Income Mobility in the United States: New Evidence from Income Tax Data

Abstract *- While many studies have documented the long–term trend of increasing income inequality in the U.S. economy, there has been less focus on income mobility and the potential opportunity for upward mobility. Data from panels of individual income tax returns suggest that there was considerable income mobility in the U.S. economy over the 1987–1996 and 1996–2005 periods. Consistent with prior mobility studies, the data show that over half of taxpayers moved to a different income quintile and that roughly half of taxpayers who began in the bottom income quintile moved up to a higher income group by the end of each period. By contrast, those with the very highest incomes in the base year were more likely to drop to a lower income group and the median real income of these taxpayers declined in each period. Economic growth resulted in rising incomes for most taxpayers over both time periods. Initial position in the income distribution and changes in marital status were found to be associated with the largest upward or downward movements through the income distribution.*

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INTRODUCTION

Many studies have documented the long–term trend of increasing income inequality in the U.S. economy. U.S. Census data, for example, show that the share of household income of the top 20 percent of households increased from 44.1 percent in 1980 to 50.4 percent by 2005, with the share of the bottom 20 percent decreasing from 4.2 percent to 3.4 percent.[1] Similarly, Piketty and Saez (2003,2007) found that the share of income of the top 10 percent of taxpayers increased from 31.7 percent in 1960 to 44.3 percent in 2005, while the share of the top 1 percent increased from 8.4 percent to 17.4 percent. Economists have suggested a variety of factors as possible explanations for these trends, including increased returns to skill and education, greater globalization of labor markets, the decline in unionization, increased immigration, increased reporting due to reductions in income tax rates, and changes in the supply of highly educated workers.

The increasing inequality of incomes is shown in Table 1, which provides illustrative statistics using the income tax data and measure of cash income used in this study. The table shows the income breaks for income quintiles and selected

[1] U.S. Census Bureau (2006).

TABLE 1
INCOME CLASS CUTOFFS AND RATIOS TO MEDIAN INCOMES, 1987–2005
(2005 Dollars)

Quintile or Percentile	Income Cutoffs			Ratio of Cutoffs to Median Income		
	1987	1996	2005	1987	1996	2005
20th percentile	16,533	16,151	16,441	0.46	0.45	0.45
40th percentile	28,915	28,479	29,034	0.80	0.80	0.79
Median	36,188	35,711	36,664	1.00	1.00	1.00
60th percentile	44,700	44,477	46,679	1.24	1.25	1.27
80th percentile	69,127	71,519	78,088	1.91	2.00	2.13
Top 10%	93,034	100,898	113,495	2.57	2.83	3.10
Top 5%	122,466	137,626	162,451	3.38	3.85	4.43
Top 1%	266,846	331,106	430,341	7.37	9.27	11.74

Notes: The income breaks for the quintiles and top percentiles for each year are based on the income tax returns of all non–dependent taxpayers. Income is cash income in 2005 dollars as defined in the Technical Appendix.
Source: IRS, Statistics of Income 1987, 1996 and 2005 Individual Income Tax Files.

income percentiles of non–dependent taxpayers in 1987, 1996, and 2005, the time period included in this study. The ratios of the income cutoffs for the 20th, 40th and 60th percentiles to median income were virtually unchanged over this time period. While this ratio for the 80th percentile, the top quintile, increased by about 15 percent from 1.9 to 2.1, the ratios for the highest income classes increased considerably more. The cutoff–to–median income ratio for the top 1 percent increased by 67 percent from 7.4 to 11.7 and by 38 percent from 3.4 to 4.4 for the top 5 percent of taxpayers. Among taxpayers age 25 and over, the share of cash income of the top 1 percent rose from 11.3 percent in 1987 to 14.4 percent in 1996 and 19.3 percent in 2005.

Income mobility, the opportunity for lower income individuals to move up in the income distribution over time, is another important dimension of the distribution of income. Indeed, the opportunity for upward income mobility as a result of individual effort has sometimes been seen as a defining characteristic of the U.S. economy.[2] A recent survey (Pew Economic Mobility Survey, 2009, for example, showed that Americans view hard work (92 percent), having ambition (89 percent), and a quality K–12 education and staying healthy (tied at 83 percent) as essential or very important factors in contributing to a person's economic mobility. Economic historian Joseph Schumpeter compared income distribution and mobility to a hotel where some rooms are luxurious while others are small and shabby. The rooms are always occupied, but the occupants change over time.[3] Mobility means that over time people have opportunities to move between rooms. Fairness requires that those in the small rooms have an opportunity to move to a better one, and that the most luxurious rooms are not always occupied by the same people.

