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Income Inequality, Income Mobility, and Economic Policy: U.S. Trends in the 1980s and 1990s

Abstract
[Excerpt] Income inequality has been increasing in the United States over the past 25 years. Several factors have been identified as possibly contributing to increasing income inequality. Some researchers have suggested the decline in unionization and a falling real minimum wage as the primary causes. Others have argued that rising returns to education and skill-biased technological change are the important factors explaining rising inequality. Most analysts agree that the likely explanation for rising income inequality is due to skill-biased technological changes combined with a change in institutions and norms, of which a falling minimum wage and declining unionization are a part.

Since most people are concerned with upward mobility, and given the central importance of income mobility to the debate over income inequality, this report examines the relation between income mobility and inequality. Income mobility studies are an important complement to income inequality studies — income inequality does not address the issue of whether or not the poor are getting poorer, whereas income mobility does.

While there appears to be considerable relative income mobility (about 60% of individuals change income quintiles over 10 years), it is not far — about 60% of those individuals who changed income quintile in the 1980s or 1990s only moved to the next quintile. But most individuals in the poorest quintile in 1980 experienced an increase in their real income between 1980 and 1989 — half saw their real income increase by more than 36%. Of those in the richest quintile, almost half saw their real income fall by 10% or more during the 1980s. But there are differences in income changes between the 1980s and the 1990s: those in the poorest income quintile may have done slightly better in the 1990s than in the 1980s, while individuals higher up in the income distribution (quintiles 2-5) appear to have done better in the 1980s than in the 1990s.

In both the 1980s and 1990s, income growth was progressive and had an equalizing effect on the income distribution, but the equalizing effect had a larger absolute value in the 1990s than in the 1980s. Mobility, however, had a disequalizing effect and, in fact, outweighed the progressivity effect, thus increasing the annual inequality. In both decades, the long-term income inequality is lower than the income inequality in the first year of the decade. The results suggest that mobility had a greater equalizing effect on long-term inequality in the 1990s than in the 1980s.

Three broad types of government economic policy affect income growth and mobility, and hence income inequality: (1) regulation, (2) the tax system, and (3) government transfers. Economic policies to reduce the growth of income inequality may work, in part, through their effects on income mobility. Reducing income mobility (that is, stabilizing incomes) may reduce the rising trend in income inequality, but it could also increase inequality of longer-term income.

Keywords
income, inequality, mobility, public policy, United States, tax, regulation, income growth

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CRS Report for Congress

Income Inequality, Income Mobility, and Economic Policy: U.S. Trends in the 1980s and 1990s

April 4, 2008

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Prepared for Members and Committees of Congress

Congressional Research Service

Income Inequality, Income Mobility, and Economic Policy: U.S. Trends in the 1980s and 1990s

Summary

Income inequality has been increasing in the United States over the past 25 years. Several factors have been identified as possibly contributing to increasing income inequality. Some researchers have suggested the decline in unionization and a falling real minimum wage as the primary causes. Others have argued that rising returns to education and skill-biased technological change are the important factors explaining rising inequality. Most analysts agree that the likely explanation for rising income inequality is due to skill-biased technological changes combined with a change in institutions and norms, of which a falling minimum wage and declining unionization are a part.

Since most people are concerned with upward mobility, and given the central importance of income mobility to the debate over income inequality, this report examines the relation between income mobility and inequality. Income mobility studies are an important complement to income inequality studies — income inequality does not address the issue of whether or not the poor are getting poorer, whereas income mobility does.

While there appears to be considerable relative income mobility (about 60% of individuals change income quintiles over 10 years), it is not far — about 60% of those individuals who changed income quintile in the 1980s or 1990s only moved to the next quintile. But most individuals in the poorest quintile in 1980 experienced an increase in their real income between 1980 and 1989 — half saw their real income increase by more than 36%. Of those in the richest quintile, almost half saw their real income fall by 10% or more during the 1980s. But there are differences in income changes between the 1980s and the 1990s: those in the poorest income quintile may have done slightly better in the 1990s than in the 1980s, while individuals higher up in the income distribution (quintiles 2-5) appear to have done better in the 1980s than in the 1990s.

In both the 1980s and 1990s, income growth was progressive and had an equalizing effect on the income distribution, but the equalizing effect had a larger absolute value in the 1990s than in the 1980s. Mobility, however, had a disequalizing effect and, in fact, outweighed the progressivity effect, thus increasing the annual inequality. In both decades, the long-term income inequality is lower than the income inequality in the first year of the decade. The results suggest that mobility had a greater equalizing effect on long-term inequality in the 1990s than in the 1980s.

Three broad types of government economic policy affect income growth and mobility, and hence income inequality: (1) regulation, (2) the tax system, and (3) government transfers. Economic policies to reduce the growth of income inequality may work, in part, through their effects on income mobility. Reducing income mobility (that is, stabilizing incomes) may reduce the rising trend in income inequality, but it could also increase inequality of longer-term income.

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Income Inequality, Income Mobility, and Economic Policy: U.S. Trends in the 1980s and 1990s

Income inequality has been increasing in the United States over the past 25 years.[1] Several factors have been identified as possibly contributing to increasing income inequality. Some researchers have suggested the decline in unionization and a falling real minimum wage as the primary causes.[2] Others have argued that rising returns to education and skill-biased technological change are the important factors explaining rising inequality.[3] Tax policy, especially the Tax Reform Act of 1986, has also been identified as a possible cause for rising income inequality.[4] Most analysts agree that the likely explanation for rising income inequality is due to skill-biased technological changes combined with a change in institutions and norms of which a falling minimum wage and declining unionization are a part.[5] Research suggests that tax policy, while possibly having short-term effects on inequality, does not have much impact on longer-term inequality trends.[6]

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[1] See CRS Report RL34155, *Income Inequality and the U.S. Tax System*, by Thomas L. Hungerford.

[2] See David S. Lee, "Wage Inequality in the United States During the 1980s: Rising Dispersion or Falling Minimum Wage?" *Quarterly Journal of Economics*, vol. 114, no. 3 (Aug. 1999), pp. 977-1023; and John DiNardo, Nicole M. Fortin, and Thomas Lemieux, "Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach," *Econometrica*, vol. 64, no. 5 (Sept. 1996), pp. 1001-1044.

[3] See John Bound and George Johnson, "Changes in the Structure of Wages in the 1980s: An Evaluation of Alternative Explanations," *American Economic Review*, vol. 82, no. 3 (Jan. 1992), pp. 371-392; David H. Autor, Lawrence F. Katz, and Melissa S. Kearney, "The Polarization of the U.S. Labor Market," *American Economic Review*, papers and proceedings, vol. 96, no. 2 (May 2006), pp. 189-194; and Thomas Lemieux, "Postsecondary Education and Increasing Wage Inequality," *American Economic Review*, papers and proceedings, vol. 96, no. 2 (May 2006), pp. 195-199.

