Is High Inequality Offset by Mobility?

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The United States is the most unequal affluent country. It has the highest level of earnings inequality among employed individuals and the highest level of posttax-posttransfer income inequality among households (Kenworthy 2004, 2007; Pontusson 2005; Brandolini and Smeeding 2006; Burniaux, Padrini, and Brandt 2006). But these conclusions are based on single-year snapshots of the population. Many believe that the United States also has more mobility of earnings and income than other countries — that is, individuals move up and down in the distribution with greater frequency and to a greater extent. If this is true, inequality of long-run ("permanent") earnings and income in the United States may be comparable to or perhaps even less than in other countries.

A number of researchers have examined the degree to which multiple-year inequality differs from single-year inequality (Burkhauser and Poupore 1997; Jarvis and Jenkins 1998; Buchinsky and Hunt 1999; Gittleman and Joyce 1999; Goodin et al. 1999; Cantó 2000; Aaberge et al. 2002; Gangl 2005). The finding typically has been that inequality measured using average income over a five- or ten-year period is 10% to 30% less than when measured for a single year.

But do countries differ in the degree to which mobility over time reduces inequality? In recent years a handful of studies have examined comparative earnings and/or income inequality over multi-year periods. An OECD (1996) study compared earnings inequality in the United States and seven European countries during a five-year period from 1986 to 1991. Burkhauser and Poupore (1997) compared income inequality in the United States and Germany during the 1980s.

Aaberge et al. (2002) examined earnings and income inequality in the United States, Denmark, Norway, and Sweden over a ten-year period from 1980 to 1990. Schluter (1998) examined income inequality in the United States, Germany, and the United Kingdom during the late 1980s and early 1990s. Goodin et al. (1999) compared income inequality in the United States, Germany, and the Netherlands during a ten-year period from the mid-1980s to the mid-1990s. Gangl (2005) examined income inequality in the United States and eleven European countries over a six-year period in the mid-to-late 1990s. Each of these studies found little or no alteration of the country rank-ordering when switching from a single-year measure of inequality to a multi-year measure. And all found that, as when measured in single years, inequality measured over multiple years tends to be comparatively high in the United States.

Yet the maximum number of years covered in these studies is ten. This may be too short a time period to fairly evaluate the possibility that inequality of long-run income is no greater in the United States than in other countries. Ideally we would want to examine mobility across the entire working career of a cohort, which would amount to roughly 40 years. Given existing panel data sets, it is not possible to do that. It is, however, possible to examine a period of nearly 20 years, covering the 1980s and 1990s, for three countries: (West) Germany, Sweden, and the United States. We do so here, using data from the Socio-Economic Panel for Germany (GSOEP), the Level of Living Survey (LNU) coupled with tax register data for Sweden, and the Panel Study of Income Dynamics (PSID) for the United States.

How Mobility Can Affect Inequality

Nearly half a century ago Milton Friedman (1962, p. 171) called attention to the importance of mobility in understanding inequality:

> A major problem in interpreting evidence on the distribution of income is the need to distinguish two basically different kinds of inequality: temporary, short-run differences in income, and differences in long-run income status. Consider two societies that have the same distribution of annual income. In one there is great mobility and change so that the position of particular families in the income hierarchy varies widely from year to year. In the other, there is great rigidity so that each family stays in the same position year after year. Clearly, in any meaningful sense, the second would be the more unequal society. The one kind of inequality is a sign of dynamic change, social mobility, equality of opportunity; the other of a status society.

This distinction is illustrated in Figure 1. Each of the two charts shows hypothetical household incomes for five individuals over a period of twenty years,

with each bar representing one year. The top chart corresponds to Friedman's "low-mobility" society, the lower chart to his "high-mobility" society. The income distribution in each single year is exactly the same in the two societies. The difference is that in the top chart each individual maintains her/his position relative to the others throughout the twenty-year period, with the exception of a few temporary fluctuations, whereas in the lower chart several of the individuals switch places.

