

Economics Department
Working Papers in Economics

Boston College

Year 1997

Family Income Mobility – How Much Is
There and Has It Changed?

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Revised December 1997

I. Introduction

High levels of poverty and inequality and their failure to decline to the levels achieved in the 1970's, despite the economic recoveries of the 1980's and 1990's, remain an unresolved problem of the American economy. Although the mean family income level in the US is substantially higher than that of other industrialized countries, its poverty rate is one of the highest.¹ The ratcheting up of the official poverty rate from the 11-12 percent range in the 1970's to the 13-15 percent range in the 1980's and 1990's is due, in large part, to the substantial increase in family income inequality that has occurred over the past two decades.² The poverty-reducing effect of growth in mean family incomes has been offset by growth in the dispersion of income.

Rising inequality, the central focus of the other chapters in this volume, has generated intense public policy debate. Although most analysts agree that inequality has increased, some have argued that the high and rising level of inequality would not be cause for concern if it were accompanied by increased family income mobility. Central to

the debate is the extent of mobility in any given year and changes in the rate of mobility over time.

Inequality of yearly income may overstate the low-income problem if people do not remain in the same place in the income distribution in successive years. If a family's low income in one year is offset by high income in another year, then inequality based on family income averaged over several years will be lower than inequality of annual income. Furthermore, the trend in inequality may be overstated if the growth in inequality over the past two decades has been accompanied by growing mobility. Finally, cross-national comparisons of annual measures of poverty and inequality may present an overly-pessimistic view of American living standards because they ignore cross-national differences in mobility. If there is more income mobility in the US than elsewhere, then the perception of the US as one of the most unequal industrialized countries based on annual income may be misleading.

To address these and related issues, we provide descriptive tables that show the level and trend in mobility using both annual and multiple-year measure of family income. We focus on both short-and-long term mobility and contrast the recent American experience with that of other industrialized countries.

Our work builds on a methodology recently developed in a literature that has primarily analyzed earnings mobility.³ In this paper, we apply this framework to family incomes and

measure mobility and how it has changed over the past quarter century.⁴

In the next section we discuss the analytical issues raised when measuring mobility. Section III describes the data set and sample. Section IV presents data on the extent of mobility using several alternative measures; section V analyzes changes in the extent of mobility. The paper ends with our conclusions -- there is no evidence that significant family income mobility increases have occurred or that American family income mobility is significantly higher than that in other industrialized countries. Thus, inequality in the 1990's, whether measured over one year or longer periods, is substantially higher than it was two decades ago.

II. Analytical Issues

Mobility and Inequality -- Mobility and inequality are closely-related, but distinct, concepts. Inequality measures the dispersion of personal earnings or family income in any year. Mobility measures how individuals or families move within the distribution between two points in time. If family income mobility is high, then a low-income family in one year is likely to have higher income in a subsequent year. Similarly, a high-income family may lose its advantaged position over time. The greater the extent of income mobility, the greater the likelihood that a family will move among various parts of the distribution over time.

Although inequality and mobility are distinct concepts, they are often confused in public policy discussions. To

clarify the concepts, we present an often-used analogy that distinguishes between changes in inequality and changes in mobility. We then provide a more formal presentation which links these concepts to well-known statistical definitions.

Analogy-- Income inequality among families at a point in time is analogous to the situation of a group of persons staying in a hotel with rooms that vary widely in quality.⁵ Some rooms are luxurious, while others are spartan. The hotel guests, therefore, have very unequal accommodations on any night. The extent of inequality at a point in time is reflected by the variation in the quality of the rooms in which guests sleep on any night.

Economic mobility is akin to movement between rooms. If every guest must stay in the same room on every night, there is no mobility. This analogy reveals that information about the extent of mobility reveals nothing about the extent of inequality, nor vice versa. Inequality and mobility are conceptually distinct. Hotels with large variations in room quality may have low or high mobility.

Both mobility and inequality, however, do affect inequality measured over longer time periods. If guests are moved randomly from room to room each night, then those in the best rooms on any night may find themselves in undesirable rooms the following night. In this case, inequality in the distribution of nightly room quality is still high because the wide variation in room quality has not changed. But if inequality were instead measured over a

period of many nights, it would decline because a guest's initial good room assignment would tend to be offset by less luxurious accommodations on subsequent nights. Mobility overtime would indeed partially offset the effects of nightly inequality.

The implication of this analogy for analyzing growth in mean family income, changes in inequality, and mobility should be clear.⁶ The absolute well-being of the hotel guests is affected by three distinct changes that can occur -- upgrading the furnishings of all rooms (growth), redistributing furniture among rooms (changes in inequality), or reshuffling people among rooms (mobility). If we consider persons living in sparsely furnished rooms to be poor, then there are three ways by which they may escape poverty -- if furniture is added to all rooms (growth), if furniture is reallocated from better-furnished rooms to their rooms (decreases in inequality), or if they move to the better rooms (mobility).⁷

Now consider the effects of growing inequality (each night the better rooms get even better furniture, while the quality of furniture in the least-desirable rooms deteriorates). Inequality measured over multiple nights will now also increase, even if the extent of mobility continues to be substantial. Mobility can only offset increased inequality if the extent of mobility also increases. It is the change in mobility, not its level, that is relevant to discussions about increased inequality. This important

distinction is often neglected by those who cite the extent of mobility as a reason for not being concerned about rising income inequality.