[4] See Daniel R. Feenberg and James M. Poterba, "Income Inequality and the Incomes of Very High-Income Taxpayers: Evidence from Tax Returns," in James M. Poterba, ed., *Tax Policy and the Economy*, vol. 7 (Cambridge, MA: MIT Press, 1993); and Roger H. Gordon and Joel B. Slemrod, "Are "Real" Responses to Taxes Simply Income Shifting Between Corporate and Personal Tax Bases?" in Joel B. Slemrod, ed., *Does Atlas Shrug? The Economic Consequences of Taxing the Rich* (New York and Cambridge, MA: Russell Sage Foundation and Harvard University Press), pp. 240-280.

[5] See, for example, Frank Levy and Peter Temin, *Inequality and Institutions in 20th Century America*, National Bureau of Economic Research, Working Paper no. 13106, May 2007; and Autor, Katz, and Kearney.

[6] See Joel Slemrod and Jon M. Bakija, "Growing Inequality and Decreased Tax

(continued...)

Arguments are offered for and against reducing income inequality. The classic argument against rising income inequality is the rich get richer and the poor get poorer. This can increase poverty, reduce well-being, and reduce social cohesion. Consequently, many argue that reducing income inequality may reduce various social ills. Some researchers are concerned about the consequences of rising income inequality. Research has demonstrated that large income and class disparities adversely affect health and economic well-being.[7]

In contrast, there are those arguing that rising inequality is nothing to worry about and point out that average real income has been rising, so while the rich are getting richer, the poor are not necessarily getting poorer. In addition, many argue that some income inequality is necessary to encourage innovation and entrepreneurship — the possibility of large rewards and high income are incentives to bear the risks. Furthermore, many argue that income or social mobility reduces income inequality and increases well-being. Milton Friedman argued in 1962 that mobility is an important determinant of well-being:

> 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.[8]

Since Congress and most people are concerned with upward mobility and, given the central importance of income mobility to the debate over income inequality, this report examines the relation between income mobility and inequality.[9] Income mobility studies are an important complement to income inequality studies.

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[6] (...continued)
Progressivity," in Kevin A. Hassett and R. Glenn Hubbard, *Inequality and Tax Policy* (Washington, DC: AEI Press, 2001), pp. 192-226; Levy and Temin; Thomas Piketty and Emmanuel Saez, "Income Inequality in the United States, 1913-1998," *Quarterly Journal of Economics*, vol. 118, no. 1 (Feb. 2003), pp. 1-39; and Edward M. Gramlich, Richard Kasten, and Frank Sammartino, "Growing Inequality in the 1980s: The Role of Federal Taxes and Cash Transfers," in Sheldon Danziger and Peter Gottschalk, eds., *Uneven Tides: Rising Inequality in America* (New York: Russell Sage Foundation, 1993), pp. 225-249.

[7] Michael Marmot, *The Status Syndrome: How Social Standing Affects Our Health and Longevity* (New York: Henry Holt and Co., 2004); Richard G. Wilkinson, *Unhealthy Societies: The Afflictions of Inequality* (New York: Routledge, 1996); Robert Frank, *Falling Behind: How Rising Inequality Hurts the Middle-Class* (Berkeley, CA: University of California Press, 2007); and Gopal K. Singh and Mohammad Siahpush, "Widening Socioeconomic Inequalities in US Life Expectancy, 1980-2000," *International Journal of Epidemiology*, vol. 35 (May 2006), pp. 969-979.

[8] Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962), p. 171.

[9] For example, the Subcommittee on Income Security and Family Support of the House Ways and Means Committee held a hearing on economic opportunity in Feb. 2007.

Examining income inequality provides information on the dispersion of income and a snapshot of well-being. It does not provide dynamic information on well-being over a period of time — are the same people always at the bottom of the income distribution? Income inequality does not address the issue of whether or not the poor are getting poorer, whereas income mobility does.

What is Income?

A precise definition of income is important in studying inequality and mobility. Most people think of income as the salary they receive from their employer or adjusted gross income as reported on their income tax return. A broader definition of income is the Haig-Simons concept of income. Henry Simons started from the proposition that "[p]ersonal income connotes, broadly, the exercise of control over the use of society's scarce resources."[10] Robert Haig defined "income in terms of power to satisfy economic wants rather than in terms of satisfactions themselves."[11] Both economists argue that income is the sum of consumption and additions to wealth.[12] There are some who argue that only consumption should be considered because, they claim, it is a better measure of well-being.[13] But additions to wealth reflect rights that could have been exercised in consumption and may be so exercised in the future.[14]

For analytic purposes, income has to be measured and expressed in numerical terms in terms of national currency. Consequently, consumed goods and services produced through home production (such as child care services provided by family members and food grown by family members) are not included in income, since a monetary value is difficult to calculate. In this analysis, income is measured in dollars and includes earnings, asset income (interest and dividends), government cash transfers, pension payments, the face value of food stamps, and transfers from private individuals. Realized capital gains are not included since they are not an annual income flow and vary greatly from year to year. Taxes (which may be negative) are subtracted to produce what is called post-government income.[15]

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[10] Henry C. Simons, *Personal Income Taxation: The Definition of Income as a Problem of Fiscal Policy* (Chicago: University of Chicago Press, 1938), p. 49.

[11] Robert Murray Haig, "The Concept of Income — Economic and Legal Aspects," in R.M. Haig, ed., *The Federal Income Tax* (New York: Columbia University Press, 1921).

[12] Simons, p. 50, states that "[p]ersonal income may be defined as the algebraic sum of (1) the market value of rights exercised in consumption and (2) the change in the value of the store of property rights between the beginning and end of the period in question."

[13] See, for example, W. Michael Cox and Richard Alm, "You Are What You Spend," *New York Times*, Op-Ed Contribution, Feb. 10, 2008, p. 14.

[14] The same reasoning would apply to an increase in debt which is a subtraction from wealth.

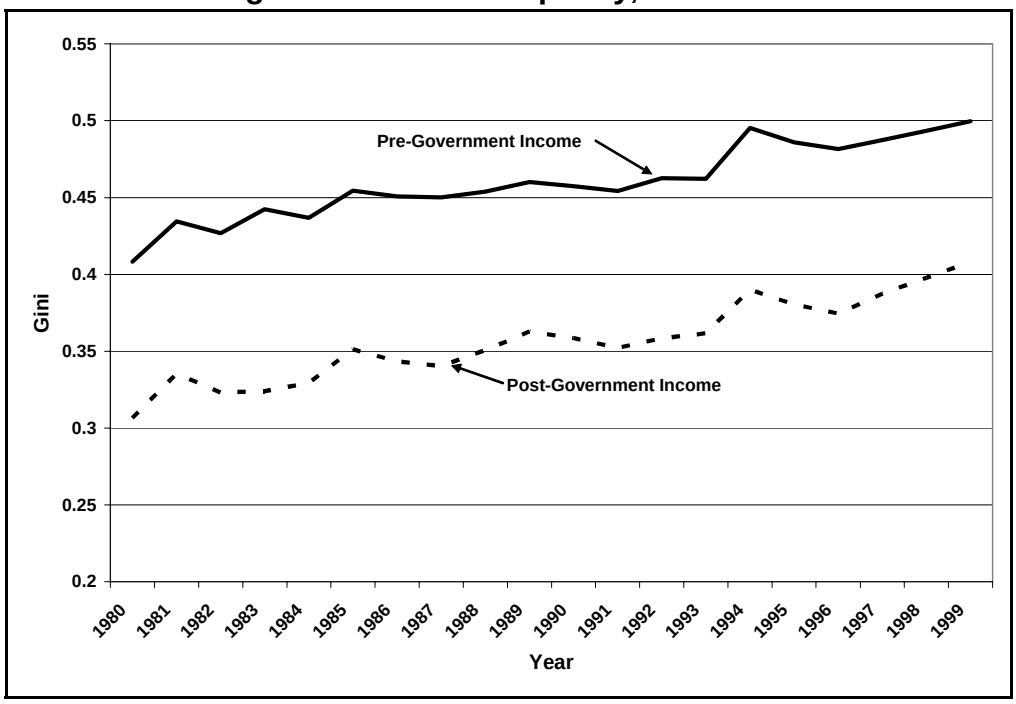
[15] See **Appendix** for more information on the definition of income used in the analysis. Pre-government income includes only income from non-governmental sources and excludes any adjustment for taxes.