The degree of inequality in each individual year is exactly the same in the two societies. As a result, the average Gini coefficient (the most common measure of inequality, which ranges from zero to one with larger numbers indicating greater inequality) for single-year incomes over the twenty years (i.e., the average of twenty Gini coefficients) is the same in the two societies: .376. When inequality is calculated based on each person's long-run income, however, the societies differ sharply. In the "low-mobility" society depicted in the top chart, the Gini coefficient for twenty-year average incomes is .363. In the "high-mobility" society, long-run incomes are less unequal among the five individuals, because each moves up or down at some point during the period; the Gini coefficient for twenty-year average incomes is .294. In a society with substantial mobility, in other words, measuring inequality based on single-year incomes results in an inflated estimate of the "true" degree of inequality.

Figure 2 illustrates this point. It shows inequality in the two hypothetical societies measured with income aggregated (averaged) over one year, then over two years, then over three years, and so on up to twenty years. When only the first year of income is included, the Gini coefficient is the same for the two societies: .376. Two persons in the "low-mobility" society have some temporary income fluctuation in the second year, so its Gini drops a bit early on. But inequality of long-run ("permanent") income is much lower in the high-mobility society.

Social scientists study a number of aspects of mobility, so let us be clear about which is at issue here. Sociologists traditionally have examined occupational mobility. We focus here on income mobility. Changes in occupation are one cause of income mobility, but there are many others (see below).

Many mobility studies examine intergenerational mobility, which refers to movement between generations (Lipset and Bendix 1959; Erikson and Goldthorpe 1992; Breen 2004; Corak 2005). The question addressed in such studies is typically something like: How does the income (or occupational status) of a person compare to that of her/his parents? Our concern here is with *intra*generational mobility, which refers to movement up or down *within* generations.

Figure 1.   Two Hypothetical Income Distributions Among Five Individuals Over Twenty Years

