale, that was 0.34 of the median in the U.S. compared to 0.64 in Sweden. We multiply the 98700 SEK in Sweden by $.34/.64$ to obtain the disposable income a 10th decile American adult would have if Sweden had the U.S. income distribution, then multiply by 1.26 to account for the higher overall income in the U.S.

Disposable income of children, 0-17. Sweden -- our calculation from LNU based on OECD equivalence scales. U.S. estimated from calculations based on the Luxembourg Income Survey done by Markus Jantti. These calculations show that in 1986 the 10th decile child had disposable income, adjusted for OECD equivalence scale, that was 0.33 of the median in the U.S. compared to 0.59 in Sweden. We multiply the 555600 SEK in Sweden by $.33/.59$ to obtain the disposable income a 10th decile American child would have if Sweden had the U.S. income distribution, then multiply by 1.26 to account for the higher overall income in the U.S.

NOTES: Similar results are obtained if we use other estimated income distribution figures. According to Atkinson, Rainwater, and Smeeding (1994) a low decile person in Sweden has disposable income that was 0.56 of the median in 1987 whereas a low decile person in the U.S. had disposable income that was 0.35 of the median (table 4.1).

FIGURE 5: Conditions During Childhood by Year of Birth, 1892-1973

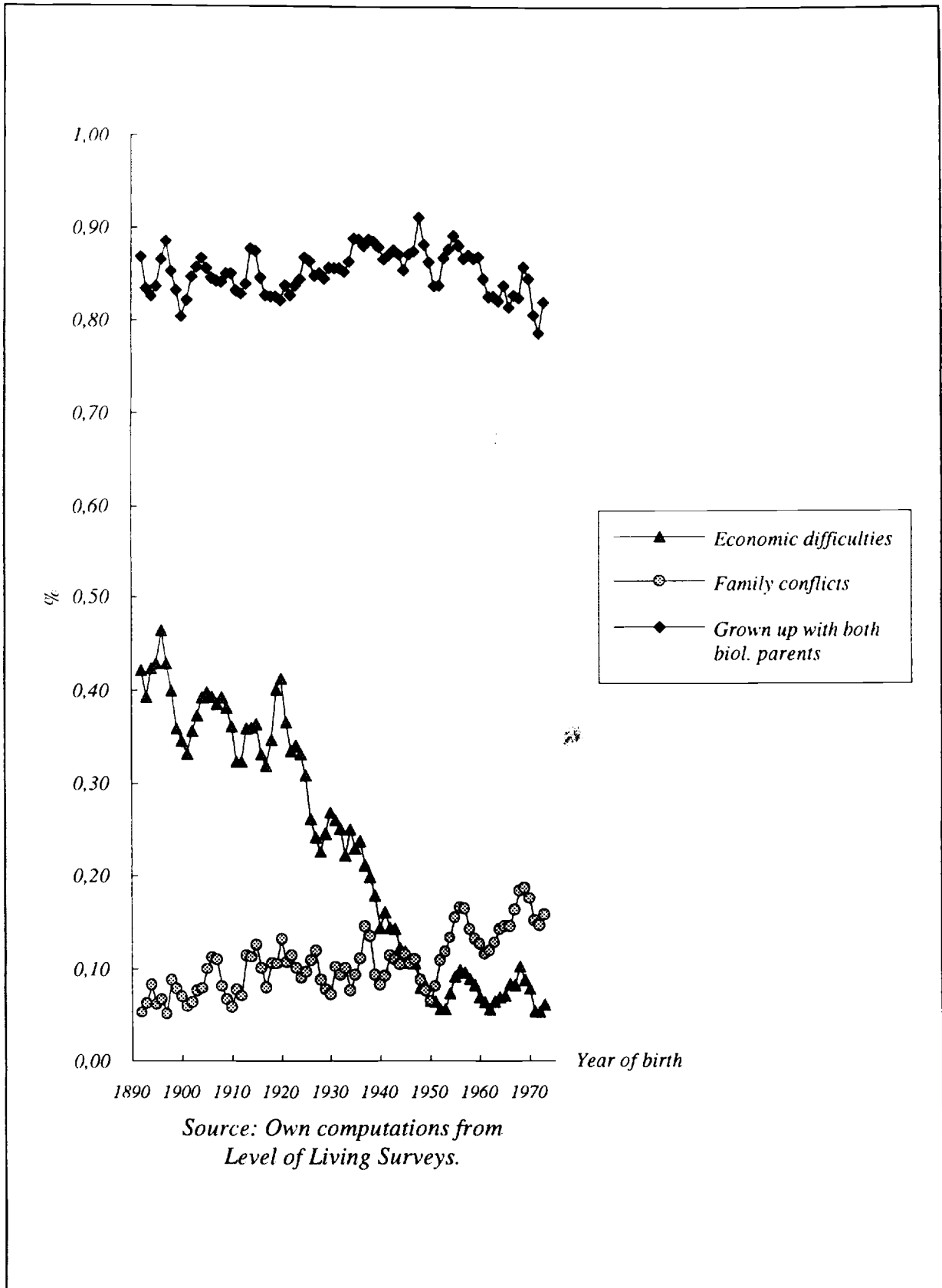


TABLE 1: The Ratio of Hourly and Annual Earnings by Decile, Employed Wage and Salary Workers Aged 20-64 in Sweden, 1968-1991

Hourly Earnings						
	Men			Women		
	n	Inequality 90/10	Low-Paid 10/50	n	Inequality 90/10	Low-Paid 10/50
1968	1709	2.44	0.71	1072	2.21	0.73
1974	1651	2.01	0.78	1254	1.87	0.75
1981	1750	1.93	0.79	1591	1.65	0.81
1991	1626	2.03	0.76	1614	1.73	0.80

Annual Earnings (including sickness and UI)			