Statistical Concepts⁸-- The relationships among growth, inequality and mobility can be specified more precisely using standard statistical concepts. The basic building block is the joint distribution of family income (Y_i) measured over T periods, $f(Y_1, Y_2, \dots, Y_T)$ ⁹. Economic growth is reflected in differences in the means of the marginal distributions. The extent of inequality is reflected in the variance of the marginal distribution in each year; mobility is captured by the correlation in incomes across years, which reflects covariances as well as variances.

This framework demonstrates that mobility and inequality measure conceptually different aspects of the joint distribution of income. Knowing that mobility (as reflected in the correlation between two periods income) is high provides no information about the extent of inequality in any period (as reflected in the variance).

Mobility and single-period inequality, however, both affect long-run inequality, the variance of income averaged over multiple periods. Consider the distribution of \bar{Y}_i , income averaged over K periods for the i^{th} individual:

$$(1) \quad \bar{Y}_i = \frac{1}{K} \sum_{t=1}^K Y_{it}$$

The variance of this multiple-period income, which reflects not only the covariance of income across years, but also the yearly variances is given by:

$$(2) \quad \text{var}(\bar{Y}) = \left[\frac{1}{K^2} \sum_{t=1}^K \text{var}(Y_t) + \sum_{t=1}^K \sum_{s \neq t}^K \text{cov}(Y_t Y_s) \right]$$

$$= \frac{\overline{\text{var}}}{K} + \frac{K-1}{K} \overline{\text{cov}}$$

$$\text{where } \overline{\text{var}} = \frac{1}{K} \sum_{t=1}^K \text{var}(Y_t)$$

$$\text{and } \overline{\text{cov}} = \frac{1}{K^2 - K} \sum_{t=1}^K \sum_{s \neq t}^K \text{cov}(Y_s Y_t)^{10}$$

The variance of multiple-period income ($\text{var}\bar{Y}$) is, therefore, a function of the average variance ($\overline{\text{var}}$) and the average of the covariances ($\overline{\text{cov}}$).¹¹

Equation 2 shows that increased yearly inequality, as captured by increases in $\overline{\text{var}}$, must be offset by a sufficiently large increase in mobility, as captured by the decrease in $\overline{\text{cov}}$, or $\text{var}(\bar{Y})$ will also increase. The extent of mobility, as captured by the level of $\overline{\text{cov}}$, is irrelevant to changes in inequality.

We now turn from the conceptual distinction between the level and trends in inequality and mobility to the measurement issues that must be resolved when studying either levels or trends in mobility. These include the choice of the measure of family income and the accounting period; whether to measure mobility using a single summary measure or to display the full transition matrix; and whether to use

absolute or relative thresholds in constructing transition matrices.

Income Measure -- The family income measure we use includes all forms of cash income, including transfers, but does not include in-kind transfers received, such as food stamps, or subtract taxes paid. Two further issues must be addressed in determining the appropriate income concept -- how inclusive to make the income-sharing unit and how to adjust for differences in the number of people in the unit.

Because the family best approximates the grouping of persons who share income, we focus on family income.¹² Families are, however, not a good unit to follow over time because family structure changes often. Children moving out to form their own households, deaths of individuals, or the splitting of families through divorce or separations all lead to composition changes that make it difficult to define a "family" overtime. We, therefore, follow persons rather than families. Each person is positioned in the income distribution based on total family income from all sources adjusted for family size.

The need for clarity in defining an appropriate income concept is illustrated by the misinterpretation of a widely-cited study by Cox and Alm (1995). They assign individual income (not family income adjusted for family size differences) to each person 16 years and older in their sample. Although the authors and others have interpreted their results as measuring the extent of mobility out of

poverty, their income definition does not identify persons in poor families since poverty is measured on the basis of family, not personal, income. For example, a sixteen year old with a part-time job in an affluent family may well fall in the lowest quintile in the initial year. But, this person is clearly not poor or at the bottom of the distribution based on the family's total income. The fact that sixteen years later this child is observed as a 32 year old adult, possibly with substantial personal income, tells us nothing about mobility out of poverty, which is defined in terms of total family income adjusted by family size.

To adjust for family size, we calculate total family income divided by the poverty line (which increases with family size) -- the income-to-needs ratio -- for the family in which the individual resides in each year. For example, consider a 20 year old who lives, on his own in year 1, and with his wife in year 2. In year 1, his income is divided by the poverty line for a single person. In year 2, his income and that of his wife are summed and divided by the poverty line for a two-person family.

Accounting period -- The length of the accounting period affects the extent of mobility as well as the degree of inequality. Inasmuch as measures of inequality at a point in time reflect transitory changes in income that are offset over longer periods, inequality is reduced as the accounting period is lengthened. Mobility is also reduced when the accounting period is lengthened. For example, consider how

mobility would be measured for a person who receives roughly the same total income each year, but who experiences large month-to-month fluctuations. Mobility measured on a monthly basis would be larger than mobility measured on an annual basis, as fluctuations within any year would cancel out.