Others have likened income mobility to an escalator where the opportunity for mobility means that no matter which step a person starts on, he or she can move up.[4] With an escalator, while one can move ahead faster by walking up the steps, the movement of the escalator itself will carry the rider upward. That is, the real incomes of households can increase over time with

[2] Litan (1999) wrote that "A defining ethic of America has long been that, no matter which step you first land on or how great the distance to the higher steps, you have a good shot at moving up if, as President Clinton has frequently said, 'you work hard and play by the rules.'"

[3] See Sawhill and Condon (1992) for additional discussion of the hotel analogy.

[4] Litan (1999) used the escalator analogy, while McMurrer and Sawhill (1996b) used a similar analogy of moving up and down the economic ladder. In climbing a ladder, however, all the progress is due to individual effort. Holtz–Eakin, Rosen, and Weathers (2000) connected mobility with Horatio Alger success stories.

the growth of the overall economy.[5] The extent to which households' incomes have risen over time with economic growth is another important dimension of income distribution.

The wider income gaps reported above could have the effect of reducing the opportunity for and extent of upward income mobility. Comparisons of snapshots of the income distribution at points in time, such as those in Table 1, however, do not measure the actual experiences of specific individuals or households and can therefore be misleading with respect to changes in the real incomes of individuals and households over time.

This study examines the income mobility of individuals over the last two decades using large panels of income tax returns that overcome many of the limitations of prior studies. The use of panel data means that the analysis tracks changes in the incomes of the same individual taxpayers over these time periods rather than comparing cross–sections at different points in time. The large size of the samples and oversampling of high–income returns increases the precision of estimates and allows analysis of the income dynamics of those with the highest incomes. While there are limitations in using tax return data, especially for the lowest income individuals, the use of tax return data generally provides more accurate measures of income and results in less attrition bias compared to most survey data.[6]

The analysis includes three alternative measures of income mobility that illustrate different aspects of income mobility. In addition, we present some preliminary analysis of the factors associated with income mobility, including initial income level, changes in marital and family status, entrepreneurship, and the role of life cycle factors. Key findings include:

- There was considerable income mobility of individuals in the U.S. economy over the 1996–2005 period. More than half of taxpayers (57.5 percent by one measure and 55 percent by another measure) moved to a different income quintile over this period. About half (56 percent by one measure and 42 percent by another) of those in the bottom income quintile in 1996 moved to a higher income group by 2005.
- Median incomes of taxpayers in the sample increased by 24 percent after adjusting for inflation. The real incomes of two–thirds of all taxpayers increased over this period. Furthermore, the median incomes of those initially in the lowest income groups increased more in percentage terms than the median incomes of those in the higher income groups. In contrast, the real median incomes of taxpayers who were in the highest income groups in 1996 declined by 2005.

[5] The irony of this paper on income mobility appearing near what we hope to be the turning point of a deep recession has not been lost on the authors. Even at such times, however, it is important to keep the longer term perspectives provided in this paper in mind.

[6] As discussed in more detail in the Technical Appendix, limitations include lack of data on some low–income non–filers and non–compliant taxpayers who understate their income, especially those with self–employment income and retired individuals whose primary income source is Social Security benefits. Nevertheless, tax returns likely provide a more accurate measure of income for most of the population and suffer from less attrition than the PSID. For example, tabulations from the 1988 Taxpayer Compliance Measurement Project (TCMP) show that only 1.7 percent of returns were found to have un–reported income of 50 percent or more of reported income. Total attrition in the 1996–2005 panel was 12.2 percent (compared to 25 percent for the PSID) of which 60 percent was accounted for by the death of the taxpayer. While low–income individuals are not required to file, the filing thresholds are generally lower than Census poverty standards and additional low–income individuals have an incentive to file to claim tax refunds and refundable credits (Auten and Gee, 2007).

- The composition of the very top income groups changed dramatically over time. Less than half (39 percent or 42 percent depending on the measure) of those in the top 1 percent in 1996 were still in the top 1 percent in 2005. Less than one–fourth of the individuals in the top 1/100th percent in 1996 remained in that group in 2005.
- The degree of relative income mobility among income groups over the 1996–2005 period was very similar to that over the prior decade (1987–1996). To the extent that increasing income inequality widened income gaps, this was offset by increased absolute income mobility so that relative income mobility neither increased nor decreased over the past 20 years.
- Upward and downward mobility is affected by many factors. Based on a regression analysis, we find that initial position in the income distribution and changes in marital status are among the more important factors associated with changing positions in the income distribution.