Low Mobility

High Mobility
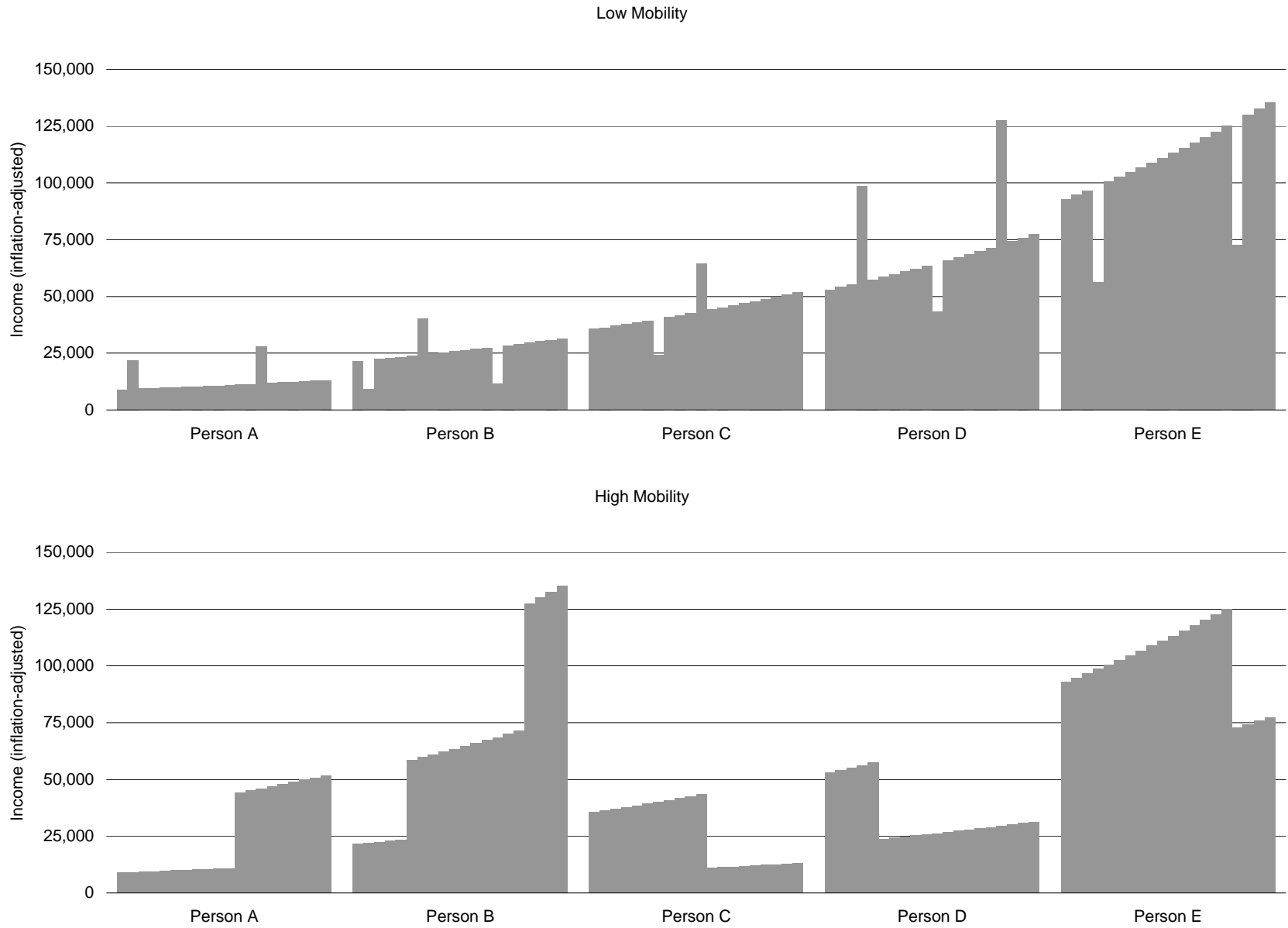
Note: Each bar represents one year. The incomes in each year are exactly the same in the two hypothetical societies, but in the bottom chart the individuals switch incomes at various points during the twenty years. The average of the twenty Gini coefficients for single-year income is .376 in both societies. For the "low mobility" society (top chart), the Gini for twenty-year average incomes is .364. For the "high mobility" society (lower chart), the Gini for twenty-year average incomes is .294.

Figure 2. Short-Run and Long-Run Inequality for Two Hypothetical Income Distributions
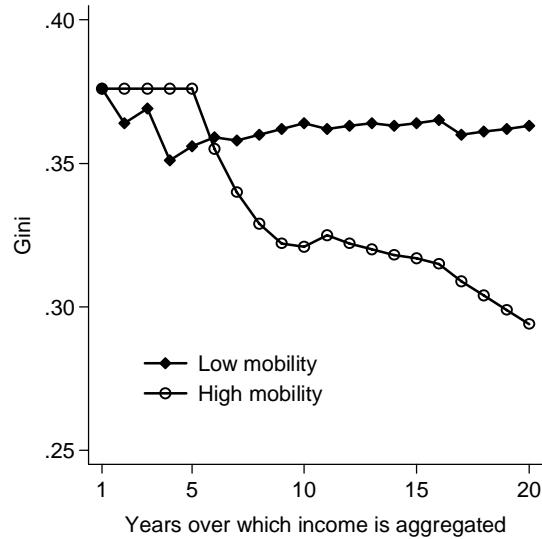
Note: The horizontal axis represents the number of years over which income is aggregated (averaged) in calculating the Gini coefficient. Vertical axis of the chart is truncated.

A third important distinction is between absolute mobility and relative mobility (Erikson and Goldthorpe 1985; Gottschalk and Danziger 1998). Absolute intragenerational mobility refers to changes in income compared to the income one started with. In Figure 1 there is upward absolute mobility for the individuals even in the "low-mobility" society; each of the five persons experiences an increase in (inflation-adjusted) income over the twenty-year period. In the "high-mobility" society depicted in the lower chart, persons A and B experience upward absolute mobility while C, D, and E experience downward absolute mobility.