What is the appropriate accounting period? A standard economic model of utility-maximizing agents with access to capital markets and full information implies that individuals can offset shortfalls in income in one period by drawing down savings or by borrowing to smooth consumption. Under these assumptions, families with low income in one period do not necessarily experience economic hardship. What matters is the average multi-period (or permanent) income to which they have access.¹³

This model implies that longer accounting periods provide more appropriate inequality and mobility measures. This, however, assumes that families can smooth transitory fluctuations in income by lending or borrowing. This may be a reasonable assumption for high-income families who can rely on savings or who have access to capital markets to smooth transitory fluctuations. However, for low-income or young families with little or no savings and limited access to capital markets to smooth consumption, the appropriate accounting period would be shorter, certainly not many years, and possibly even shorter than a year.¹⁴

In our empirical work reported below, we use two different accounting periods to show the sensitivity of our

results to changes in this parameter. Because the data set we use does not measure income over periods shorter than a year, our shortest accounting period is annual income. We also measure inequality and mobility using a three-year accounting period. Extending the accounting period to three years eliminates most of the effects of short-term income fluctuations.

Absolute versus Relative Mobility -- As discussed above, economic growth and mobility are conceptually distinct concepts. Growth refers to changes in the absolute level of the mean of the income distribution in each year; mobility, to the extent to which persons change relative positions across years. The term mobility, however, is sometimes used in the media or in policy discourse to refer to changes in the level of absolute income, rather than to changes in relative income.

Consider the statement that "prosperity brings upward mobility." As commonly used, this implies that economic booms raise average living standards across the income distribution. However, it reveals little about mobility (or about inequality), because it does not tell us whether those at the bottom of the distribution stayed there or whether they moved up relative to other families. Such statements are almost always about changes in the mean of the income distribution, not about the degree of persistence in income.

We stress the fact that economic growth should not be confused with mobility. Nonetheless, an analysis of absolute

changes in income for families starting at different points in the distribution may be of interest in its own right. We, therefore, provide measures of "absolute mobility" which show changes in income levels for persons starting at various points in the distribution. Consider, for example, how mobility would be measured if rapid economic growth produced a doubling in the real income of every family. An absolute measure of mobility would indicate that low-income families had experienced upward mobility as they moved into higher income categories. However, there would be no change in a measure of relative mobility because the correlation in income would not be affected.

In our view, these family income changes reflect a situation of economic growth, but no mobility. As a result, our empirical work emphasizes measures of relative mobility that change only when persons change their relative position in the income distribution.

Measures of Relative Mobility -- Several alternative measures of mobility have been proposed in the literature.¹⁵ Some, such as the proportion of persons changing quintiles or the intertemporal correlation coefficient, summarize mobility as a single number. These summary measures, however, provide limited information and do not reveal where in the distribution transitions have taken place. For example, transitions may not be symmetric -- a greater percentage of persons may experience mobility out of the bottom decile than the top decile.¹⁶ To preserve information, we present the

full transition matrix wherever possible. These contingency tables show the proportion of people in income group i in year t who moved to income group j in year $t+k$. These tables not only show the proportion of people changing categories, but they also provide information on the magnitude of the movement. For example, a different picture emerges if all persons leaving the lowest quintile move into the second lowest quintile or if they move into the highest quintile.

To measure relative mobility, we classify persons in each year into quintiles based on their family income-to-needs ratios and tabulate the proportion of persons in quintile i in year t who move to quintile j in year $t+k$. By definition, twenty percent of the population is placed in each quintile in each year. These transition matrices reflect only changes in relative positions. For every person who moves out of any quintile, another person must move into that quintile.

In contrast, measures of absolute mobility use fixed, initial year quintile cutoffs to determine the rankings in both year t and $t+k$. For example, if the lowest quintile in 1968 includes persons in families with income-to-needs ratios below 1.3, then this same cutoff value is used to define groups in the terminal year. Because the real income levels used to define the quintiles are fixed, the percentage of persons in each income group in the terminal year will vary, depending on growth in the mean, changes in inequality changes in relative mobility.

Although transition matrices provide a rich picture of economic mobility, they capture only movements across groups, not income changes that keep a family within the same group. These movements can be captured by making the groupings smaller (e.g., deciles instead of quintiles), but at the cost of higher sampling variability. Our choice of quintiles reflects this tradeoff.

III. Data Set, Sample and Variable Definitions

We are interested in both the extent of and changes in mobility. Thus, we must use a sufficiently long panel to observe how income transition matrices have changed over time. We analyze data on total money income from all sources and all family members from the Panel Study of Income Dynamics (PSID). The PSID offers the longest continuous income data on a nationally-representative sample of families, starting in 1968 and continuing to the present. We use data through 1991, the most recent year for which data were available when we began our empirical work.

There are two problems with the PSID data for our purposes. First, income is measured only on a yearly basis, which we have suggested may be too long an accounting period for people who are credit constrained. However, alternative longitudinal data sets that gather information on monthly income, such as the Survey of Income and Program Participation (SIPP), cover too short a period to analyze long-term income dynamics or changes in mobility during the 1970's and 1980's.

A second potential problem is that roughly half of the original panel members were no longer in the sample by the end of the 1990's. Whether this attrition biases estimates of mobility depends on whether the families continuing to participate in the study have mobility rates that are representative of the entire population. Although the amount of attrition in the PSID is substantial, Fitzgerald, Gottschalk and Moffitt (1998, in press) conclude that using sample weights can largely overcome any biasing effects of attrition on the variables they examine.

Our sample consists of all persons aged 22 to 62 with valid income-to-needs ratios at the beginning and end of the periods being analyzed. For example, to construct the 1979-1989 transition matrix, we included all persons between the ages of 22 and 52 in 1979 who had valid income-to-needs ratios in 1979 and 1989. By 1989, these persons were between the ages of 32 and 62. We exclude persons under age 22 to avoid including intergenerational mobility effects associated with children leaving their parental homes and setting up their own households. We exclude persons over 62, as the elderly may have lower income, but higher consumption, when they draw down their assets upon entering retirement.