Income Inequality

Earnings and income inequality has been rising in the United States since 1980.[16] The evidence suggests that the increase in inequality is primarily due to those at the top of the income distribution pulling away from households lower down in the distribution. Furthermore, it appears that the real incomes of the poor have been roughly steady over the past 25 years. The United States is not the only industrial country experiencing rising income inequality. Income inequality also increased in most developed countries throughout the 1980s and 1990s, though at different rates and starting from different levels.[17]

One common measure to characterize income inequality is the Gini coefficient, which varies from 0 to 1. A Gini coefficient of 0 indicates that income is evenly distributed among the population (that is, everyone has the same income) while a value of 1 indicates perfect income inequality (that is, one individual has all the income). The 20-year trend from 1980 to 1999 of the Gini coefficient for equivalence-adjusted family income is displayed in **Figure 1**.[18]

Figure 1. Income Inequality, 1980-1999



Source: Author's calculations of the Panel Study of Income Dynamics (PSID).

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[16] See CRS Report RL34155, *Income Inequality and the U.S. Tax System*, by Thomas L. Hungerford.

[17] Peter Gottschalk and Timothy M. Smeeding, "Cross-National Comparisons of Earnings and Income Inequality," *Journal of Economic Literature*, vol. 35, no. 2 (June 1997), pp. 633-687.

[18] See the **Appendix** for a description of how equivalence-adjusted income is calculated.

The top solid line in the figure shows the trend in pre-government (before taxes and receipt of government transfers) income inequality. Between 1980 and 1999 the Gini coefficient increased by 22.4% from 0.408 to 0.500. The bottom dashed line shows the 20-year trend in the post-government (after taxes and receipt of government transfers) income inequality. The post-government family income Gini coefficient was also steadily increasing over this period — increasing by 33% from 0.307 in 1980 to 0.408 in 1999. The trends in the two Gini coefficients increase roughly in tandem.

The post-government income Gini coefficient is about 30% lower than the pre-government income Gini coefficient. This strongly indicates that government transfers and taxes have a leveling effect on the distribution of income. This leveling effect, however, appears to have not changed over this period — tax and transfers were equally progressive throughout the period.

Not all sources of post-government income, however, have a leveling effect. For example, research has shown that rising male earnings inequality is a significant source of the rise in family income inequality, while changes in female earnings have had an equalizing effect on family income inequality.[19] **Table 1** reports the estimated effect on the Gini coefficient arising from a 1% increase in an income source (holding the level of other income sources constant) for selected years.[20]

Increasing both labor income and asset income by 1% would lead to an increase in the Gini coefficient. In interpreting this result, it must be kept in mind that if labor or asset income are zero then a 1% increase is also zero — only individuals with positive labor or asset income would benefit from this hypothetical increase.[21] Consequently, individuals at the top of the income distribution would benefit the most from such an increase. Overall, the estimated results are qualitatively similar across the selected years.

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[19] See, for example, Deborah Reed and Maria Cancian, "Sources of Inequality: Measuring the Contributions of Income Sources to Rising Family Income Inequality," *Review of Income and Wealth*, series 47, no. 3 (Sept. 2001), pp. 321-333.

[20] The years chosen are the beginning and end years for the two time periods examined in the next section.

[21] If, on the other hand, individuals with no labor income in 1999 were given a full-time minimum wage job, the Gini coefficient would be reduced by 1.4%.

Table 1. How Changes in Income from Different Sources Affects Income Inequality, 1980-1999

Income Source	Percent Change in Gini from 1% Increase in Income Source			
	1980	1989	1990	1999
Labor Income	0.1988 (0.0028)	0.1901 (0.0022)	0.1420 (0.0026)	0.1193 (0.0046)
Asset Income	0.1043 (0.0018)	0.1050 (0.0014)	0.0933 (0.0018)	0.1207 (0.0025)
Private Transfers	-0.0124 (0.0002)	-0.0101 (0.0001)	-0.0139 (0.0002)	0.0033 (0.0006)
Private Retirement Income	0.0107 (0.0004)	-0.0026 (0.0005)	0.0083 (0.0007)	-0.0048 (0.0005)
Public Transfers	-0.0551 (0.0004)	-0.0356 (0.0002)	-0.0335 (0.0004)	-0.0179 (0.0002)
Social Security Pension	-0.0577 (0.0005)	-0.0828 (0.0005)	-0.0365 (0.0005)	-0.0755 (0.0006)
Total Taxes	-0.1886 (0.0010)	-0.1640 (0.0006)	-0.1597 (0.0005)	-0.1451 (0.0025)
Payroll Taxes	0.0007 (0.0002)	-0.0012 (0.0002)	0.0036 (0.0002)	0.0057 (0.0004)
State Taxes	-0.0187 (0.0002)	-0.0238 (0.0002)	-0.0217 (0.0002)	-0.0171 (0.0004)
Federal Taxes	-0.1706 (0.0011)	-0.1389 (0.0003)	-0.1416 (0.0003)	-0.1336 (0.0019)

Source: Author's analysis of the PSID.
Note: Bootstrap estimated standard errors in parenthesis.

Three sources of post-government income (public transfers, social security pension, and total taxes) have the effect of reducing income inequality as measured by the Gini coefficient. These are the income sources that lead to the difference between pre-government income and post-government income. The estimated effect is negative in all of the selected years, but the values vary somewhat from year to year. Total taxes appear to have the largest progressive effect on income inequality. Different taxes, however, have different effects on inequality. Payroll taxes (such as Social Security taxes), state income taxes, and federal income taxes are separated and the individual effects on inequality are estimated (see the last three rows of **Table 1**). Payroll taxes have the smallest effect on inequality and the effect varies around zero (positive and negative) over the selected years suggesting these taxes have very little equalizing effects on income. Federal and state income taxes have a consistent negative effect on inequality (that is, reduces income inequality) with federal taxes

having the greatest equalizing effect. This is arguably due to the refundable tax credits, especially the earned income credit.