1980	1827	2.66	0.59
1990	1346	3.09	0.51

 NOTES: Tabulated from Level of Living Surveys. Hourly earnings is explained in endnote 2. Annual earnings is taken from register information: We restrict the sample to people who report some earnings in both cases. See Erikson and Aberg 1987 for a description of the surveys.

TABLE 2: Comparison of Worktime in Sweden and the United States

	Sweden	U.S.	Ln Difference	
Aggregate Worktime (Men and Women)				
1. Aggregate Hours Worked/Population	1231	1365	-.103	
2. Employment/Population, 15-64 in 1990	.832	.766	.083	
3. Hours Worked by Workers in 1990	1480	1782	-.186	
	Sweden	U.S.		
	Both	Men	Men	
Distribution of Annual Hours Paid For (Hours > 0)				
4. 90th %ile in hours	2440	2600	2912	-.113
5. Median in hours	2080	2080	2080	0
6. 10th %ile in hours	1010	1070	960	.108
7. 90/10 spread in hours	2.42	2.43	3.03	-.60
8. 10/50 gap in hours	0.49	0.51	0.46	.05
				difference
Decomposition of Annual Earnings Inequality				
9. Variance ln annual earnings	0.286	.233	1.084	-0.851
10. Variance ln hours	0.162	.107	0.472	-0.365
11. Variance ln wage	0.082	.091	0.481	-0.390
12. 2 Covariance ln hours and ln wage	0.042	.034	0.131	-0.097

 SOURCE: Line 1 Calculated from lines 2 and 3; Line 2, from OECD, Employment Outlook 1993; Line 3, from OECD, Historical Statistics 1960-1990 ; Lines 4-12, for men and women, 20-64 years old, Sweden, tabulated from Level of Living Survey; United States, tabulated from US Census of Population 1990
 In lines 4-12 we have eliminated men reporting less than \$1 per hour or more than \$1000 per hour for the U.S. as these outliers affect variances whereas they do not noticeably affect the percentiles.

TABLE 3: Inequality and Relative Poverty in Household Factor Incomes and Disposable Incomes Per Equivalent Person in Sweden, 1967-1991