Relative intragenerational mobility refers to the degree to which individuals move up or down compared, not to their starting point, but rather to others in their cohort. In the "high-mobility" society in Figure 1 there is considerable relative mobility: persons A and B experience income increases relative to persons C, D, and E. In the "low-mobility" society there is no sustained relative mobility.

Absolute intragenerational mobility is of considerable interest. A society in which incomes increase over time is likely to be preferable to one in which incomes are stagnant or decline. But for our purpose here, which is to assess whether examining long-run inequality alters the conventional wisdom about

cross-country differences in inequality, it is *relative* intragenerational mobility that is relevant. If everyone experiences upward absolute income mobility at roughly the same rate — as is the case in the "low-mobility" society in figure 1 — the degree of long-run inequality will be approximately the same as the degree of single-year inequality. It is movement up or down relative to others that produces lower inequality of long-run incomes.

As noted earlier, most studies of multi-year inequality have examined fairly short periods of time — typically five or ten years. Examining inequality over a longer period may be useful because shorter periods may primarily capture the effect of transitory changes in relative incomes rather than the effect of more significant, sustained changes (Hills 1998, 2003). When analysts such as Friedman and others allude to the inequality-mitigating impact of mobility, they generally have in mind significant and lasting upward or downward movement by individuals within the income distribution. Upward mobility of this sort can be a product of factors such as talent and hard work over the course of a career, entrepreneurial success, marriage to a high earner, and inheritance. Downward mobility can owe to factors such as poor work effort, job loss coupled with skill mismatch and geographical immobility, sustained illness, disability, and marital breakup. With a time period of just five or ten years, the effects of significant mobility events or processes such as these on inequality may be hard to detect compared to those of transitory fluctuations in income. The latter may stem from a period of temporary unemployment or sickness, a member of a couple taking time off from work to care for a child or relative, a one-time earnings bonus, a temporary second job, and so on. The increases and decreases in income produced by these sorts of processes occur in all countries (though likely to differing degrees). The "noise" they introduce into calculations of inequality may smother the "signal" from the more substantial mobility events and processes that are of greater interest in assessing long-run inequality. The longer the time period examined, the less likely that will be the case.

Figure 2 (above) illustrates this possibility. When income is aggregated over five years, the "low-mobility" society has a smaller Gini coefficient than the "high-mobility" society. This is because in the former some income fluctuation occurs during the first five years, whereas in the latter none takes place. Over the longer run, however, it becomes clear that inequality is lower in the "high-mobility" society.

What Cross-Country Differences in Mobility Should We Expect?

Reasons to Expect More Mobility in the United States

The United States differs from European countries such as Germany and Sweden in a number of ways that may promote greater relative intragenerational earnings and income mobility (Erikson and Goldthorpe 1985; DiPrete 2002). These include the following:

Job loss and job switching. Employers in the United States face fewer impediments to firing workers, which may lead to higher dismissal rates (OECD 2004). In addition, American culture emphasizes individual flexibility and freedom, which may lead to higher quit rates. There is evidence that employee turnover is indeed greater in the United States than in Germany or Sweden. In addition, government benefits for the unemployed are less generous in the U.S., so joblessness may have a larger impact on income. For instance, as of the late 1990s a worker with median earnings who lost her/his job in the United States received unemployment and related benefits equal to about 28% of her/his former earnings, compared to 35% in Germany and 70% in Sweden (OECD n.d.). Americans who lose their job involuntarily tend to get another comparatively quickly. As of 2000, only 6% of unemployed Americans had been jobless for more than a year, compared to 26% of unemployed Swedes and 52% of unemployed Germans (OECD 2003, p. 325). But because of the greater dispersion in wages in the U.S. economy, Americans who move from one job to another may be more likely to experience sizeable earnings increases or decreases than their German or Swedish counterparts.