IV. Extent of Mobility

We start by describing the extent of mobility using both relative and absolute definitions. Then we examine whether these mobility rates have changed in recent years.

Relative Mobility -- Table 1 presents the extent of single-year income mobility between 1990 and 1991. It shows that 75.1 percent of persons in the lowest quintile in 1990 were also in the lowest quintile in 1991. Of the remaining 24.9 percent who moved out of the lowest quintile, about 80 percent (19.5/24.9) moved into the second quintile. In other words, 94.6 percent (75.1 plus 19.5) of individuals who started in the lowest quintile of family income/needs in 1990 ended up in the first or second quintile one year later.

There was also relatively little mobility out of the highest quintile. Of those in the top quintile in 1990, 79.2 remained there and 94.8 ended up in one of the top two quintiles.

Mobility out of the middle three quintiles is larger, as people starting in the middle can move either up or down. On the other hand, those in the lowest quintile who experience income declines cannot fall further; those in the top quintile who experience increases cannot move higher.¹⁷ About 60 percent of persons in each of the middle three quintiles stayed in the same quintile; less than eight percent moved up or down more than one quintile.

Although mobility rates between 1990 and 1991 for all persons are relatively low, there are substantial differences across demographic groups. Table 2 shows mobility rates out of the lowest and highest quintiles for persons classified by race and education (college graduate or less). We also show mobility rates for persons who are often assumed to be mired

in poverty -- women with less than a college education who are family heads and who received cash welfare.

Individuals with these demographic attributes have very different prospects for mobility. Consistent with Table 1, 24.9 percent of all persons in the lowest quintile in 1990 moved into higher quintiles in 1991. Mobility was greater for whites than non-whites (29.7 versus 14.4 percent) and for college graduates relative to those without college degrees (41.8 versus 23.7 percent).¹⁸ Upward mobility was especially low for welfare recipients, as only 7.5 percent of them left the lowest quintile.

Persons in those demographic categories with higher probabilities of leaving the lowest quintile had smaller probabilities of leaving the highest quintile. For example, 20.5 percent of whites, but 26.9 percent of non-whites, and 14.8 percent of college graduates, but 27.7 percent of those without a college degree fell from the highest quintile.

Although the one-year transition rates indicate relatively little mobility, it is possible that, with more years to experience income changes, mobility measured across a longer period would be greater. For example, a person with high family income in the initial year might experience economic difficulties, and after a few years, might slowly fall from the top quintile, or a person might slowly move to successively higher quintiles, showing little change between adjacent years, but large changes across decades.

To address longer term mobility, Table 3 shows the probabilities of changing quintiles between 1968 and 1991 for those persons who were between the ages of 22 and 39 in 1968 (and hence, 45 to 62 in 1991).¹⁹ Over this 23 year period there are more changes in relative positions than over a two year period. For example, only 46.9 percent of the people in the lowest quintile in 1968 were still in the lowest quintile in 1991. Nearly half of those who had moved up, landed in the second quintile (25.1/53.1) and only 1.3 percent had made it all the way to the top quintile.

Whether this represents a little or a lot of mobility for those starting at the bottom is akin to asking whether a bottle is half-full or half-empty. The fact that 46.9 percent of those in the bottom quintile were still there and another 25.1 percent stayed near the bottom over a 23 year period indicates substantial immobility. However, the fact that about a quarter of those who were in the bottom quintile in 1968 moved above the 40th percentile by 1991 (the top of the second quintile) shows that many low-income persons do not remain persistently at the bottom of the distribution.

Movements out of the top quintile also show substantial long-term mobility. Of those in the top quintile in 1968, 41.6 percent were still there in 1991. Most of those moving down ended up in the second or third highest quintile, but about 13 percent of movers (7.5/58.4) had fallen to the bottom quintile. Likewise, the probability of moving out of the middle three quintiles over this 23 year period is

substantially higher than the one-year exit probabilities shown in Table 1.

So far we have placed individuals into quintiles in each year based on the annual income/needs of their family. As discussed above, lengthening the accounting period has the advantage of reducing the effects of transitory income fluctuations, which can be smoothed by people with access to capital markets.

To see the effect of lengthening the accounting period, Table 4 classifies people into quintiles based on average income for 1968, 1969 and 1970 in the initial period, and for 1989, 1990 and 1991 in the final period. As expected, mobility of three-year average income is somewhat lower than mobility based on single-year income. The differences are, however, small. Comparing the probabilities from Table 3 (which are based on one-year income) with the corresponding ones from Table 4 (which are based on three-year average income) shows that the proportion remaining in the lowest quintile increases from 46.9 to 53.8 percent. Likewise, the proportion of people staying in the top quintile increases from 41.6 to 46.1 percent.

Table 5, which is similar to Table 2, shows the probability of moving out of the lowest and highest quintiles for persons classified by their demographic characteristics. Like Table 4, it uses three-year average income. Again, non-white individuals are substantially less likely to move up from the lowest quintile, but they are less likely to move

down from the highest quintile than are whites.²⁰ Persons with less than a college education are also much less likely to escape from the bottom, but they are much more likely to fall from the top, than are college graduates. Likewise, women with less than a college education who received welfare in the 1968 period had a low probability of escaping from the bottom quintile.