	Inequality: 90/10 Ratios				Relative Poverty: 10/50 Ratios			
	Adults (20-64)		Children (0-17)		Adults (20-64)		Children (0-17)	
	factor	disp.	factor	disp.	factor	disp.	factor	disp.
	income	income	income	income	income	income	income	income
1967	5.80	3.19	3.72	2.52	0.35	0.54	0.50	0.65
1975	6.87	2.57	4.24	2.21	0.27	0.59	0.43	0.67
1978	7.87	2.36	4.03	2.14	0.23	0.62	0.44	0.67
1980*	8.11	2.65	4.36	2.43	0.23	0.57	0.42	0.62
1980	8.19	2.44	4.87	2.27	0.22	0.60	0.37	0.65
1981	8.24	2.41	4.47	2.18	0.22	0.61	0.40	0.67
1982	8.16	2.44	4.38	2.17	0.23	0.61	0.40	0.67
1983	7.82	2.45	4.71	2.09	0.23	0.61	0.37	0.68
1984	8.14	2.41	4.49	2.10	0.23	0.62	0.38	0.68
1985	8.72	2.44	4.39	2.07	0.21	0.63	0.39	0.68
1986	9.24	2.49	4.82	2.08	0.21	0.62	0.36	0.68
1987	8.83	2.38	4.78	2.00	0.21	0.63	0.37	0.70
1988	9.57	2.39	4.79	2.02	0.20	0.63	0.36	0.69
1989	9.46	2.41	5.71	2.10	0.20	0.63	0.32	0.68
1990	9.64	2.49	6.15	2.11	0.19	0.61	0.29	0.68
(new definition)								
1989	9.62	2.53	5.85	2.19	0.20	0.62	0.32	0.68
1990	9.44	2.58	6.09	2.16	0.20	0.60	0.30	0.67
1991	12.76	2.67	7.47	2.23	0.15	0.60	0.25	0.67
1992	18.74	2.68	13.29	2.23	0.10	0.60	0.14	0.67

SOURCE: Statistics Sweden (HINK-data); with 1967* and 1980* from Level of Living Survey. The definition of income in the level of living survey differs modestly from that in the HINK-data. Statistics Sweden has a broader base for its income after 1991. The new definition figures for 1989 and 1990 are based on the new definition.

TABLE 4: The Major Transfer Programs in Sweden for Non-Elderly Adults

	Expenditure As Share of GNP (1991)	Relation to Work
<u>General Transfers^a</u>		
Medical Care	2.6%	income effect
Dental Care	0.4%	income effect
<u>Work-Related Transfers^b</u>		
Sickness Cash benefits	2.2%	work-fare
Work Injury Insurance	0.8%	work-fare
<u>Strongly Means-Tested Transfers</u>		
for all groups		
Housing Allowance ^c	0.4%	poverty trap
Social Assistance ^d	0.4%	poverty trap
for disabled		
Disability Pension ^b	1.9%	poverty trap
Sheltered Work, Wage Subsidies and Rehab ^e	0.8%	work-fare
for the unemployed		
Unemployment Benefits ^b	1.4%	poverty-trap
Temporary jobs, training, wage subsidies, emp serv ^f	1.3%	work-fare
<u>For Families With Children</u>		
Day Care ^g	1.3%	work-fare
Child Allowances ^b	1.1%	income effect
Maintenance Allowance ^h	0.2%	income effect
Parental Leave ^b	1.0%	work-fare
Temporary Parents Cash Ben ^b	0.2%	work-fare
<u>All Listed Programsⁱ</u>	16.0%	
Work-fare	7.6%	
Income Effect	4.3%	
Poverty Trap	4.1%	

NOTES: a - Data from National Accounts and SOU:1993:38. The estimates are constructed from the assumption that the non-elderly consume 40 percent of medical care and that 10 percent is paid by fees. The non-elderly are assumed to consume 80 percent of dental care; b - From Social Insurance statistics - FACT 1992, National Social Insurance Board; c - From Boverket; d - From Statistics Sweden; e - From Samhall and National Labor Market Board, figures for 1991/92; f - From National Labor Market Board, figures for 1991/92; g - Estimated as the number of children at day care centres (300,000 according to Statistics Sweden) times SEK 50,000 plus the number of children with subsidised day care in private homes (110,000, acc to Statistics Sweden) times SEK 40,000; h - From Social Insurance statistics, with the part paid by non-custodial parents excluded; i - Sickness cash benefits, work injury insurance, disability pension, training stipends, wages for sheltered jobs and temporary jobs, unemployment benefits, parental leave benefits and temporary parents cash benefits are subject to income tax; thus the gross expenditures overstates the net burden of public budgets.