Promotion. The employment relationship in the United States is less heavily regulated by union agreements or government statutes than in Germany or Sweden. American employers thus tend to have greater control over the choice about whom to promote within the firm and how much of a pay increase such promotion carries. Hence, both the chances of promotion and the earnings and income reward from promotion may be greater in the United States than in Germany or Sweden.

Entrepreneurship. Successful self-employment can lead to substantial upward mobility. The U.S. economy is thought to be comparatively conducive to entrepreneurship in several respects. There is a strong cultural emphasis on individual freedom and success, which encourages starting one's own business. The venture capital market is relatively well-developed compared to European countries. And business start-ups face fewer regulations than their European counterparts. Alberto Alesina and Francesco Giavazzi (2006, p. 30) argue that in Europe "high taxes and regulations create a disincentive effect that makes society less mobile because individual initiative is stifled."

Marriage and divorce. The United States has higher rates of marriage and divorce than Germany and Sweden. For an individual who marries a high earner, marriage is likely to significantly increase household income and thereby result in upward mobility. For an individual who marries someone with no earnings, by contrast, marriage will reduce size-adjusted household income, since household size grows without a proportionate increase in income. Because of gender differences in employment and earnings, divorce tends to have unequal financial consequences for men and women: men tend to benefit, while women tend to end up with lower incomes. Marital breakup can thus have significant mobility effects.

Strength of the safety net. Germany and Sweden each provide more generous government benefits than the United States for those who are unsuccessful, whether temporarily or permanently, in the labor market (Korpi and Palme 1998; Scruggs 2004). They also impose higher taxes on those who do succeed (OECD 2004). Both of these policy differences affect the extent to which increases or decreases in earnings result in substantial mobility.

Reasons to Expect Less Mobility in the United States

On the other hand, there are reasons why we might expect to find less relative intragenerational mobility of earnings and/or income in the United States.

Inequality of cognitive skills. Gøsta Esping-Andersen (1999) has suggested that a more even distribution of cognitive skills can promote mobility. The best available data on cognitive skills are from a multi-country study of adult literacy, the International Adult Literacy Survey (IALS), conducted in the mid-1990s by the OECD and Statistics Canada. Individuals were tested on three types of literacy: document, prose, and quantitative. Scores tended to correlate strongly across the three types. A useful way to measure the degree of inequality is via a P90/P10 ratio. For prose literacy, the ratio in the United States was 1.9. In other words, the prose literacy score at the ninetieth percentile of the literacy distribution was nearly twice as high as that at the tenth percentile. In Germany and Sweden, by contrast, the ratio was 1.5.

Inequality of cultural capital. Elsewhere, Esping-Andersen (2004) argues that cultural capital may be as important as cognitive skills in determining labor market success. This is consistent with other recent research that emphasizes the importance of noncogntive traits and abilities, such as motivation, tenacity, perseverance, leadership, discipline, enthusiasm, conscientiousness, aggressiveness, self-confidence, dependability, organization, commitment, trustworthiness, and likeability (Bowles and Gintis 1976, 2002; Jencks et al. 1979; MacLeod 1995; Bowles, Gintis, and Osborne 2001; Farkas 2003; Heckman and Rubenstein 2003). There are no cross-country data on the distribution of cultural capital or noncognitive traits. Esping-Andersen argues that the widespread use of high-quality public child care and preschools in the Nordic countries very likely reduces dispersion in this distribution: "The uneven distribution of cultural capital

among families is greatly neutralized in the Nordic countries, simply because much of the cognitive stimulus has been shifted from the parents to centers that do not replicate social class differences" (2004, p. 308). This would lead us to expect more mobility in Sweden than in Germany or the United States.