PRIOR STUDIES OF INCOME MOBILITY

Previous research on income mobility over the past several decades has generally found that about half of those in the bottom quintile move to a higher quintile and also that more than half of households move to a different income quintile within about 10 years.[7] Sawhill and Condon (1992), for example, used the Panel Study of Income Dynamics (PSID) to examine the mobility of individuals between the ages of 25–54 for the periods 1967–1976 and 1977–1986 relative to others in their sample. Using a measure of mobility that compares a fixed group of households over time, they found that over 60 percent of individuals were in a different income quintile a decade later. Among individuals initially in the lowest income quintile, 44 percent moved to a higher quintile between 1967–1976 and 47 percent moved to a higher quintile between 1977–1986. Downward mobility from the top quintile was experienced by 47 percent and 50 percent of individuals in the two periods, respectively. A later study by McMurrer and Sawhill (1996b) concluded that mobility rates had remained unchanged during this 20–year period.

Two studies by the U.S. Department of the Treasury (1992a, 1992b) examined income mobility using a panel that followed 14,351 taxpayers over the period from 1979–1988.[8] The first Treasury study found that 86 percent of taxpayers in the lowest income quintile in 1979 had moved to a higher quintile by 1988 and 15 percent of them had moved all the way to the top quintile. The unusually high degree of mobility reported by this study resulted from several methodological features of the analysis.[9]

[7] Acs and Zimmerman (2008) and McMurrer and Sawhill (1996a) summarized a number of mobility studies.

[8] The studies examined changes in real constant law adjusted gross income (AGI), which controlled for changes in the tax law. Real constant law income includes realized capital gains, but excludes Social Security benefits because they were not subject to tax until 1984. For a more detailed description of constant law AGI, see U.S. Department of the Treasury (1992a). Income percentiles were based on the full population of non–dependent income tax returns filed each tax year. The 1992 Treasury studies limited the sample to non–dependent taxpayers who had filed in all 10 years from 1979–1988.

[9] The most important factors were the inclusion of taxpayers under age 25, the lack of data on Social Security benefits for older taxpayers, and comparison to the full taxpayer population. Since Social Security benefits were not taxable prior to 1984, the 1992 Treasury income measure excluded Social Security benefits. Dropping the elderly from the sample eliminated spurious downward mobility when households stopped earning wages but were not credited with Social Security benefits. Similarly, dropping those under age 25 eliminated the effects of dramatic income increases when students leave school and get their first full–time jobs. As discussed in the following section, limiting the comparison to households in the sample in both periods reduced measured mobility by eliminating moving up in the overall income distribution relative to new entrants to the population, i.e., the new group of 25–34–year–olds and new immigrants.

When the second Treasury study followed the Sawhill–Condon methodology by limiting the sample to taxpayers age 25–64 and comparing taxpayers within the panel rather than all taxpayers, the Treasury data showed that 50 percent of the lowest income quintile had moved to a higher quintile after 10 years. Thus, the results were similar to those of Sawhill and Condon when a similar methodology was used. Using an extended version of the panel, Carroll, Joulfaian, and Rider (2006) found that 54 percent of taxpayers age 30–44 and in the lowest quintile in 1979 had moved to a higher quintile by 1995, while 47 percent of those in the top quintile had moved down. When they subdivided the period into five or eight sub–periods, they found some evidence that mobility had declined in the later part of the period, although much of the decline seemed to reflect effects of the double–dip recession in the early 1980s.

Several recent studies have used PSID data to examine relative income mobility in the 1970s, 1980s, and 1990s. Bradbury and Katz (2002a, 2002b) found that about half of households in the bottom quintile moved out after 10 years (51 percent for 1969–1979, 50 percent for 1979–1989, and 47 percent for 1988–1998). They concluded that relative mobility declined slightly in the 1990s as 40 percent of households remained in the same income quintile, as compared to 36 percent in the 1970s and 37 percent in the 1980s.[10] They also showed that the income gaps widened over this period, which would make mobility across quintiles more difficult, and could have accounted for the small decline in relative income mobility.[11] Also using PSID data, Acs and Zimmerman (2008) found that intragenerational mobility of cohorts of individuals aged 25–44 was similar over the periods 1984–1994 and 1994–2004. In each period, about 60 percent changed income quintiles relative to their peers and about 47 percent of those initially in the lowest income quintile rose to higher quintiles. Hungerford (2008) found that in both the 1980s and 1990s, 47 percent of those in the lowest income quintile had moved to a higher income quintile by the end of the decade, but concluded that overall mobility declined in the 1990s.