Absolute Mobility -- We now analyze absolute mobility, measured as the probability that a person starting in a given quintile has an income outside the fixed (inflation-adjusted) bounds of that quintile in a subsequent period. For example, we present the probability that a person in lowest quintile in 1968 has an income in 1991 that exceeds the 1968 boundary between the first and second quintile. Absolute mobility is affected by increases in income associated with the aging of the cohort, increases in income due to economic growth, and changes in income inequality, as well as by relative mobility.

The transition matrix shown in Table 6 is based on the 1968-1970 average income/needs of respondents between the ages of 22 and 39 in 1968. The 1989-91 cutoffs are the same (inflation adjusted) as those used to divide the sample into quintiles in the 1968-70 period. The columns are labeled "groups" rather than "quintiles" because this formulation does not require that twenty percent of the sample fall into each group in the terminal period, as shown by the percentages in the bottom row.

Slow economic growth over these two decades and the aging of the sample reduced the percent of persons whose income-to-needs ratio was below the base year cut off by half. By definition, 20 percent of the entire sample fell below the first quintile threshold in the late 1960's.²¹ By the early 1990's, 10.0 percent of the sample had real incomes below this fixed threshold(bottom row of first column) and half of the sample had incomes above the eightieth percentile two decades earlier (bottom row of fifth column).

The extent of this absolute mobility is impressive. Transitions across these boundaries, however, differ substantially by initial quintile. Of those who started in the lowest quintile in the late 1960's, 31.0 percent still had incomes below that fixed threshold two decades later, despite the fact that they were more than 20 years older. This represents a substantial persistence of low income over a period of positive, but slow, economic growth and rising inequality. An additional 25.4 percent of those who started in the lowest quintile moved only into the next higher group.

On the other hand, some individuals who started in the lowest quintile made substantial absolute progress -- 11.4 percent ended up in the highest group.²² Eighty percent of those in the top quintile in the late 1960's were still in the highest group two decades later. Among those who were in the highest income group in the early 1990's, over half were also in the two highest quintiles in the late 1960's and only 4.5 percent started from the lowest quintile in the late

1960's.²³

Cross-national Comparisons²⁴ -- One basis on which to judge whether mobility in the United States is high or low is by comparison with mobility in other industrialized countries. The United States has substantially more inequality than other OECD countries. It is not, however, an outlier when it comes to income mobility²⁵. U.S. one-year mobility rates resemble those of countries as different as France, Italy and the Nordic countries. Of course, the U.S., as well as each of these countries, has less inequality when a longer accounting period is used. However, because countries differ little in their extent of mobility, the rankings of countries in terms of inequality remain similar whether one uses a multi-year or an annual accounting period.

The fact that the US has a less-regulated, more decentralized labor market than the Nordic countries or Germany has not generated greater economic mobility here, either in earnings or family income. Likewise, the more extensive systems of social protection in the European countries have yielded lower poverty and lower family income inequality, but not at the cost of lower mobility.

V. Has Income Mobility Increased?

Some analysts have argued that because a substantial number of Americans move across income quintiles over time that we should not be too concerned with the well-documented increase in income inequality. Such a conclusion is inappropriate²⁶. As we demonstrated earlier, only increases

in mobility can offset increased income inequality. If the extent of mobility has stayed roughly constant over the past two decades, then increases in annual income inequality will translate directly into increased inequality using a multiple-year accounting period.²⁷

We, therefore, analyze the trend in family income mobility to see if the extent of mobility has changed. Figure 1 focuses on relative mobility. It plots the probability that a person remained in the same quintile in adjacent years. For example, 62.7 percent of all persons were in the same quintile in 1968 and 1969.²⁸ This annual probability declined to about 60.5 percent between 1974 and 1975, and then rose steadily through the 1980's, reaching a high of 65.9 percent between 1990 and 1991.

That the probability of staying in the same quintile increased into the early 1990's indicates that mobility was declining somewhat, not increasing, during the same period that income inequality was rising²⁹. This refutes the notion that enhanced mobility has offset increased family income inequality.

Figure 1 does not distinguish between persons falling out of the top quintile and persons rising out of the bottom quintile. Because US social policies are primarily concerned with increasing mobility out of the bottom, Figure 2 plots the probability of moving out of the lowest quintile in each pair of years (solid line) as well as the probability of falling from the highest quintile (dashed line). The

probability of staying in the lowest and highest quintiles decreased moderately during the 1970's, indicating an increase in downward mobility for those who started at the top and an increase in upward mobility for those who started at the bottom. The patterns were, however, reversed in the late 1970's. The probability that a person in the lowest quintile would still be in the lowest quintile in the following year reached a low of 73 percent in 1978 and was above 75 percent by 1990. Similarly the probability of staying in the highest quintile increased from 75 percent in 1975 to 79 percent in 1990. Thus, there is no evidence that short-term mobility increased during the 1980's. If anything mobility was declining for persons starting at the bottom.

The probability of changing quintiles between adjacent years is, by definition, based on one-year incomes. To examine mobility over longer periods, Table 7 measures mobility across decade-long periods, 1969-1979 and 1979-1989, first using annual income, then using a three-year accounting period. Using a one year accounting period (columns 1 and 2) shows a modest decline in mobility. For example, the probability of remaining in the lowest quintile remains virtually constant, but the probability of staying in the second quintile increased from 26.3 over the 1969-79 decade, to 33.8 over the 1979-1989 decade. The probability of remaining in the highest quintile increased from 49.1 to 51.3.