If there is greater relative intragenerational mobility in the United States than in Germany and/or Sweden, the difference in inequality will decrease as we move from single-year to long-term measures of earnings and income. If there is less mobility in the United States, moving to long-run measures will widen the cross-country gap in inequality.

Data, Measures, Method

Time Period, Sample, and Unit of Analysis

To maximize comparability across the three countries, we examine a period of eighteen years for each. The German Socio-Economic Panel began in 1983 and is available through 2001. We use the years 1984 to 2001. For Sweden we examine the period from 1985 through 2002. Our data set for the United States, the Panel Study of Income Dynamics, is available annually until 1997 and only biannually since then. Hence we use 1980 to 1997 as the U.S. time period.

We focus on inequality during the prime working-age years. Our sample consists of individuals age 25 to 41 (inclusive) in the first year of the panel for each country. Because the panels are eighteen years, these individuals are 43 to 59 at the end of the period. It is common practice in analyses of earnings inequality to include only individuals with positive earnings in every year (e.g., Gottschalk and Moffitt 1994; Aaberge et al. 2002). We instead include all individuals. This is to enhance comparability between the analyses for earnings and incomes. As we discuss below, it also yields an interesting insight about cross-country differences in earnings inequality. For incomes we exclude any individual that lacks a valid income in any of the eighteen years. We limit the samples to individuals who lived in the country throughout the period. This excludes any immigrants who arrived after the first year. It also excludes all East Germans, as prior to unification in 1990 individuals and households living in the Eastern lander were not included in the GSOEP.

Our unit of analysis is the individual. For earnings this is straightforward, as earnings are paid to individuals. For pretax-pretransfer income and posttax-posttransfer income, however, we treat individuals as the unit of analysis but measure the income of their household. This is the most logical choice since income is typically pooled within households. If a couple has one earner and one stay-at-home parent, it makes sense to score the latter's earnings as zero, but not her/his income. Because we do not have information on exactly how income is distributed within households, we assume that it is shared equally. Following

convention, we adjust household income for household size. We use an equivalence scale that weights the first person in the household as 1, the second as 0.5, and all others as 0.3. Thus, for example, for a four-person household we divide the household's income by 2.1 (1.0 + 0.5 + 0.3 + 0.3) to get "size-adjusted" household income.

Because we use individuals as the unit of analysis, a household with two adults appears as two separate observations in our data for pretax-pretransfer and posttax-posttransfer income. This is not problematic in either a statistical or a substantive sense, but it may seem odd to some readers. The reason we do not use households as the unit of analysis is that we are examining incomes over nearly two decades, and during a period this long many households will dissolve due to marital breakup or death of a spouse. If we were to use households as the unit of analysis, many would disappear before the period ended. This would dramatically reduce the size of our samples and render them less representative of the populations.

Measures of Earnings, Income, and Inequality

We examine inequality of individual earnings, household earnings, household pretax-pretransfer income, and household posttax-posttransfer income. Earnings include wages and salaries. Pretax-pretransfer (market) income includes earnings, investment income, and interpersonal transfers (e.g., gifts or loans from family or friends). Posttax-posttransfer (disposable) income includes pretax-pretransfer income plus government transfers received minus taxes paid. Negative market and disposable incomes are coded as zero.

We adjust all earnings and incomes for inflation using national consumer price index data from the OECD (2004). Our interest is in comparative levels of inequality, rather than levels of earnings or incomes, so it is not necessary to convert earnings and incomes from national currencies into a common unit.

We measure inequality using the Gini coefficient. The Gini ranges from zero to one, with larger numbers indicating greater inequality.

Our procedure is as follows: (1) Calculate earnings inequality for each single year. Then calculate the average of these eighteen values. This yields a measure of average short-run (i.e., single-year) earnings inequality. (2) Calculate average annual earnings for each individual over the first two years of the panel. Then calculate inequality for these two-year average earnings. Do the same for the first three years, the first four years, and so on up to the full eighteen years included in the panel. This yields measures of long-run, or "permanent," earnings inequality. (3) Repeat these two steps for household earnings, pretax-pretransfer household income, and posttax-posttransfer household income.