INCOME MOBILITY—1996–2005

This study examines income mobility over the period from 1996–2005 using data from a large sample of individual income tax returns for these two years. While the income data are as reported on tax returns, the analysis includes both primary and secondary taxpayers who are each followed separately. Thus, if a married couple filed a joint tax return in 1996, divorced, and then filed separate tax returns in 2005, each person is followed separately, even if one or both of them appear as a secondary taxpayer on another tax return in 2005. To avoid counting transitions from school to work as mobility, the analysis follows the common practice in previous research of excluding taxpayers who were under age 25 in the beginning year.[12] The resulting

[10] Gittleman and Joyce (1999) also concluded that income mobility rates differed little between the 1970s–1980s. Comparable data for the 1990s would not yet have been available for their 1999 study. Sabelhaus and Song (2009) found evidence that the variance of permanent shocks to earnings has been constant within age and education groups over the period from 1984–2004.

[11] It is unclear whether absolute mobility increased or decreased in these data as this study does not examine absolute income mobility. Table 1 in Bradbury and Katz (2002b) shows that average real incomes of families in the lowest quintile in 1988 increased from 1988–1998 after declining in the previous two decades, which may suggest some increase in absolute mobility.

[12] For example, Sawhill and Condon (1992) examined individuals between age 25–54 in the initial year, while Gittleman and Joyce (1999) limited their sample to individuals between age 25–64 in both the initial and ending years.

panel includes a sample of approximately 107,000 tax returns with 175,800 primary and secondary (i.e., spouses on joint returns) taxpayers who filed for tax years 1996 and 2005.[13] The sample represents approximately 120 million taxpayers on 84 million income tax returns. Income is defined as cash income as reported on individual income tax returns and supplemented by data on Social Security benefits reported on information returns filed with the Internal Revenue Service (IRS).[14] To remove the effects of inflation, cash income is adjusted to 2005 dollars using the Consumer Price Index Current Methodology Series. Income is adjusted for family size by dividing by the square root of the number of members of the household.[15]

In order to provide a more complete picture of the different dimensions of income mobility, this section shows three alternative measures: two measures of relative income mobility and one measure of absolute income mobility.[16] Relative income mobility shows how the income of households changed over time relative to the incomes of other households, while absolute income mobility shows how the real incomes of households changed over time.

Taxpayers are grouped by income quintiles (the lowest 20 percent, the second 20 percent, etc.). Results for the top 1 percent, 5 percent, and 10 percent of the population are also reported.[17] The two measures of relative income mobility are illustrated using a transition matrix that shows the movement of individuals across the population quintiles and also into and out of the top income groups. For individuals in each income quintile in 1996, the transition matrix shows the percentages that end up in each income quintile in 2005. The measure of absolute income mobility groups taxpayers by income quintile in 1996 and shows the distribution of percentage changes in real income by 2005. The use of income quintiles and top income groups provides a relatively simple way to illustrate the extent of income mobility over time. Because of its simplicity, the approach has some limitations. For example, some taxpayers may have crossed a quintile income threshold by moving up or down only a few income centiles, while others could have moved as many as 19 income centiles without

[13] The sample is based on the IRS Statistics of Income Individual Income Tax Files. The sample used for the study excludes dependent filers and follows primary and secondary taxpayers separately. The construction of the panel sample used for the analysis is discussed in more detail in the Technical Appendix.

[14] The definition includes wages, taxable and tax–exempt interest, dividends, taxable and non–taxable Social Security benefits, business income and other sources of cash income reported on tax forms and is discussed in more detail in the Technical Appendix.

[15] This approach has been used in many studies including the U.S. Congressional Budget Office (CBO) (2009) and produces results similar to other commonly used adjustments. The most important effects are to improve income measurement in the cases of married individuals who later file separately and single individuals who are married in the ending year.

[16] Other income mobility measures include income variance over time, the correlation between income in one year and income in another year, and the percentages of households that are in a top income class or fall below the poverty level at least once in a period of years as compared to the percentages in a single year. Instead of following the income of specific individuals or households over time, some studies compare similar population groups at different points in time. For example, a recent study (CBO 2007) reported that the average income of households with children in the lowest income quintile in 2005 was 35 percent higher than the average income of comparable households in 1991 after adjusting for inflation. Since this approach does not follow the incomes of specific households over time, it does not measure income mobility as generally understood.