Income Mobility

Most people are concerned with upward mobility. But upward mobility means different things to different people. Many think of upward mobility as increasing inflation-adjusted or real income. Others think of it as upward movement in the income distribution — not only keeping up with the Jones but surpassing them. Social scientists have developed several measures to examine the different concepts of income mobility.[22]

Two methods are used in this study to examine income mobility. The first is a transition matrix, which compares a person's place in the income distribution in the base year to his or her place in the distribution in the final year of the period under consideration. The second is the difference between real income in the base year and the final year. These two measures provide information on relative and absolute changes in well-being. The two measures, however, may or may not provide a consistent picture of income mobility. For example, it is possible for someone to experience downward relative mobility (that is, fall in the income distribution) even though their real income is increasing — it just didn't increase as much as other people's income.

Income mobility studies also can provide information on the relation between (1) inequality in one year with inequality in another, and (2) short-term inequality and long-term inequality. The trend in inequality is affected by income growth and reranking or mobility within the income distribution — whose income grows and by how much affects inequality. Additionally, Peter Gottschalk notes that "inequality in each subperiod and mobility across subperiods would both impact inequality of permanent (or average) earnings."[23]

Previous Studies of Income Mobility

Several studies have examined income mobility over the past 20 years using a variety of methods and longitudinal data sources.[24] Researchers at the Department of the Treasury have produced three of these studies. In each study, the researchers use a 10-year sample of individual tax returns. The earliest Treasury study limited the sample to taxpayers who filed a tax return in each of the 10 years between 1979

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[22] See Gary S. Fields and Efe A. Ok, "The Measurement of Income Mobility: An Introduction to the Literature," in Jacques Silber, ed., *Handbook of Income Inequality Measurement* (Boston, MA: Kluwer Academic Publishers, 1999), pp. 557-596 for a discussion of the different concepts of mobility and measurement issues.

[23] Peter Gottschalk, "Inequality, Income Growth, and Mobility: The Basic Facts," *Journal of Economic Perspectives*, vol. 11, no. 2 (Spring 1997), p. 24.

[24] Longitudinal data contain information about a sample of individuals and families over a period of time, which is collected from periodic surveys.

and 1988, the observation period.[25] Their results show that 40% of the taxpayers who started out in the poorest income quintile in 1979 ended in the richest two income quintiles 10 years later, while only 14% remained in the poorest quintile. This sample selection criteria, however, eliminates many lower income individuals who do not file a tax return in one or more years (for example, many elderly families are not included) who tend to remain near the bottom of the income distribution. The Treasury sample, therefore, is statistically biased towards finding little downward mobility.

The next two Treasury studies focus on the 10-year period 1987 to 1996 or 1996 to 2005.[26] The sample is limited to taxpayers who filed a tax return in the first year (1987 or 1996) and the final year of the period (1996 or 2005). Consequently, the sample is a little more representative of the U.S. population than in the first Treasury study, but taxpayers under age 25 in the first year are eliminated from the analysis. The sample selection criteria still omits many lower income individuals and families who do not file a tax return such as the elderly. The two studies find that lifetime income is more equally distributed (that is, inequality is lower) than income in a single year because of considerable mobility. For example, both studies find that more than half of those taxpayers in the poorest income quintile move up to higher quintiles by the final year. The upward movement, however, is not far — about half of those who move up in the distribution only move to the next income quintile. As with the first Treasury study, the sample selection criteria yields a sample that is statistically biased toward finding upward mobility and little downward mobility.

Several studies have used the University of Michigan's Panel Study of Income Dynamics (PSID) to examine income mobility. The PSID is well suited for studying income mobility because: (1) it is representative of the broader U.S. population (rather than of taxpayers); (2) it includes sources of income not reported on tax returns (but not capital gains); and (3) it includes detailed demographic information on the individuals and families in the sample. All the studies find considerable income mobility, but less than was found in the three Treasury studies, and the movement is not very far. One researcher concludes that, "the rags to riches success stories are fairly rare as well as riches to rags sob stories."[27] The same researcher also found that when a longer term measure of income is considered, individuals appear less mobile within the income distribution. Another study found that mobility increases when the length of the time period under consideration increases, but again observed mobility rates are lower than those found in the Treasury studies.[28]

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[25] U.S. Department of Treasury, Office of Tax Analyst, "Household Income Changes Over Time: Some Basic Questions and Facts," *Tax Notes* (Aug. 24, 1992), pp. 1065-1074.

[26] Gerald E. Auten and Geoffrey Gee, *Income Mobility in the U.S.: Evidence from Income Tax Returns for 1987 and 1996*, U.S. Department of Treasury, Office of Tax Analysis, OTA working paper 99, May 2007; and U.S. Department of Treasury, *Income Mobility in the U.S. from 1996 to 2005*, Report of the Department of Treasury, Nov. 13, 2007.

[27] Thomas L. Hungerford, "U.S. Income Mobility in the Seventies and Eighties," *Review of Income and Wealth*, vol. 39, no. 4 (Dec. 1993), p. 414.

[28] Maury Gittleman and Mary Joyce, "Have Family Income Mobility Patterns Changed?"

(continued...)

Furthermore, the authors find that families headed by people lacking a college degree are less likely to experience upward mobility. A study comparing mobility between time periods found less income mobility in the 1990s than in the 1970s.[29] A study of income mobility in Britain finds many of the same results as for the U.S. — much income mobility, but it tends to be not very far.[30]

A few studies have examined earnings mobility. One of the studies finds that earnings mobility has declined significantly over the years.[31] Another study finds that changes in earnings mobility have been smaller than changes in inequality and the authors conclude that "changes in mobility have not substantially affected the evolution of inequality, so that annual snapshots of the distribution provide a good approximation of the evolution of the longer term measures of inequality."[32]

Relative Income Mobility in the 1980s and 1990s

Transition matrices of relative income mobility are reported in **Table 2** for the 1980s (panel A) and the 1990s (panel B). Two summary measures of association are shown in the last two rows of each panel. One measure is the immobility ratio, which shows the proportion of individuals not changing income quintiles between the first and final year. The other measure is Cramér's V, which has a range of -1 to +1 with a value of +1 indicating perfect association between the income quintile in the first year and the final year quintile (that is, no mobility).

The first row in panel A of **Table 2** shows that of the poorest 20% of individuals (the poorest quintile) in 1980, 53% were still in the poorest quintile 10 years later, while 2.5% made it to the richest quintile (the traditional Horatio Alger rags to riches success story). The immobility ratio is 0.377, indicating that overall 37.7% of the individuals remained in the same income quintile between the two years. While there appears to be considerable mobility, it is not far — about 60% of those individuals who changed income quintile between 1980 and 1989 only moved to the next quintile. The same overall pattern is seen for the 1990s in panel B, but both the immobility ratio and Cramér's V are larger, suggesting relative income mobility was lower in the 1990s than in the 1980s.

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[28] (...continued)
Demography, vol. 36, no. 3 (Aug. 1999), pp. 299-314.