Country Data Sets

TO BE WRITTEN.

Findings

Description

Figure 3 shows inequality measured over periods from one year to eighteen years for individual earnings, household earnings, household pretax-pretransfer income, and household posttax-posttransfer income. Our main finding is straightforward: In each of the three countries the degree of inequality decreases as the time period over which inequality is measured increases, but lengthening the time period does not alter the cross-country variation in levels of inequality. In each of the four charts inequality is highest in the United States, followed by Germany, and lowest in Sweden. It is not only the rank-ordering of countries that remains constant; so too does the magnitude of the cross-country differences.

A few other aspects of the findings are worth noting. For individual earnings, the degree of inequality in the United States is only slightly higher than in Germany. This contrasts sharply with the picture suggested by OECD data for earnings inequality among the full-time employed (Kenworthy and Pontusson 2005; Kenworthy 2007). The OECD data suggest that the level of earnings inequality in Germany is closer to that in Sweden than to the United States. This difference is due to the fact that we include nonemployed persons in our calculation of individual earnings inequality. Because the employment rate in Germany is substantially lower than in Sweden or the United States, there are many more individuals with zero earnings in Germany, which increases the measured level of inequality.

For household earnings and household pretax-pretransfer income, the level of inequality in Germany is almost identical to that in Sweden. This is consistent with what is suggested by data from the Luxembourg Income Study (Kenworthy 2007). The difference between Sweden and Germany on the one hand and the United States on the other is less than for individual earnings inequality. This too is consistent with what other data, from the OECD for individual earnings and from the Luxembourg Income Study for household earnings and pretax-pretransfer income, indicate (Kenworthy and Pontusson 2005; Kenworthy 2007).

For household posttax-posttransfer income, there is a bit more of a gap between the levels of inequality in Sweden and in Germany than there is for pretax-pretransfer inequality. This too is consistent with what the LIS data suggest (Kenworthy 2007). It is largely a function of Sweden's more generous redistributive programs. On the other hand, the LIS data suggest a wider gap between Germany and the United States for posttax-posttransfer income than for pretax-pretransfer income, whereas our data do not.

Again, however, our focus is primarily on whether shifting from short-run measures of earnings and income to long-run measures alters our understanding of cross-country differences in inequality. Our analyses suggest that measuring earnings and incomes over periods of up to eighteen years does not alter the differences among these three countries.

Figure 3.   Short-Run and Long-Run Inequality in Germany, Sweden, and the United States