TABLE 5: The Distribution of Earnings of Men, Sweden vs United States, 1989/91

	Earnings of Workers			
	Hourly		Annual	
	90/10	10/50	90/10	10/50
Swedes in Sweden	2.02	0.77	2.74	0.58
Swedish Descent in US				
Any Swedish anc	5.59	0.38	10.4	0.20
Only Swedish anc	5.05	0.41	7.0	0.29
US, Total	5.53	0.39	10.0	0.21
Non-Swedes in Sweden	2.09	0.71	4.27	0.36
Non-Nordics in Sweden	1.85	0.74	4.42	0.35

SOURCE: US data tabulated from public use Census files. We have used all of the earnings/income data, including observations for which the Census imputed incomes. The Census Bureau made a top-code adjustment in 1990 by giving everyone in a state with income above the top-code the median income of top-coded incomes in that state. We experimented with several top codes but they did not affect our distributions. Swedish data tabulated from the LNU survey, The number of observations in the Swedish data is limited. There were 1513 observations for all Swedes in 1989/91; 233 for non-Swedes and 104 for non-Nordic Swedes. By contrast, we have 53,468 men of Swedish ancestry and a random sample of 98,181 Americans irrespective of ancestry in 1990.

**TABLE 6: Test Scores in Science Achievement Among 14 year olds
in Advanced OECD Countries, 1980s**

	Quartile Scores			Scores of Bottom 25% Mean Score	25%	Ratios of Quartile Scores	
	75% (1)	Median (2)	25% (3)			75%/25% (6)	25%/Median (7)
Sweden	15	19	22	12.2	11	1.47	0.79
U.S.	13	17	20	10.3	9	1.54	0.76
Average for Others	15	18	22	12.3	10.9	1.47	0.81
Australia	15	18	22	12.2	11	1.47	0.83
Canada (Eng)	15	19	22	12.4	11	1.47	0.79
England	13	17	20	10.5	9	1.54	0.76
Finland	16	19	22	13.7	13	1.38	0.84
Italy	13	16	20	10.4	9	1.54	0.81
Japan	17	21	24	13.7	12	1.41	0.81
Netherlands	16	19	23	13.1	11	1.44	0.84
Norway	15	18	21	12.5	11	1.40	0.83

SOURCE: Calculated from International Association for the Evaluation of Educational Achievement, 1988, tables 5 and 6.

NOTES: % refers to the relevant percentile, so the 75% means the 75th percentile. The 25th percentile of the bottom 25th percentile is approximately the bottom 6% of students.

TABLE 7: Estimates of the Contribution of the Variance in Fathers' Earnings on Sons' Earnings under Swedish and US Intergenerational Mobility Patterns

	US(PSID)	Sweden(LNU)	Difference
Basic Data			
1. Posited Variance of Sons to be explained	0.50	0.29	0.21
2. Variance of ln earnings of fathers	0.50	0.29	
3. Correlation, Fathers and Sons Earnings	0.40	0.25	
4. Correlation coefficient squared	.16	.06	
5. Contribution of Background to Variance	0.08	0.02	0.06
6. Residual Variance	0.42	0.27	0.15
Predicted Variance of ln Earnings of son given			
7. Other Country's Variance of fathers ln earnings but own country correlation, of fathers and sons' earnings	0.47	0.30	
8. Other Country's Correlation of fathers and sons' earnings but own country variance of fathers' ln earnings	0.45	0.34	
9. Other Country's Contribution of Background, other country's correlation of fathers' and sons' earnings and other country's variance of fathers' ln earnings	0.44	0.35	

 SOURCE: Calculated from statistics in Bjorklund and Jantti, 1993

TABLE 8: Percentage of 20-64 Year Old Workers Employed in the Public Sector, by quartile in the hourly earnings distribution, low skill, and physical mobility status, 1968-1991

	1968	1974	1981	1991	Change	1968-91
Men						
All	0.18	0.23	0.27	0.25	0.25	.07
Normal mobility	0.20	0.23	0.27	0.25	0.25	.05
Reduced mobility	0.09	0.20	0.28	0.25	0.25	.16
Severely lim. mob	0.12	0.18	0.20	0.29	0.29	.17
Less Educ of 45-64	0.13	0.19	0.20	0.19	0.19	.06
Low quartile	0.10	0.18	0.24	0.29	0.29	.19
Middle quartiles	0.21	0.26	0.34	0.30	0.30	.09
High quartile	0.34	0.35	0.33	0.29	0.29	-.05
Women						
All	0.39	0.48	0.57	0.58	0.58	.19
Normal mobility	0.40	0.49	0.57	0.58	0.58	.18
Reduced mobility	0.33	0.38	0.55	0.55	0.55	.22
Severely lim. mob	0.35	0.53	0.64	0.74	0.74	.39
Less Educ of 45-64	0.30	0.43	0.47	0.58	0.58	.28
Low quartile	0.28	0.42	0.50	0.52	0.52	.24
Middle quartiles	0.45	0.55	0.65	0.66	0.66	.21
High quartile	0.62	0.67	0.68	0.61	0.61	-.01