[17] Since primary and secondary taxpayers are followed separately, they are counted separately in determining the income quintiles of the taxpayer population. Thus, a married couple filing jointly is counted as two observations. Similar procedures have been followed in some prior studies, some of which count all members of a household (including children) separately in determining the population quintiles.

moving to another quintile. The extent of such cases cannot be seen in the transition matrix. Later sections of the paper, however, provide other measures of mobility that provide more nuanced perspectives.

The first measure of mobility shows how the incomes of taxpayers in each income group in 1996 changed relative to the incomes of all taxpayers in the comparable filing population in 2005 (Table 2). This measure likely represents the most common understanding of income mobility, moving up (or down) relative to the total population. The income thresholds in 1996 and 2005 for the income quintile groups in this measure are based on all non–dependent taxpayers age 25 and over in the population of all tax return filers in these years. The table shows a high degree of income mobility over this period. About 56 percent of taxpayers (i.e., 56.3 = 100 – 43.7) in the lowest income quintile in 1996 had moved to a higher quintile by 2005. While 29 percent moved up to the second quintile, nearly as many (27.4 percent) moved up two or more quintiles and 4.5 percent moved all the way to the top quintile.

Middle–income taxpayers were also mobile across income quintiles in the population. More than twice as many middle–income taxpayers moved up to a higher income quintile (47.2 percent = 32.7 +14.5) as dropped to a lower one (20.9 percent = 5.9 +15.0). About one–third of the taxpayers in the middle income quintile in 1996 were still in the middle quintile in 2005. While taxpayers in the top quintile had a higher probability of staying there in 2005, over 30 percent had dropped to a lower quintile, and 2.6 percent dropped all the way to the bottom quintile.

The bottom row of Table 2 illustrates that overall, households present in the 1996 population moved up in the income distribution by 2005. Only 13.2 percent of the households who filed returns in 1996 are in the bottom quintile of the total tax filing population in 2005, while 27.6 percent are in the top quintile and 23.2 percent are in the fourth quintile. This upward movement reflects the fact that new entrants into the population age 25 and over are more likely to enter with below average incomes. In part, this reflects life cycle income patterns as newly entering young taxpayers initially have low incomes but their incomes increase more rapidly. New immigrants are also more likely to enter the population with relatively low incomes. While not shown directly in the table, 57.5 percent of

TABLE 2
FIRST MOBILITY MEASURE: INCOME MOBILITY RELATIVE TO THE TOTAL POPULATION, 1996–2005

1996 Income Quintile	2005 Income Quintile								
	Lowest	Second	Middle	Fourth	Highest	Total	Top 10%	Top 5%	Top 1%
Lowest	43.7	28.8	14.9	8.0	4.5	100.0	1.9	1.0	0.2
Second	15.3	30.3	30.2	16.9	7.3	100.0	2.5	1.2	0.2
Middle	5.9	15.0	31.8	32.7	14.5	100.0	4.2	1.3	0.2
Fourth	3.4	7.3	17.4	37.7	34.2	100.0	11.2	3.2	0.3
Highest	2.6	3.1	7.0	18.1	69.1	100.0	45.2	24.0	4.6
Top 10%	2.5	2.2	4.4	11.2	79.7	100.0	61.7	38.9	8.5
Top 5%	2.9	1.7	3.5	8.5	83.5	100.0	70.9	54.0	15.4
Top 1%	3.2	1.4	2.1	5.6	87.8	100.0	81.2	73.3	41.5
All Income Groups	13.2	16.1	19.9	23.2	27.6	100.0	14.0	6.6	1.2

Notes: This table shows income mobility of 1996 tax filers relative to the total tax filing population in 2005. The rows sum to 100 percent across the five quintiles in the first five columns. The table uses the tax returns of primary and secondary non–dependent taxpayers who were age 25 or over in 1996 and filed for both 1996 and 2005. Income breaks for the quintiles and top percentiles are based on the full cross–sections of tax returns for each year, where the taxpayer is age 25 and over. Income is household equivalent cash income in 2005 dollars as defined in the Technical Appendix.
Source: Tabulations by the U.S. Department of the Treasury, Office of Tax Analysis, using data from IRS Statistics of Income, Individual Income Tax Files for tax years 1996 and 2005.

taxpayers filing tax returns in 1996 had moved to a different income quintile in 2005.[18]

More than half (58.5 percent = 100 – 41.5) of the top 1 percent of taxpayers in 1996 had dropped to a lower income group by 2005, although most (87.8 percent) remained in the top income quintile. This statistic illustrates that the top income groups as measured by a single year of income (i.e., cross–sectional analysis) often include a large share of individuals or households whose income is only temporarily high. Put differently, more than half of the households in the top 1 percent in 2005 were not there nine years earlier. Thus, while the share of income of the top 1 percent is higher than in prior years, it is not a fixed group of households receiving this larger share of income every year. As suggested by the Schumpeter hotel analogy, the majority of the most luxurious rooms are occupied by different people at different times.