The pattern in columns 3 and 4, which use the three-year accounting period is somewhat stronger, with mobility declining in all five quintiles. Taken together, there is no evidence that mobility increased. Thus, the rise in income inequality was not offset by increased mobility.

VI. Conclusions

Many of the papers in this volume have documented that the quarter-century since the early 1970s has been one of slow growth in family income and rising earnings and income inequality. In this paper, we examined mobility using a one-year and a three year accounting period. We examined mobility measured across adjacent years, across decades and across a 23-year period. In all cases, we have shown that even though there is substantial income mobility, the extent of mobility has not increased over this period. As a result, the gaps between those at the top and those at the bottom have widened and remained at least as persistent as they were in the 1970's.

There is no evidence that the growth in the economy since the mid-1980s has significantly reduced inequality or increased mobility. If we are to offset the detrimental impacts of the rise in inequality over the last two decades, we will need to enhance labor market and income supplementation policies to shore-up the incomes of those who have not been benefiting from economic growth--especially, less-educated workers and inner-city residents. The hope that mobility is sufficiently large or growing sufficiently

fast to offset the rise in inequality is inconsistent with the data presented in this paper.

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Endnotes

- * Gottschalk is Professor of Economics, Boston College; Danziger is Professor of Social Work and Public Policy, University of Michigan. The empirical results reported here were supported in part by a grant from the Russell Sage Foundation. Katherine Lang and Michael Hansen provided outstanding research assistance; Pauline Lonergan, clerical assistance. We thank Isabel Sawhill, Lawrence Katz, Joseph Quinn, Robert Haveman, Markus Jantti, Barbara Wolfe, Eugene Smolensky, and Greg Duncan for constructive suggestions on a previous draft.
- ¹ Cornia and Danziger (1997) and Gottschalk and Smeeding (1997) present poverty rates for more than a dozen industrialized countries using a relative poverty line. The US also has higher poverty rates than many countries with similar income levels even when absolute poverty thresholds are used.
- ² For a discussion of the relationship between inequality and poverty, see Gottschalk and Danziger (1985) and Danziger and Gottschalk (1995, Chapter 5).
- ³ See Atkinson and Bourguignon (1992) for a review of the literature on earnings mobility. Family income mobility studies are more limited. They include Hungerford (1993), Duncan and Rogers, (1991), Condon and Sawhill (1992), and Duncan, Rogers and Smeeding (1993). Bane and Ellwood (1991) focus on transitions into and out of poverty.
- ⁴ Moffitt and Gottschalk (1995) examine changes in earnings mobility.
- ⁵ This analogy has been attributed to Joseph Schumpeter and was used recently by Sawhill and Condon (1992).
- ⁶ Throughout this paper we use the term economic growth to refer to increases in the mean of income across all families. Because each family may experience lifecycle increases in income and because we do not adjust for age, these lifecycle changes affect our measures of

mobility. Such lifecycle changes also affect cross-sectional measures of inequality, as families are at different points in their lifecycles. In-as-much as families can borrow early in their lives to offset low income when they are young, such lifecycle effects tend to overstate inequality and mobility. To partially address this issue, we also provide mobility measures of income averaged across a number of years.

⁷ Unless otherwise stated, we use the term "poverty" to indicate income below a fixed real threshold. The poverty threshold, therefore, is not increased when real mean incomes grow.

⁸ This section assumes knowledge of basic statistics. It provides an alternative to the intuitive presentation provided earlier.

⁹ Assume income is measured in log form so that changes in scale do not affect measures of variances or covariances.

¹⁰ This term is an average covariance because the K by K covariance matrix has K^2 elements, K of which are variances.

¹¹ This reflects the fact that correlation between income in any adjacent years a family's member must lie between -1 and 1 . It can be shown that the variance of multiple-period income can never be larger than the average variance of single-period income.

¹² Unrelated individuals are considered to be "one-person families".

¹³ In this case, all lifecycle changes are eliminated.

¹⁴ Official measures of inequality and most academic studies use an annual accounting period, even though this is too short a period for families that can smooth consumption over multiple years and too long for families that are credit-constrained.

¹⁵ See Atkinson et al. (1992).

¹⁶ The form of the asymmetry may be more subtle. For example, probabilities of transitions out of the bottom may be similar to those out of the top. However, the extent of the fall of those leaving the top may be smaller than the rise of those leaving the bottom category.

- ¹⁷ An exception to this would occur if persons not in the lowest quintile lost sufficient income to put them below persons previously in the lowest quintile, who were thereby pushed into a higher quintile. These effects are small as almost all transition matrices show greater persistence in the bottom and top groups than in intermediate groups.
- ¹⁸ Duncan, Rogers and Smeeding (1993) show that part, but not all, of these differences reflect the fact that the mean income of blacks in the lowest decile is lower than that of whites in that decile, placing them further from the border.
- ¹⁹ Note that increases in income associated with the aging of this cohort do not necessarily imply greater mobility, as the cutoffs in 1991 are based on the distribution of income for this cohort in 1991.
- ²⁰ Note, however, the very small numbers of non-whites in the highest quintile, n=24.
- ²¹ All statements refer to the weighted sample.
- ²² This absolute upward mobility is largely a reflection of holding the thresholds fixed. The relative mobility matrix (Table 4) indicates that only 0.9 percent of the same sample had made it into the top group when the thresholds classify 20 percent of the people into each quintile in the terminal year.
- ²³ Because 20 percent of all persons are in the first row, 11.4 percent of the 20 percent of all persons who started in the lowest quintile, ended in the highest quintile. This is 4.5 percent of the 51 percent of all persons who ended in the highest quintile.
- ²⁴ This section is based largely on Gottschalk (1997).
- ²⁵ See Aaberg et al. (1996), Burkhauser et al. (1996), and OECD (1996).
- ²⁶ See Cox and Alm (1996) for an example of this mistake.
- ²⁷ See equation 2. If the average variance increases, then the variance of average income also increases, unless there is an offsetting change in the average covariance.