SOURCE: Tabulated from Level of Living Surveys. Note that the quartile distributions exclude the self-employed

TABLE 9: Employment Rates, Working Hours, and Sickness Days of Swedish Adults, 20-64

	Males		Females	
	1981	1991	1981	1991
A) Percentage At Work At Time of Interview				
Normal Mobility	0.93	0.90	0.83	0.87
Reduced Mobility	0.77	0.68	0.61	0.65
Severely Limited Mobility	0.65	0.63	0.46	0.54
B) Annual Contractual Hours Conditional on Work				
Normal Mobility	2040	2030	1490	1680
Reduced Mobility	2030	2000	1480	1660
Severely Limited Mobility	1950	2110	1460	1550
C) Annual Sickness Days Conditional on Work				
Normal Mobility	13	15	16	22
Reduced Mobility	52	81	40	77
Severely Limited Mobility	75	102	66	105

SOURCE: Level of Living Surveys. Note, the data in panels B and C refer to the previous calendar year.

TABLE 10: Disposable Income and Sick pay, Unemployment /Benefits and Child Allowance(general and progressive part) by quartile group in 1990 distribution of adjusted disposable income. 1000 SEK.

All 20-64 years, by quartile group.

	Lowest	2nd	3rd	4th
Mean Adj. disp inc	48.5	74.1	95.2	139.3
Sick pay as % of DI	3.6 (7)	5.8 (8)	7.5 (8)	7.9 (6)
Un. Benefits as % of DI	1.1 (2)	1.5 (2)	1.0 (1)	0.9 (1)
Child all.(gen) as % of DI	2.6 (5)	2.2 (3)	1.0 (1)	0.4 (0)
Child all. (pr.) as % of DI	0.4 (1)	0.1 (0)	0.0 (0)	0.0 (0)

Children 0-17 years

Mean Adj. disp inc	45.7	64.3	77.7	105.8
Sick pay as % of DI	11.5 (25)	11.4 (18)	14.5 (18)	10.8 (11)
Un. benefits as % of DI	2.21 (5)	2.9 (5)	2.2 (3)	1.8 (2)
Child all.(gen.) as % of DI	18.3 (40)	15.9 (25)	13.0 (17)	10.7 (10)
Child all. (pr.) as % of DI	5.8 (13)	3.0 (5)	1.0 (1)	0.4 (0)

SOURCE: Own tabulations from the Level of Living Surveys.

APPENDIX

The standard approach to analysing how taxes and transfers affect incomes compares the distribution of income generated by the "market" with the distribution after taxes and transfers -- i.e. disposable income. In the text we use the standard concept of "factor incomes" to reflect market incomes. This concept, however, has some shortcomings that suggest the value of a more detailed picture of how taxes and transfers modify the outcome that the market generates. Accordingly, in this appendix we examine measures of inequality in various income measures derived from the HINK surveys of the Statistics of Sweden.

Factor income ("faktorinkomst") consists of wages and salaries for employed workers and the equivalent salary for self-employed workers. It also includes income from capital and realized capital gains. It excludes sickness and parental allowances in spite of the fact that these benefits are closely tied to previous work. The basic components of income from work are wages and salaries for employed and self-employed persons ("arbetsinkomst"). This includes the closely work-related sickness and parental leave allowances as well as the "stipends" for retraining of unemployed workers. Note that these three transfers are taxable. Total income after deductions for deficits in some sources of income ("sammanräknad nettoinkomst"), finally, consists of total taxable income from all sources of income, like work (including all taxable transfers), income from capital, income from realized capital gains, and income from own estate and own business. It also includes the closely work-related transfers included in retirement pensions that are also related to previous work activity.