[29] Katherine Bradbury and Jane Katz, "Are Lifetime Incomes Growing More Unequal? Looking at New Evidence on Family Income Mobility" *Regional Review*, Q4, Federal Reserve Bank of Boston (2002), pp. 3-5.

[30] Sarah Jarvis and Stephen P. Jenkins, "How Much Income Mobility is There in Britain?" *Economic Journal*, vol. 108 (Mar. 1998), pp. 428-443.

[31] Moshe Buchinsky and Jennifer Hunt, "Wage Mobility in the United States," *Review of Economics and Statistics*, vol. 81, no. 3 (Aug. 1999), pp. 351-368.

[32] Wojciech Kopczuk, Emmanuel Saez, and Jae Song, *Uncovering the American Dream: Inequality and Mobility in Social Security Earnings Data Since 1937*, National Bureau of Economic Research, Working Paper no. 13345, Aug. 2007.

Table 2. Relative Income Mobility — Transition Matrices for the 1980s and 1990s

A. 1980-1989

		1989 Income Ranking					
		1	**2**	**3**	**4**	**5**	**Total**
1980 Income Ranking	**1**	53.0	27.2	11.6	5.8	2.5	100.0
	2	22.4	30.0	25.5	15.6	6.5	100.0
	3	12.2	21.4	26.0	25.5	15.0	100.0
	4	8.9	13.2	22.8	29.2	25.9	100.0
	5	3.5	8.2	14.2	24.1	50.1	100.0
	Total	100.0	100.0	100.0	100.0	100.0	
Cramér's V		0.311					
Immobility Ratio		0.377					

B. 1990-1999

		1999 Income Ranking					
		1	**2**	**3**	**4**	**5**	**Total**
1990 Income Ranking	**1**	53.2	23.9	13.7	6.4	2.8	100.0
	2	25.9	32.9	23.5	13.1	4.5	100.0
	3	9.0	23.4	30.3	23.4	13.9	100.0
	4	7.7	13.8	20.4	33.0	25.1	100.0
	5	4.1	6.2	11.9	24.0	53.8	100.0
	Total	100.0	100.0	100.0	100.0	100.0	
Cramér's V		0.335					
Immobility Ratio		0.406					

Source: Author's analysis of the PSID.

The transition matrices show the extent of relative income mobility but not who is likely to move up or down in the income distribution. **Table 3** presents the results of a multivariate analysis of the likelihood of upward, no, and downward mobility.[33] The entries in the table show the percentage differences in the probability of mobility between individuals with the indicated characteristic and other individuals. For

[33] See the **Appendix** for a description of the multinomial logit analysis, which is the multivariate analysis method used to estimate the effects of the demographic characteristics on the likelihood of moving up in the income distribution, no movement, or moving down.

example, the first entry of 0.1447 in the table shows that an individual with a high school diploma has a 14.5% higher probability of experiencing upward mobility than an individual with less than a high school education (the omitted educational category in the analysis). The top panel reports results for the 1980s and the bottom panel for the 1990s.

Overall, the qualitative results for the two decades are similar. Individuals with more than a high school education are more likely to experience upward mobility than others, while older individuals and African-Americans are less likely to experience upward mobility and more likely to experience downward mobility (all the marginal effects are statistically significant). The results also suggest that individuals from larger families are more likely to experience upward mobility.

The quantitative results for the two decades, however, are quite different. The estimated effect of having more than a high school education on upward mobility is considerably lower in the 1990s than in the 1980s (33.4% for the 1980s versus 10.2% for the 1990s). The individuals in the oldest age group (65 or older) were much less likely to experience upward mobility (compared to the youngest age group) in the 1990s than in the 1980s (-52.9% for the 1990s versus -39.7% for the 1980s). Lastly, blacks, while less likely to experience upward mobility than others, appeared to do less badly in the 1990s than in the 1980s.

Table 3. How Demographic Variables Affect Percentage Change in Probability of Upward, No, and Downward Mobility

	Upward Mobility	No Mobility	Downward Mobility
A. 1980 to 1989			
High School Education	0.1447***	-0.3186***	0.0149
More than High School	0.3344***	-0.1113*	-0.2866***
Age 18-24	0.0163	-0.1998**	0.0859
Age 25-39	0.0818	0.1161	-0.1437***
Age 40-54	-0.0692	0.1452	-0.0035
Age 55-64	-0.4327***	-0.0119	0.4387***
Age 65 or older	-0.3972***	0.2894**	0.2596***
Female	-0.0137	0.0724	-0.0231
Black	-0.2645***	0.2088***	0.1646***
Family Size	0.0955***	0.0067	-0.1016***

	Upward Mobility	No Mobility	Downward Mobility
B. 1990 to 1999			
High School Education	-0.1094*	0.0236	0.0864
More than High School	0.1016*	-0.0401	-0.0706
Age 18-24	0.1370	-0.3232***	0.0463
Age 25-39	0.2176***	0.0825	-0.2401***
Age 40-54	0.1069	0.1312	-0.1656***
Age 55-64	-0.3460***	-0.0836	0.3567***
Age 65 or older	-0.5293***	0.3835**	0.2764***
Female	0.0007	-0.0433	0.0221
Black	-0.1617***	0.1306*	0.0773
Family Size	0.0234*	0.0344	-0.0419***

Source: Author's analysis of the PSID.
Notes: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Standard errors in parentheses. See **Appendix** for full set of coefficient estimates upon which the marginal effects are based.

Absolute Income Mobility in the 1980s and 1990s

Relative income mobility is concerned with the extent to which individuals change places in the income distribution (that is, reranking). Absolute income mobility is concerned with the extent to which an individual's real income changes. **Table 4** displays how real income changed in the 1980s (panel A) and 1990s (panel B). The tables show the proportion of individuals in each first year income quintile whose real income changed by the indicated percentage between the first (1980 or 1990) and final (1989 or 1999) year. Also shown is the median percentage change in real income for each income quintile.

Table 4. Absolute Income Mobility — Real Income Growth in the 1980s and 1990s

A. 1980-1989					
Quintile	**Median Percentage Change**	**Proportion of Quintile Within Range**			
		<-10%	**-10-0%**	**0-10%**	**>10%**
1	36.6	22.1	7.1	8.0	62.9
2	23.4	25.3	6.1	7.4	61.1
3	17.0	29.5	7.8	7.8	55.0
4	4.5	37.0	9.2	9.2	44.6
5	-9.4	49.3	8.5	8.8	33.4
B. 1990-1999					
Quintile	**Median Percentage Change**	**Proportion of Quintile Within Range**			
		<-10%	**-10-0%**	**0-10%**	**>10%**
1	35.5	23.8	7.0	4.9	64.3
2	9.9	31.6	9.8	8.6	50.0
3	5.5	36.0	8.5	10.3	45.2
4	-2.8	42.5	10.1	9.0	38.4
5	-12.0	51.7	8.9	10.1	29.3

Source: Author's analysis of the PSID.