The second measure of income mobility shows how the incomes of taxpayers in each income quintile in 1996 changed relative to that same group of taxpayers in 2005 (Table 3). Note that unlike Table 2 in which the comparison is to all taxpayers age 25 and over in the filing population in 2005, the comparison in Table 3 is only to the other taxpayers in the panel.[19] Since no new households enter the comparison population in this measure, it eliminates the potential for upward movement of the initial taxpayers within the overall income distribution by moving up relative to newcomers to the population. Thus, under this measure of income mobility, taxpayers in the bottom income quintile are less likely to move up to a higher quintile because the only new entrants to the bottom quintile are taxpayers whose incomes have fallen. Nevertheless, by this measure 42.3 percent of the lowest income quintile moved to a higher quintile by 2005. Total mobility was approximately the same as in the first mobility measure, as 55 percent of taxpayers moved to a higher or lower income quintile compared to 57.5 percent in Table 2. As compared to Table 2, this

TABLE 3
SECOND MOBILITY MEASURE: MOBILITY RELATIVE TO THE PANEL POPULATION, 1996–2005

1996 Income Quintile	2005 Income Quintile								
	Lowest	Second	Middle	Fourth	Highest	Total	Top 10%	Top 5%	Top 1%
Lowest	57.7	24.1	10.1	5.3	3.0	100.0	1.4	0.8	0.1
Second	25.1	36.3	23.3	11.2	4.1	100.0	1.7	0.8	0.2
Middle	10.5	24.1	33.7	23.6	8.1	100.0	2.6	1.0	0.2
Fourth	5.6	12.4	23.2	36.7	22.2	100.0	6.7	2.3	0.3
Highest	3.6	4.7	10.0	21.9	59.8	100.0	36.1	19.3	4.1
Top 10%	3.3	3.1	6.3	14.4	72.9	100.0	52.5	32.3	7.6
Top 5%	3.5	2.6	4.8	10.2	79.0	100.0	64.3	47.3	13.6
Top 1%	3.8	1.6	3.2	5.9	85.4	100.0	78.4	70.6	38.5
All Income Groups	20.0	20.0	20.0	20.0	20.0	100.0	10.0	5.0	1.0

Notes: This table shows income mobility of 1996 tax filers relative to the panel members filing in 2005. The rows sum to 100 percent across the five quintiles in the first five columns. The table uses the tax returns of primary and secondary nondependent taxpayers who were age 25 or over in 1996 and filed for both 1996–2005. Income breaks for the quintiles and top percentiles are based on only the tax returns of the panel population. Income is household equivalent cash income in 2005 dollars as defined in the Technical Appendix.
Source: Tabulations by the U.S. Department of the Treasury, Office of Tax Analysis, using data from IRS Statistics of Income, Individual Income Tax Files for tax years 1996–2005.

[18] This figure is calculated by summing all of the non–diagonal cells and dividing this number by 5. The diagonal cells contain households in the same quintile in both years. Dividing by 5 adjusts for the fact that the percentages in each quintile row sum to 100 percent, or 500 percent for all five rows.

[19] The construction of Table 3 means that in the bottom row showing all taxpayers, 20 percent of the 1996 taxpayers are in each of the 2005 quintiles.

measure of relative income mobility also implies more downward mobility.[20] For example, a larger portion of taxpayers in the 1996 top quintile were in a lower income quintile in 2005: 40 percent (40.2 = 100 – 59.8) as compared to 31 percent in Table 2. Over 60 percent of taxpayers in the top 1 percent in 1996 dropped out of the top 1 percent by 2005, although 85 percent of them remained in the top quintile

The third measure examines absolute income mobility, that is, the extent to which taxpayers' incomes rose or fell over time. Table 4 shows that median taxpayer income (adjusted for changes in family size) rose by 23 percent after adjusting for inflation.[21] [22] Real income increased for two–thirds (67.7 percent = 17.1 +14.8 +16.9 +18.9) of taxpayers between 1996–2005.

Percentage increases in real income were the largest for taxpayers with the lowest incomes in 1996. Among those taxpayers in the lowest income quintile in 1996, median income increased by 77 percent by 2005. Real incomes increased over the period for 80 percent (80.2 = 8.4 + 9.7 + 15.6 + 46.5) of these low–income taxpayers and at least doubled for nearly half of this group (46.5 percent).