Tables A1 and A2 present measures of dispersion for the three income concepts plus

disposable income for selected years from 1975 until 1991. We use the same groups as in the text, namely adults 20-64 years old (in Table A1) and children 0-17 years old (in Table A2). We also use (as in the main text) the household as the unit of income, the individual as the unit of analysis and the Swedish equivalence scales.

Factor incomes have the most unequal and erratic pattern. The marked rise in inequality that can be found in factor income is not as dramatic in income from work and total income. This reflects the importance of sickness and parental leave allowances for families in the age groups that we consider. The detailed tables from the HINK project reveal that these two transfers, which are included in income from work, are higher than income from capital and capital gains, that are included in factor income.

In Table A3 we look at income from work in a more detailed way; for men, women and both sexes individually and for families with the individual as the unit of analysis. In the latter case, equivalence scales are applied. The figures reveal an increase in inequality for men irrespective of the measure of inequality that is used. The opposite pattern is found for women up to 1990. This development for women reflects the shift from part-time to full-time work for women that took place during the 1980s. Even for women there was, however, a marked increase in inequality from 1990 to 1991. For both sexes together there is also a downward trend in inequality up to 1990 when there was a marked rise.

When we use the family as the unit of income and divide the income from work for both spouses on the equivalent number of adults in the family, inequality is remarkably stable from 1975 to 1990. In addition, the 90/10 and 10/50 ratios reveal much more equal distributions for families than for individuals.

**TABLE A1. Inequality of Various Income Concepts
Adults 20-64 Years Old**

	<u>90/10 - ratios (ginis)</u>			
	Factor income	Income from work	Total income	Disposable income
1975	6.87 (0.842)	6.08 (0.327)	4.21 (0.302)	2.57 (0.212)
1980	8.19 (0.342)	7.22 (0.327)	3.68 (0.276)	2.44 (0.197)
1985	8.72 (0.357)	7.12 (0.333)	3.91 (0.276)	2.44 (0.244)
1988	9.57 (0.358)	7.21 (0.325)	3.80 (0.276)	2.39 (0.203)
1989	9.46 (0.360)	7.17 (0.322)	3.72 (0.280)	2.41 (0.205)
1990	9.64 (0.365)	6.85 (0.323)	3.86 (0.290)	2.49 (0.213)
1989*	9.62 (0.368)	7.36 (0.324)	n.d.	2.53 (0.224)
1990*	9.44 (0.372)	6.94 (0.325)	n.d.	2.58 (0.229)
1991*	12.76 (0.392)	8.99 (0.345)	n.d.	2.67 (0.245)
1992*	18.74 (0.397)	15.25 (0.366)	n.d.	2.68 (0.235)
		<u>10/50 ratios</u>		
1975	0.27	0.29	0.42	0.59
1980	0.22	0.23	0.45	0.60
1985	0.21	0.25	0.43	0.63
1988	0.20	0.24	0.44	0.63
1989	0.20	0.24	0.44	0.63
1990	0.19	0.25	0.43	0.61
1989*	0.20	0.24	n.d.	0.62
1990*	0.20	0.25	n.d.	0.60
1991*	0.15	0.20	n.d.	0.60
1992*	0.10	0.12	n.d.	0.60

* new definition

n.d. = not defined in same manner after tax reform

TABLE A3. Inequality of income from work with the individual and the family as units of income, adults 20-64 years.

	<u>90/10 ratios (ginis)</u>			
	Individual			Family
	<u>Men</u>	<u>Women</u>	<u>Both Sexes</u>	
1975	4.98 (0.293)	n.r. (0.494)	n.r. (0.418)	6.08 (0.327)
1980	5.83 (0.300)	n.r. (0.411)	n.r. (0.376)	7.22 (0.327)
1985	11.62 (0.327)	n.r. (0.362)	46.97 (0.367)	7.12 (0.333)
1988	10.39 (0.318)	n.r. (0.339)	20.66 (0.349)	7.21 (0.325)
1989	11.34 (0.317)	128.67 (0.333)	20.71 (0.347)	7.17 (0.322)
1990	10.30 (0.323)	73.50 (0.331)	17.34 (0.348)	6.85 (0.323)
1989*	12.04 (0.322)	131.75 (0.335)	n.a.	7.36 (0.324)
1990*	8.13 (0.324)	74.73 (0.332)	77.85 (0.350)	6.94 (0.325)
1991*	22.92 (0.353)	61.09 (0.337)	30.72 (0.366)	8.99 (0.345)
		<u>10/50 ratios</u>		
1975	0.33	0	0	0.29
1980	0.27	0	0	0.23
1985	0.14	0	0.04	0.25
1988	0.16	0	0.08	0.24
1989	0.14	0.01	0.08	0.24
1990	0.16	0.02	0.10	0.25
1989*	0.14	0.01	n.a.	0.24
1990*	0.16	0.02	0.10	0.25
1991*	0.07	0.03	0.06	0.20

* new definition

n.a. = not available

n.r. = not relevant because base is 0.