Most individuals in the poorest quintile in 1980 experienced an increase in their real income between 1980 and 1989 — half saw their real income increase by more than 36%. However, over one in five individuals in the poorest quintile in 1980 saw their real income decrease by over 10%. Of those in the richest quintile, almost half saw their real income fall by 10% or more during the 1980s. The same patterns are evident for the 1990s.

There are differences, however, in absolute mobility between the 1980s and the 1990s. First, those in the poorest income quintile may have done slightly better in the 1990s than in the 1980s — a larger proportion saw their real income increase by more than 10% in the 1990s than in the 1980s but the median percentage change was slightly lower in the 1990s than in the 1980s. Second, individuals higher up in the income distribution (quintiles 2-5) appear to have done worse in the 1990s than in the 1980s.

The Effect of Mobility on Inequality

Income growth and mobility contribute to changes in income inequality over time. Income growth can have an equalizing (progressive) effect on incomes if the income of those individuals at the bottom of the income distribution grows at a greater rate than for those at the top of the distribution. This is what happened in both the 1980s and 1990s (see **Table 4**). But income inequality increased in both decades (see **Figure 1**). The reshuffling or reranking (income mobility) in the income distribution between two points in time affects inequality through a disequalizing effect.[34] The progressivity effect focuses solely on the change in income holding an individual's rank or place in the income distribution constant. Of course, when income changes an individual's place in the income distribution is also likely to change. The reranking effect focuses on how far an individual's change in rank is from his or her original position, holding income constant at the final year level.

The decomposition of the increase in the Gini coefficient into a progressivity effect and a reranking effect over the 1980s and 1990s is reported in **Table 5**. The Gini coefficient increased by 0.0579 points (19%) over the 1980s and by 0.0466 points (13%) over the 1990s. In both decades, income growth was progressive (the progressivity effect) and had an equalizing effect on the income distribution (that is, reducing the Gini coefficient). The equalizing effect had a larger absolute value in the 1990s than in the 1980s. The reranking effect, however, had a disequalizing effect and, in fact, outweighed the progressivity effect. In both decades, reranking (or relative income mobility) had the effect of increasing the annual Gini coefficient.

Income mobility can reduce long-term income inequality, however. With high income mobility, individuals at the top or the bottom of the income distribution will not necessarily be there in the future, suggesting that longer-term incomes may be more equal than annual incomes. Consequently, long-term inequality will be lower than short-term inequality.[35] It is possible, though, that high income mobility implies income instability — some individuals may face a high likelihood of a large fall in income.

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[34] Stephen P. Jenkins and Philippe Van Kerm, "Trends in Income Inequality, Pro-poor Income Growth, and Income Mobility," *Oxford Economic Papers*, vol. 58 (2006), pp. 531-548.

[35] Gary S. Fields, *Does Income Mobility Equalize Longer-term Incomes? New Measures of an Old Concept*, Cornell University, ILR working paper, Aug. 2007.

Table 5. Decomposition of Change in Gini Coefficient into Progressivity Effect and Reranking Effect

	Year	Gini	Difference	Progressivity Effect	Reranking Effect
1980s	1980	0.3053 (0.0009)	0.0579 (0.0012)	-0.0694 (0.0017)	0.1273 (0.0007)
	1989	0.3632 (0.0011)			
1990s	1990	0.3502 (0.0011)	0.0466 (0.0025)	-0.0844 (0.0036)	0.1310 (0.0009)
	1999	0.3968 (0.0024)			

Source: Author's analysis of the PSID.
Note: Bootstrap estimated standard errors in parenthesis.

Table 6 reports results of the comparison of short-term and long-term income inequality in the 1980s and 1990s. The long-term Gini coefficient is estimated using income for each individual averaged over each decade (1980 to 1989 or 1990 to 1999). In both decades, the long-term Gini coefficient is lower than the Gini coefficient of income in the first year of the decade. The equalization measure is shown in the last column of the table. The results suggest that mobility had a greater equalizing effect on long-term inequality in the 1990s than in the 1980s.

Table 6. Effect of Mobility on Inequality of Longer-term Income

Decade	Year	Gini	Equalization Measure
1980s	1980	0.3053 (0.0009)	0.0209 (0.0021)
	Long-term	0.2989 (0.0008)	
1990s	1990	0.3502 (0.0011)	0.0819 (0.0022)
	Long-term	0.3215 (0.0009)	

Source: Author's analysis of the PSID.
Note: Bootstrap estimated standard errors in parenthesis.

U.S. Economic Policy

Both income growth and mobility affect the trend in inequality. In the 1980s and 1990s, the equalizing effect of income growth was more than offset by the disequalizing effect of mobility. Three broad types of government economic policy affect income growth and mobility, and hence income inequality: (1) regulation and legislation, (2) the tax system, and (3) government transfers. Each of these three types of economic policy affect inequality through different mechanisms.

Regulation and legislation can affect income inequality directly by reducing the extreme ranges of the income distribution. For instance, increasing in the minimum wage increases the earnings of low-wage workers who are often near the bottom of the income distribution.[36] Efforts to reduce excessive executive pay could reduce the growth in executive pay and could reduce or limit increases in income inequality by affecting the upper tail of the income distribution.[37] Enforcement of anti-discrimination laws can help keep workers from falling to the bottom of the income distribution by safeguarding wages and employment opportunity for the aged, women, and minorities. It is often argued, however, that these policies have unintended consequences. Many claim that minimum wage hikes, for example, reduce employment among low-skilled individuals, although recent empirical research shows there is little or no disemployment effect from raising the minimum wage.[38]

Earnings and income can be quite volatile, and large reductions in a family's income reduce economic well-being. It is this income volatility that causes mobility within the income distribution which, in turn, contributes to rising income inequality. The progressive personal income tax system is part of a redistributive tax-transfer system that insures individuals and families against risks of volatile income associated with human capital and random events.[39] One analyst shows that redistributive taxation can reduce variation in after-tax income, and that the optimal income tax may be a progressive tax.[40] Progressive taxation may be more effective at raising revenue than a proportional tax, and, combined with transfers, may be

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[36] The minimum wage was most recently increased in three steps by the Defense Supplemental Appropriations (P.L. 110-28). The minimum wages was increased from $5.15 per hour to $5.85 in July 2007. It will increase to $6.55 in July 2008 and to $7.25 in July 2009.

[37] For specific policy proposals, see CRS Report RS22604, *Excessive CEO Pay: Background and Policy Approaches*, by Gary Shorter, Mark Jickling, and Alison Raab.

[38] David Card and Alan Krueger, *Myth and Measurement: The New Economics of the Minimum Wage* (Princeton, N.J.: Princeton University Press, 1995).

[39] See, for example, Jonathan Eaton and Harvey S. Rosen, "Taxation, Human Capital, and Uncertainty," *American Economic Review*, vol. 70, no. 4 (Sept. 1980), pp. 705-715; and Robert J. Shiller, *Macro Markets* (Oxford: Oxford University Press, 1993).