Among taxpayers in the highest income quintile in 1996, real income increased for over half (51.9 percent = 17.5 +12.9 +12.2 +9.3) and doubled for 9.3 percent. The median real income of taxpayers in the top quintile in 1996 rose by 8.6 percent, while the median income of those in the top 1 percent in 1996 declined by 30.9 percent. As discussed in later sections, likely causes of income declines in the top income classes include typical life cycle factors and "mean reversion" in which the incomes of taxpayers whose incomes were temporarily high in 1996 reverted to a level closer to their long–run averages.

Among taxpayers in the middle income quintile in 1996, median income increased by 24.4 percent. Real income increased for over two–thirds of taxpayers in this group and at least doubled for 12.6 percent. Overall, the results reported in Table 4 show that over the 1996–2005 period, incomes rose for the majority of taxpayers, and that upward income mobility was the greatest among those that began the period in the lowest income groups.

INCOME DYNAMICS OF THE TOP 1/100, 1/10, AND 1 PERCENT OF THE POPULATION

One of the advantages of using data from income tax returns to examine income mobility is that these data include a large sample of the highest income taxpayers. In contrast, most survey data used to study income dynamics, such as the PSID, include only a few high–income households and exclude the highest income households altogether. This section examines the income mobility of the top 1 percent of the population in detail.

The sample for this study represents approximately 120 million primary and secondary taxpayers age 25 and over who filed tax returns for both 1996 and 2005. Thus, the top 1 percent included about 1.2 million taxpayers, the top 0.1 percent was about 120,000 taxpayers and the top 0.01

[20] Table 3 shows greater downward mobility because for every household that moves up another must move down. The table construction, combined with the fact discussed previously that new entrants into the population have lower incomes on average, results in more downward mobility using this measure.

[21] By comparison, in the U.S. Census Bureau (2006) data, median income for all households increased by 5.4 percent from $46,704–$49,202 over this time period in 2007 dollars. Similarly, median income for four–person households increased by 9.3 percent from $67,644–$73,926 over this period. One difference is that the Census data measures changes in the full cross–section population including new entrants, while the data in Table 3 show changes in incomes of individuals that filed income tax returns in 1996 and 2005.

[22] In Table 4 all income values are adjusted for household size by dividing by the square root of household size for consistency with Tables 2 and 3.

TABLE 4
THIRD MOBILITY MEASURE: ABSOLUTE INCOME MOBILITY, 1996–2005

1996 Income Quintile	Distribution of Percentage Changes in Income from 1996 to 2005 in $2005								Percent Change in:	
	Decreased more than 50%	Decreased 25 to 50%	Decreased up to 25%	Increased up to 25%	Increased 25 to 50%	Increased 50 to 100%	Increased 100% or more	Total	Mean Income	Median Income
Lowest	7.4	4.8	7.6	8.4	9.7	15.6	46.5	100.0	186.8	77.2
Second	6.6	7.6	12.7	15.5	15.7	21.0	21.1	100.0	60.4	36.9
Middle	5.6	8.4	15.0	21.2	18.0	19.2	12.6	100.0	40.0	24.4
Fourth	6.2	10.8	17.7	21.5	17.2	16.9	9.5	100.0	31.7	17.9
Highest	14.0	15.5	18.5	17.5	12.9	12.2	9.3	100.0	25.8	8.6
Top 10%	18.9	16.8	17.1	15.6	10.9	10.7	10.0	100.0	26.6	0.3
Top 5%	26.1	17.9	15.6	12.0	8.8	8.8	10.8	100.0	27.8	–10.6
Top 1%	41.7	14.4	10.8	8.0	5.7	6.3	13.0	100.0	10.1	–30.9
All Income Groups	8.1	9.7	14.6	17.1	14.8	16.9	18.9	100.0	37.1	22.7

Notes: The table uses the tax returns of primary and secondary non–dependent taxpayers who were age 25 or over in 1996 and filed for both 1996 and 2005. Income breaks for the quintiles and top percentiles are based on the full cross–section of tax returns for 1996, where the taxpayer is age 25 and over. Income is household equivalent cash income in 2005 dollars as defined in the Technical Appendix.
Source: Tabulations by the authors, using data from IRS Statistics of Income, Individual Income Tax Files for tax years 1996 and 2005.

percent was about 12,000 taxpayers. Table 5 below shows the income mobility of the top 1 percent using the same measures of income mobility as Tables 2 and 4, but showing the top 1 percent in greater detail.