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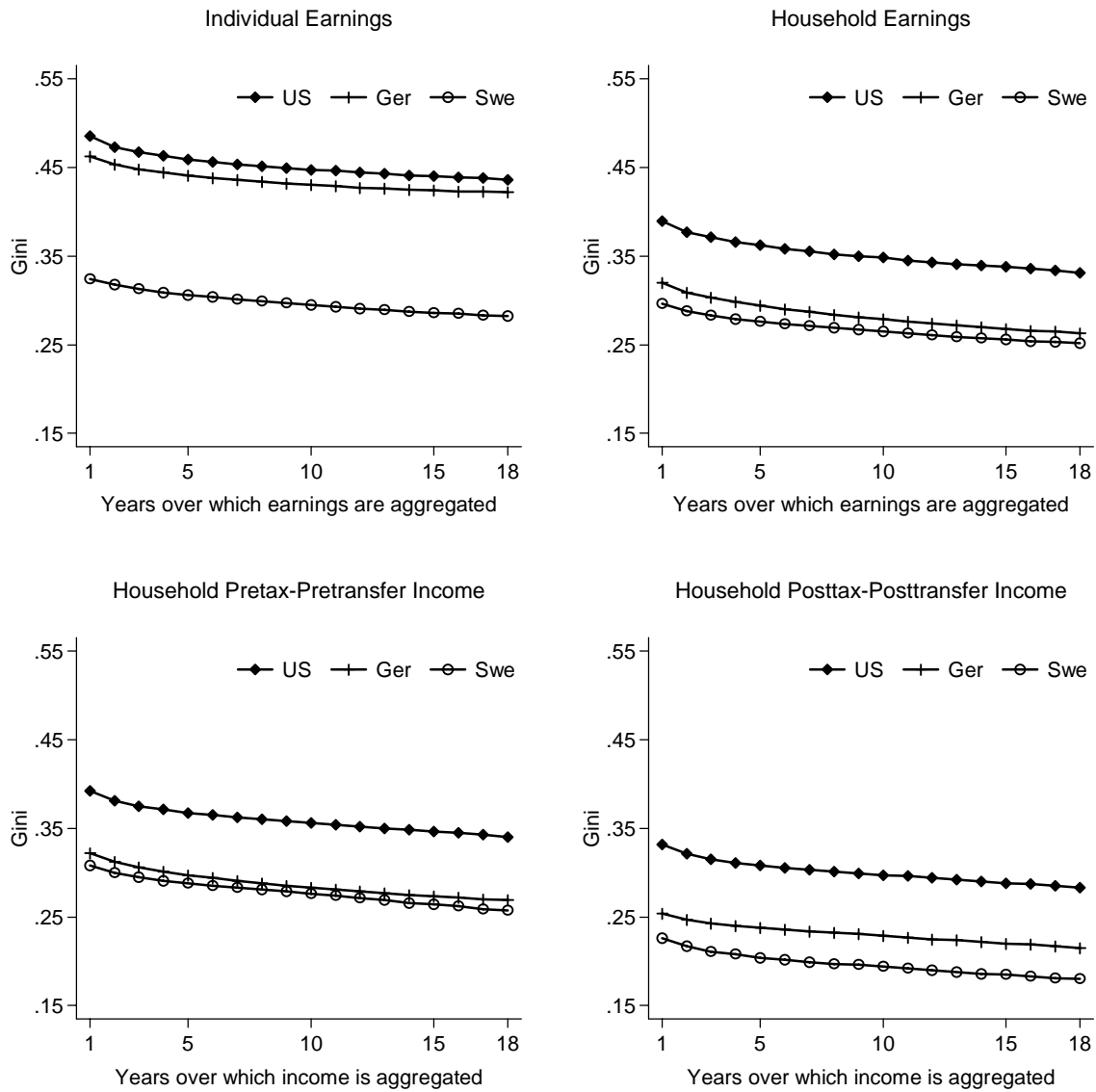
Note: The horizontal axis represents the number of years of income aggregated in calculating the Gini coefficient. Actual calendar years are 1984-2001 for Germany, 1985-2002 for Sweden, and 1990-1997 for the United States. Vertical axes of the charts are truncated. Source: Authors' calculations.

Explanation

We offered five hypotheses for why relative intragenerational mobility might be greater in the United States than in Germany or Sweden: job loss and job switching, promotion, entrepreneurship, marriage and divorce, and government transfers. We also suggested two hypotheses for why there might be less mobility in the United States: inequality of cognitive skills and inequality of cultural capital. Our data do not allow us to examine the impact of promotion, inequality of cognitive skills, or inequality of cultural capital. What, if anything, do they tell us about the other four?

TO BE WRITTEN.

Conclusion

As we suggested earlier, it is not unreasonable to hypothesize that there is greater relative intragenerational mobility of earnings and income in the United States than in Germany or Sweden. If the hypothesis was correct, the degree of inequality in the United States would not be so high relative to the other two countries when we shift from a measure of inequality based on earnings or incomes aggregated over a single year to a measure aggregated over many years. However, our data suggest that this is not the case — or at least that it was not the case in the 1980s and 1990s. High U.S. inequality was not offset by greater mobility.

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