0s are 0 because we include people with 0 incomes.

ENDNOTES

1. The equivalence scale used in this table is the square root of household size. Alternative adjustments for household size, such as taking incomes per capita, give a similar picture. See Atkinson, Rainwater, and Smeeding (1994), table 4.9.

2. Two important countries missing from these data are Germany and Japan. World Bank data on income distribution (not adjusted for family size or for disposable income) show that Japan has the lowest inequality among advanced countries while Germany is the fifth lowest in inequality. See World Bank, 1993, table 10.

3. The first survey was conducted in 1968 when approximately 6000 randomly selected Swedes were interviewed about their level of living and labour market experiences. Later in 1974, 1981, and 1991 the same sample, complemented with immigrants and youths to make it representative for the whole population, was interviewed again. See Erikson and Aberg (1987) for further details.

The hourly earnings variable in the LNU is constructed from questions about payment per period and about working hours. The respondent is asked in what way he or she is paid: by hour, by piece rate, by week, by month, etc. Then the survey asks for pay per hour, week, or month. Those paid by piece rate report pay per month. The hourly wage of persons not paid on an hourly basis is computed by dividing monthly (other unit) pay by normal working hours.

4. Since hourly earnings in Sweden are directly measured while they are obtained in the U.S. by division of earnings by time worked, some of the greater inequality in hourly pay in the U.S. could be due to measurement error. The annual earnings figures show that the basic difference remains substantial with data obtained in the same way.

5. We avoid the term living standards here, because of conceptual issues about how to value non-work time. In one sense, measured income overstates the advantage of those who work more hours since they have less leisure. If their productivity in non-market activities exceeds that of lower-paid workers proportionate to wage differences, the right comparison is the comparison of wages. But if those who work few hours do so because their opportunities are, for whatever reason, limited, the income comparison may give a better fix on differences in living standards.

6. In these scales the first adult is counted as 1.0, the second as 0.65, children between 0 and 3 as 0.48, children between 4 and 10 as 0.57, and children between 11 and 17 as 0.65.

7. Our definitions of factor income and disposable income includes realised capital gains but does not capture unrealised gains, e.g. from changing real estate prices. The strongly fluctuating house-prices -- rising during the 1970s and second half of the 1980s and falling during 1990-93 - are therefore not fully taken into account in our data. We believe that this problem is largely one at the upper half of the income distribution and thus are more confident about our relative poverty rate than our measure of overall income inequality.

8. In part, 1991 appears to be an exceptional year because many people changed the timing of their incomes to take advantage of the tax reforms.

9. But we show in the appendix that inequality of income from work was more stable than inequality of factor incomes in total until 1990. In 1991 inequality of income from work rose substantially.

10. In this calculation we include reported transfers but did not adjust for taxes. Taking account of taxes will have little effect on the difference in income between the 10th decile and the median, but U.S. household surveys typically understate the amount of transfer income relative to administrative records and also understate the amount of capital income. We believe that the 33% figure that we calculated is probably lower than the actual figure.

11. We ignore the subsidies that cover the costs of the interest payments on housing and the implicit subsidy in the deductibility of interest payments.

12. The lower basic amount is offered for three additional months for all parents.

13. Our calculations **understate** the difference in the earnings or income between low decile Swedes and Americans, because we used mean differences in GDP per head to adjust for differences in living standards, but base our decile comparisons on calculations that compare distributions based on medians. Since mean income differences exceed median differences, this implies that we have overstated how much low income Americans make.

Note also that over time the advantage of the low paid Swede has risen. The earnings of low decile Swedes rose sharply from 1968 through 1981 and moderately thereafter, the real earnings of low decile Americans have declined since the early 1970s (OECD, 1993, table 5.3).