²⁸ This is the sum of the diagonal elements in the 1968 to 1969 transition matrix that is similar to the Table 1 matrix.

²⁹ Trends in earnings mobility and income mobility seem to differ, as Moffitt and Gottschalk (1997) do not find such an upwards in earnings mobility over a similar time frame.

Table 1
Short-Term Relative Mobility --
One-Year Transition Probabilities Between 1990 and 1991

		<u>1991 Quintiles</u>					Total
		1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile	
<u>1990</u> <u>Quintiles</u>	1st Quintile	75.1	19.5	3.3	1.4	0.7	100.0
	2nd Quintile	18.0	57.0	20.5	3.3	1.2	100.0
	3rd Quintile	4.0	17.0	57.9	19.1	1.9	100.0
	4th Quintile	1.9	5.2	15.6	60.4	17.0	100.0
	5th Quintile	1.0	1.4	2.9	15.6	79.2	100.0
	Total	100.0	100.0	100.0	100.0	100.0	

Source: For all tables, computations by author from Panel Study of Income Dynamics microdata; All tables are based on weighted data; Totals may not add to 100.0 because of rounding; unweighted n=12,242.

Table 2
 Probability of Moving Out of the Lowest and Highest Quintile
 Between 1990 and 1991, By Characteristic in 1990

	Moving Up from Lowest Quintile	n	Moving Down from Highest Quintile	n
<u>All</u>	24.9	3951	20.8	1513
Non-White	14.4	2075	26.9	202
White	29.7	1876	20.5	1311
Less Than College	23.7	3844	27.7	754
Welfare Recipients	7.5	578		
Non-White	7.8	383		
White	7.1	195		
College or more	41.8	107	14.8	759

Note: n is the number of unweighted observations in each quintile.

Table 3
 Long-Term Relative Mobility --
 Transition Probabilities Between 1968 and 1991
 Based On Annual Income in Each Year

		<u>1991 Quintiles</u>					Total
		1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile	
<u>1968</u> <u>Quintiles</u>	1st Quintile	46.9	25.1	17.7	9.0	1.3	100.0
	2nd Quintile	24.2	24.8	22.3	19.1	9.7	100.0
	3rd Quintile	10.8	20.5	20.5	27.0	21.2	100.0
	4th Quintile	10.4	16.4	27.0	20.4	25.9	100.0
	5th Quintile	7.5	13.0	13.7	24.2	41.6	100.0
	Total	100.0	100.0	100.0	100.0	100.0	

Note: The sample includes 1,909 unweighted persons who had valid income observations in both 1968 and 1991; Totals may not add to 100.0 due to rounding.

Table 4
 Long-Term Relative Mobility --
 Transition Probabilities Between 1968 and 1991
 Based On Three-Year Average Income

		<u>1989-91 Quintiles</u>					Total
		1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile	
<u>1968-70</u> <u>Quintiles</u>	1st Quintile	53.8	21.8	18.8	4.8	0.9	100.0
	2nd Quintile	22.7	25.4	18.5	25.8	7.7	100.0
	3rd Quintile	11.1	21.4	24.4	27.8	15.4	100.0
	4th Quintile	5.3	22.6	23.0	19.3	29.8	100.0
	5th Quintile	7.0	8.6	16.2	22.2	46.1	100.0
	Total	100.0	100.0	100.0	100.0	100.0	

Note: Income is averaged over the 1968 to 1970 period for the row quintiles and 1989 to 1991 for the column quintiles; Totals may not add to 100.0 because of rounding; unweighted n=1840.

Table 5
 Probability of Moving Out of the Lowest and Highest Quintile
 Based on Three Year Incomes (1968-70 and 1989-91) by Characteristic in 1968

	<u>Three Year Average Income</u>			
	<u>Moving Up from Lowest Quintile</u>	<u>n</u>	<u>Moving Down from Highest Quintile</u>	<u>n</u>
<u>All</u>	46.2	647	53.9	260
Non-White	28.0	409	37.5	24
White	53.6	238	55.4	236
Less Than College	45.5	638	65.2	145
Welfare Recipients	22.2	177		
Non-White	17.2	140		
White	27.6	37		
College or more	78.2	9	41.7	115

Note: n is the number of unweighted observations in each quintile.

Table 6
 Long-Term Absolute Mobility --
 Transition Probabilities Based on Three Year Average Income Using 1968-70 Income Cutoffs

		<u>1989-91 Groupings</u>					Total
		Group 1	Group 2	Group 3	Group 4	Group 5	
<u>1968-70</u> <u>Quintiles</u>	1st Quintile	31.0	25.4	11.1	21.1	11.4	100.0
	2nd Quintile	9.5	14.6	17.0	16.3	42.5	100.0
	3rd Quintile	4.5	8.2	12.7	17.4	57.1	100.0
	4th Quintile	1.6	4.9	13.2	16.6	63.7	100.0
	5th Quintile	3.6	5.2	4.4	6.8	80.1	100.0
	Total	10.0	11.7	11.7	15.6	51.0	100.0

Note: Income is averaged over the 1968 to 1970 period for the row quintiles and 1989 to 1991 for the column groupings; unweighted n=1840.