[40] Hal Varian, "Redistributive Taxation and Social Insurance," *Journal of Public Economics*, vol. 14 (1980), pp. 49-68.

effective in reducing income inequality.[41] Recent research, however, shows that the federal income tax system, while progressive, has become less progressive at the top of the income distribution since 1960.[42] Additionally, many tax deductions, exclusions, and exemptions are targeted to higher income taxpayers, thus further reducing the progressivity of the income tax system.[43]

Government transfers — both social insurance (for example, Social Security and unemployment compensation) and public assistance (for example, Temporary Assistance for Needy Families (TANF), Supplement Security Income (SSI), and food stamps) — also insure individuals and families against large income reductions due to risks associated with human capital and random events.[44] Protected by this insurance function, individuals may engage in risky but profitable economic activities they would otherwise not undertake in the absence of such protection, which can increase economic growth.

The insurance protection of the redistributive tax-transfer system, however, may create a moral hazard problem — individuals may recklessly engage in risky economic activities or neglect to take necessary precautions in their economic activities. In addition, the redistribution may also involve some inefficiencies, the so-called "leaky bucket" of Arthur Okun.[45] The inefficiencies, the leaks in the bucket carrying money from the rich to the poor, include the administrative costs of collecting taxes and operating the social welfare programs, as well as the disincentives associated with taxes and government transfers. The disincentive effects, while real and measurable, are often not as large as expected, but research continues on the estimation of these effects.[46]

Concluding Remarks

Income mobility can affect income inequality in two ways. First, the disequalizing effect of reranking or mobility has contributed to rising inequality since

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[41] Howell H. Zee, "Inequality and Optimal Redistributive Tax and Transfer Policies," *Public Finance Review*, vol. 32, no. 4 (July 2004), pp. 359-381.

[42] Thomas Piketty and Emmanuel Saez, *How Progressive is the U.S. Federal Tax System? A Historical and International Perspective*, National Bureau of Economic Research, Working Paper no. 12404, July 2006.

[43] CRS Report RL33641, *Tax Expenditures: Trends and Critiques*, by Thomas L. Hungerford.

[44] See, for example, Hans-Werner Sinn, "A Theory of the Welfare State," *Scandinavian Journal of Economics*, vol. 97, no. 4 (1995), pp. 495-526.

[45] Arthur M. Okun, *Equality and Efficiency: The Big Tradeoff* (Washington: The Brookings Institution, 1975).

[46] See, for example, Robert A. Moffitt, "The Temporary Assistance for Needy Families Program," in Robert A. Moffitt, ed., *Means-tested Transfer Programs in the United States* (Chicago: University of Chicago Press, 2003); and Seth H. Giertz, "The Elasticity of Taxable Income over the 1980s and 1990s," *National Tax Journal*, vol. 60, no. 4 (Dec. 2007), pp. 743-768.

1980. Second, mobility has an equalizing effect on longer-term income, though the effect appears to be small. Economic policies to reduce the growth of income inequality may work, in part, through their effects on income mobility. Reducing income mobility (that is, stabilizing incomes) may reduce the rising trend in income inequality, but it could also increase inequality of longer-term income. The specific effect on longer-term inequality, however, depends on how the policy affects mobility. It is possible, for example, that policies establishing an income floor could reduce both the rising trend in income inequality and inequality of longer-term incomes.

Appendix

Data

The University of Michigan's Panel Study of Income Dynamics (PSID) is employed to study income inequality and income mobility since 1980. The specific data file was obtained from Cornell University's Cross-National Equivalent File. The data contain income and tax information that is comparably defined every year for the PSID. The tax information is estimated using the National Bureau of Economic Research's TAXSIM model.[47] Taxes are estimated for each tax unit within the household and then summed over all tax units within the household to arrive at a total household tax burden. Payroll taxes are calculated from reported earnings and legislated payroll tax rates.

The Panel Study of Income Dynamics (PSID) is a nationally representative longitudinal data set of the U.S. population that has been ongoing since 1968. The replacement mechanism of the PSID for births is designed to yield a representative sample of the nonimmigrant population in each year. The PSID oversamples low-income households because it was created by combining the Survey of Economic Opportunity (SEO), a survey of low-income households, with a representative group of households from the Survey Research Center (SRC) national sampling frame. Consequently, family weights are used throughout the analysis.[48]

The measure of income used for this study is family post-government income. This measure includes all cash income from public and private sources except realized capital gains. Realized capital gains are not an annual income flow and vary greatly from year to year. The measure does, however, include the face value of food stamps. Federal, state, and payroll taxes are subtracted. Family income is adjusted for family size and composition using an equivalence scale proposed by the National Research Council.[49]

Two periods are examined: 1980 to 1989 and 1990 to 1999. The individual is the unit of observation in this analysis. The individual is the focus of the analysis because family composition changes from year to year as people are born or marry into a family and people die, couples separate or children leave home. Equivalence-adjusted family income is used because well-being is based on the fortunes of the family the individual lives in.

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[47] See Barbara A. Butrica and Richard V. Burkhauser, *Estimating Federal Income Tax Burdens for Panel Study of Income Dynamics (PSID) Families Using the National Bureau of Economic Research TAXSIM Model*, Syracuse University, Maxwell School of Citizenship and Public Affairs, Aging Studies Program Paper no. 12, Dec. 1997.

[48] See Martha S. Hill, *The Panel Study of Income Dynamics: A User's Guide* (Newbury Park, CA: Sage Publications, 1992).

[49] See Constance F. Citro and Robert T. Michael, eds., *Measuring Poverty: A New Approach* (Washington: National Academy Press, 1995).

Inequality

Taxes and transfer payments (e.g., Social Security benefits and Temporary Assistance to Needy Families (TANF) benefits) affect the distribution of income. Furthermore, increasing any one source of post-government income will affect the income distribution differently than any other income source. The method used to estimate the marginal effect of income changes on the Gini coefficient was developed by Robert Lerman and Shlomo Yitzhaki.[50] Standard errors are obtained using bootstrap resampling methods.

Mobility

When examining income mobility between two years, the individuals had to be in the sample both years. In each year, the individuals are ranked by their equivalence-adjusted income and divided into five groups or quintiles. Quintile 1 contains the poorest 20% of individuals, while quintile 5 contains the richest 20%. Mobility within the income distribution is determined by comparing the individual's income quintile in the first year (1980 or 1990) to the individual's quintile in the second year (1989 or 1999). The income quintile breaks for the various years are reported in **Table A1**.

Table A1. Quintile Breaks — Real Equivalence-adjusted Family Income

	1980	1989	1990	1999
1	$12,912	$13,166	$14,265	$13,900
2	$18,306	$19,662	$20,661	$20,998
3	$23,699	$26,870	$27,413	$28,803
4	$31,637	$36,833	$37,735	$41,800

Source: Author's analysis of PSID.

[50] See Robert I. Lerman and Shlomo Yitzhaki, "Effect of Marginal Changes in Income Sources on U.S. Income Inequality," *Public Finance Quarterly*, vol. 22, no. 4 (Oct. 1994), pp. 403-417.