14. Another possible analysis would be to compare the distribution of earnings of Swedish immigrants to the United States with that of persons who remain in Sweden. Because of the potential selectivity of immigrants, we chose to limit our analysis to persons born in the United States with Swedish ancestry. There are too few Swedish immigrants to the U.S. in recent years to give a reasonable comparison in any case.

15. We performed a similar analysis using the 1980 U.S. Census, which coded for only a single ancestry group and obtained results like those in the table. Thus, our findings do not hinge on a particular Census year.

16. There are possible selectivity problems for persons of Swedish descent in the United State due to selectivity of their ancestors, but we doubt that this substantively affects the results. If there is a selectivity problem, it is likely that Swedes in the U.S. come from a more homogeneous background than Swedes in Sweden. This is because economic analysis suggests that immigrants should be drawn from similar circumstances: the top or bottom of an income distribution rather than randomly. Their descendents might have similar (though presumably much smaller) selectivity.

17. A possible problem with our contrast is that measurement error in incomes may be much larger in the U.S. data than in the Swedish data. The U.S. figures are self-reported; while the Swedish earnings data are from administrative records. But while this might exaggerate the difference in inequality between the U.S. and Sweden in general, there is no reason to expect it to affect the comparison of incomes of Americans of Swedish descent with that of other

Americans. And it is the absence of any discernible difference between the distributions of those two groups that is the key finding in the table.

18. This, despite the fact that persons of foreign ancestry earn less than others when a foreign language is spoken at home. We regressed the ln hourly earnings of men on dummy variables for their ancestry in Sweden and obtained the following coefficients and standard errors: for any parent not Swedish at birth: .060(.037); for parent not Swedish and other Nordic language spoken at home -.147(.051); for parent not Swedish and non-Nordic language spoken at home, -.248(.047).

19. The greater dispersion in years of schooling in Sweden than in the United States is also found in measures of relative variation: the coefficient of variation of years attained in Sweden is 0.33 compared to 0.23 in the United States.

20. Table 7 in the IEA study of Science Achievement in Seventeen Countries shows that Sweden, Finland, Japan, and Norway have the lowest variation in achievement scores across schools while the United States, Italy, and the Netherlands have the highest variation among developed countries. The coefficient of variation in the average score of schools for the U.S. is .18, which is twice the Swedish coefficient of variation (.09). The ratio of the maximum school score to the minimum school score in the U.S. is 3.07 compared to a ratio of 1.67 in Sweden.

21. We explain .06 points of the .21 point difference. The .06 is the difference between lines 1 and 9.

22. For most cohorts born after 1950 at least 9 years of schooling was compulsory. Therefore the group that we identify is an absolutely and relatively low skilled group over the entire period.

23. Our subsample from the Census had 138531 observations, so that all of the differences among groups are highly statistically significant.

24. The 1990 Census of Population does not contain a simple years of schooling measure, so we coded the reported highest level of education into a years variable for comparison with the Swedish data.

25. The analyses of Ehrenberg and Schuman and others of how demand for labor responds to the premium for overtime (which would reduce hours worked) tell a similar story. They show that if the U.S. raised its overtime premium from 1.5 times the base wage to 2 times the base wage, manufacturing employment would increase by 3%.

26. We also recognise that at some point reductions in hours by at least some of the more able should decrease the demand for the less skilled. Certainly, reductions in the work activity of entrepreneurs or inventors or others whose skills complement those of the less skilled are likely to have adverse effects on demand for unskilled labor.

27. The figures in the table exaggerate the amount of sickness benefits relative to disposable income because the benefits are measured gross of taxes when in fact they are taxable.

28. These results can be sensitive to the equivalence scales, and to the way the scales treat the costs of having additional children. The Swedish scales do not allow for economies of scale for additional children: the cost of an extra child is the same as the cost of the first child. This raises the possibility that the progressivity of the child allowance is due largely to the equivalence scale. To see if this is the case, we computed a version of Table 10 with an equivalence scale that allows for economies of scale in children by using a square root of the number of persons in the family (see the forthcoming study by Atkinson, Rainwater, and Smeeding for the OECD). The child allowance benefits become less progressive with this scale but remain strongly progressive.

29. We note that this result is sensitive to the equivalence scale that we use. While the direction of the effect will be the same with other scales, the magnitude could differ substantively.