Table 7
 Proportion Remaining in Same Quintile
 Between 1969 and 1979 and Between 1979 and 1989 --
 One- and Three-Year Income Measures

<u>Initial</u> <u>Year</u> <u>Quintile</u>	<u>Annual Income In Each Year</u>			<u>Three Year Average Income</u>		
	<u>1969-1979</u>	<u>1979-1989</u>	<u>Difference</u>	<u>1969-1979</u>	<u>1979-1989</u>	<u>Difference</u>
	1st Quintile	55.8	55.2	-0.6	62.6	63.2
2nd Quintile	26.3	33.8	7.5	34.5	36.8	2.3
3rd Quintile	25.9	25.1	-0.9	28.7	30.1	1.4
4th Quintile	28.4	28.9	0.5	31.3	33.9	2.6
5th Quintile	49.1	51.3	2.2	55.8	61.0	5.2

Figure 1
Percent Staying in the Same Quintile in Each Pair of Years --
1968-69 to 1990-91

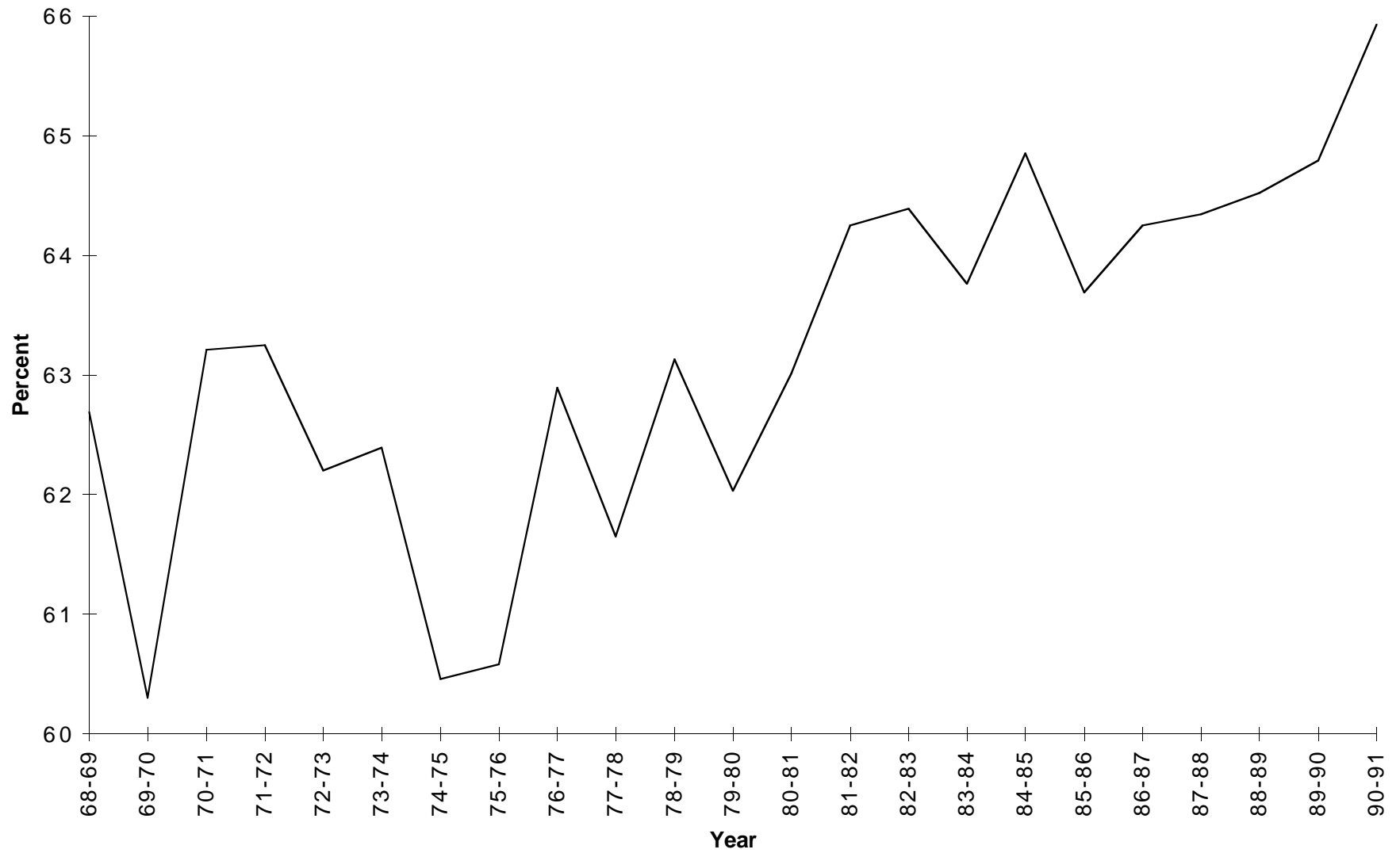


Figure 2
Percent Staying in the Lowest and Highest Quintiles in Each Pair of Years -- 1968-69 to 1990-91