Effects of Mobility on Inequality

The change in the Gini coefficient between two years is decomposed into two additive components using the method described in an article by Stephen Jenkins and Philippe Van Kerm.[51] The decomposition of the change in the Gini coefficient is given by:

$$G_2 - G_1 = 2 \times \mathrm{cov}(s_2 - s_1, F_1) + 2 \times \mathrm{cov}(s_2, F_2 - F_1)$$

where $s_t = y_t / \mu_t$, y_t is annual income, μ_t is average annual income, and F_t is the cumulative distribution of income. The change in inequality is a directional change and compares inequality in the base year with inequality in the final year. The choice of a reference point (the base year or the final year) gives rise to an index number issue. In the present case, the forward-looking perspective is the natural one to use. Consequently, the base year (1980 or 1990) is the reference point.[52]

The first component is the progressivity effect of income growth between the two years. For example, if the income of those individuals at the bottom of the income distribution grows faster than for those individuals at the top, then income inequality will decrease, holding other factors constant. In this case, the income growth effect will be negative indicating income growth is progressive.

The second component is the effect of reranking or mobility within the income distribution. This component is an average of changes in income ranks (i.e., place in the income distribution) weighted by relative income. It will be equal to zero when there is no reranking and positive otherwise.

Income mobility also affects long-term income inequality. An equalization measure developed by Gary Fields is used to quantify the equalizing effect of income mobility on long-term income inequality.[53] The formula for the measure is:

$$\mathrm{E} = 1 - \frac{G(l)}{G(s)}$$

where *G(l)* is the Gini coefficient of long-term income (the average of income over the relevant period) and *G(s)* is the Gini coefficient of income in the first year of the period.

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[51] See Stephen P. Jenkins and Philippe Van Kerm, "Trends in Income Inequality, Pro-Poor Income Growth, and Income Mobility," *Oxford Economic Papers*, vol. 58 (2006), pp. 531-548. The method used to estimate the components is derived in Robert I. Lerman and Shlomo Yitzhaki, "Changing Ranks and The Inequality Impacts of Taxes and Transfers," *National Tax Journal*, vol. 48, no. 1 (Mar. 1995), pp. 45-59.

[52] This issue is discussed in Lerman and Yitzhaki (1995), and Jenkins and Van Kerm (2006).

[53] See Gary S. Fields, *Does Income Mobility Equalize Longer-tem Incomes? New Measures of an Old Concept*, Cornell University, ILR working paper, Aug. 2007.

Multivariate Analysis

The multinomial logit procedure is employed to estimate the effects of the explanatory variables on the distribution of individuals across the three income mobility states. Consequently, the focus is on the proportion of individuals falling into each of these categories. The three categories examined are upward mobility (moving up one or more deciles), no mobility, and downward mobility (moving down one or more deciles).

The multinomial logit model in this case takes the form of:

$$\Pr(y_i = k) = \frac{\exp(\beta_k' X_i)}{\sum_{k=1}^{3} \exp(\beta_k' X_i)}$$

where X_i is the vector of explanatory variables and β_k is the vector of parameters to be estimated. Since the regressors in the multinomial logit do not vary across the three alternatives, a normalization is required to identify the parameters — the coefficients corresponding to upward mobility are set to zero; the coefficient estimates and standard errors are reported in **Table A2**. As a result of the normalization, the signs and magnitudes of the coefficient estimates may not bear any relation to the marginal effect of a variable change on the probability of being in a particular category.[54] Consequently, marginal effects (the partial derivatives of the probabilities with respect to the independent variables evaluated at the means) along with the associated standard errors are calculated and reported in **Table 3**.

Table A2. Coefficient Estimates — Multinomial Logit

		1980 to 1989	1990 to 1999
No Mobility			
Initial Decile	Decile 2	-1.3199*** (0.1264)	-1.4999*** 0.1496
	Decile 3	-1.6712*** (0.1456)	-1.6861*** 0.1635
	Decile 4	-1.8018*** (0.1535)	-1.6576*** 0.1647
	Decile 5	-1.6738*** (0.1482)	-1.7010*** 0.1701
	Decile 6	-2.0254*** (0.1620)	-1.6797*** 0.1681

[54] William H. Greene, *Econometric Analysis*, 3rd Ed. (Upper Saddle River, NJ: Prentice Hall, 1997).

		1980 to 1989	1990 to 1999
	Decile 7	-1.3453*** (0.1492)	-1.3904*** 0.1644
	Decile 8	-1.0408*** (0.1475)	-0.9883*** 0.1687
	Decile 9	-0.5939*** (0.1503)	-0.3801** 0.1709
High School Education		-0.4633*** (0.0978)	0.1330 0.1175
More than High School		-0.4457*** (0.1022)	-0.1417 0.1196
Age 18-24		-0.2161 (0.1397)	-0.4602** 0.1859
Age 25-39		0.0343 (0.1148)	-0.1350 0.1286
Age 40-54		0.2144* (0.1201)	0.0242 0.1348
Age 55-64		0.4446*** (0.1688)	0.2623 0.1822
Age 65 or older		0.6866 (0.1752)	0.9128*** 0.1929
Female		0.0860 (0.0744)	-0.0441 0.0836
Black		0.4734*** (0.1002)	0.2923*** 0.1073
Family Size		-0.0888*** (0.0226)	0.0080 0.0310
Constant		0.8589*** (0.1657)	0.5154*** 0.1974
Downward Mobility			
Initial Decile	Decile 2	-1.4802*** (0.1425)	-1.1833*** 0.1558
	Decile 3	-0.7891*** (0.1277)	-0.5090*** 0.1453
	Decile 4	-0.7556*** (0.1245)	-0.4855*** 0.1439
	Decile 5	-0.3399*** (0.1253)	-0.3466*** 0.1453

		1980 to 1989	1990 to 1999
	Decile 6	-0.3429*** (0.1200)	-0.0718 0.1410
	Decile 7	0.2780** (0.1206)	0.0976 0.1398
	Decile 8	0.4360*** (0.1267)	0.5581*** 0.1487
	Decile 9	0.8758*** (0.1331)	0.9618*** 0.1595
High School Education		-0.1298 (0.0846)	0.1958* 0.1056
More than High School		-0.6210*** (0.0916)	-0.1722 0.1078
Age 18-24		0.0696 (0.1099)	-0.0907 0.1422
Age 25-39		-0.2255** (0.0989)	-0.4577*** 0.1120
Age 40-54		0.0657 (0.1045)	-0.2725** 0.1201
Age 55-64		0.8714*** (0.1391)	0.7027*** 0.1520
Age 65 or older		0.6568*** (0.1616)	0.8057 0.1735
Female		-0.0095 (0.0632)	0.0214 0.0717
Black		0.4291*** (0.0951)	0.2390** 0.1000
Family Size		-0.1971*** (0.0216)	-0.0682** 0.0285
Constant		0.9676*** (0.1593)	0.4329** 0.1853
Log Likelihood		-8289.14	-5616.83
χ^2		1024.97***	662.10***
Pseudo R^2		0.10	0.08

Source: Author's analysis of PSID.
Notes: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Robust standard errors in parentheses.