The central theme that emerges from examining the very highest income taxpayers is that the composition of this group changes dramatically over time. The vast majority of taxpayers in this group at the beginning of the 10–year period are absent from this group 10 years later; that is, the very top of the income distribution is highly transient over time. Among those in the top 0.01 percent in 1996, only 23 percent remained in this group in 2005. While over 80 percent (82.4 = 27.3 + 31.7 + 23.4) of these taxpayers remained within the top 1 percent in 2005, 6 percent dropped out of the top income quintile. Similarly, about 23 percent of those who were in the top 0.1 percent in 1996, but below the top 0.01 percent, remained in this group in 2005. About 3 percent of these taxpayers moved to the top 0.01 percent while 76 percent moved down in the income distribution.

The data also indicate that the incomes of many taxpayers at the highest income levels are very volatile. Table 5 shows that real incomes increased for 25 percent (25.0 = 4.6 + 3.6 +5.2 + 11.6) of taxpayers in the top 0.01 percent in 1996 and at least doubled for 11.6 percent. On the other hand, 60 percent of taxpayers in the top 0.01 percent experienced declines in real income of at least 50 percent. Similarly, 53 percent of those in the top 0.1 percent, but below the top 0.01 percent, experienced income declines of at least 50 percent. These results illustrate that the incomes of a significant portion of those in the very highest income classes in a given year are highly transitory.

Table 5 also shows the mean and median incomes of taxpayers in the top 1 percent in 1996 and 2005 and the percentage changes over this period. The table shows that the real incomes of the majority of those in the very top income classes in a given year are likely to be lower in a later year. Thus, the median income of those in the top 0.01 percent of taxpayers in 1996 fell by 67 percent from $12.1–$4.0 million. The pattern was similar, if less dramatic, for the other subgroups of the top 1 percent in 1996. The basic result suggests that the very high incomes of many of the highest–income taxpayers are transitory. Thus, for the majority of this group at least, the very rich did not get richer over this period. Instead, their income dropped to a lower level, albeit generally to a level well above average, and their positions in the highest income groups were taken by other taxpayers who had moved up.

HAS INCOME MOBILITY INCREASED OR DECREASED OVER TIME? COMPARING 1996–2005 TO 1987–1996

Given the widening income gaps described above, an important question is whether increased income inequality has resulted in a decrease in income mobility as compared to earlier periods.[23] The income tax data in this study can be used to compare income mobility in the 1996–2005 period with income mobility in the 1987–1996 period.[24] Both time periods begin and end roughly during the middle of periods of economic expansion and thus allow for comparisons that are not greatly affected by the business cycle.

[23] Bradbury and Katz (2002a, 2002b) concluded that income mobility within a panel of households declined slightly in the 1990s compared to earlier periods. Kopczuk, Saez and Song (2007) concluded that both short–term and long–term earnings mobility among all workers has been fairly constant since about 1950.

[24] Auten and Gee (2007) examined income mobility for 1987–1996, following only primary taxpayers, but including additional sensitivity testing. For example, the study found that mobility is similar for the working age population age 25–55, and that measured mobility is roughly the same whether capital gains are included or excluded from the income definition.

TABLE 5
INCOME MOBILITY OF THE TOP 1 PERCENT OF TAXPAYERS, 1996–2005

Income Mobility Relative to the Total Population

Percent Distribution by 2005 Income Percentile	1996 Income Percentile			All Income Groups
	0.1 to 1%	0.01 to 0.1%	Top .01%	
Below top 20%	15.0	10.1	6.0	78.1
10 to 20%	7.2	4.7	0.5	11.0
5 to 10%	8.7	3.2	0.2	5.5
1 to 5%	33.7	20.5	11.0	4.3
0.1 to 1%	31.4	37.7	27.3	1.0
0.01 to 0.1%	3.6	20.8	31.7	0.1
Top .01%	0.3	3.1	23.4	0.01
All	100.0	100.0	100.0	100.0

Absolute Income Mobility

Distribution of Percentage Changes in Income	1996 Income Percentile			All Income Groups
	0.1 to 1%	0.01 to 0.1%	Top .01%	
Decreased more than 50%	40.4	53.0	59.7	8.1
Decreased 25 to 50%	14.8	11.2	9.1	9.7
Decreased up to 25%	11.1	7.9	6.1	14.6
Increased up to 25%	8.2	5.9	4.6	17.1
Increased 25 to 50%	5.9	4.1	3.6	14.8
Increased 50 to 100%	6.4	5.6	5.2	16.9
Increased 100% or more	13.1	12.3	11.6	18.9
Total	100.0	100.0	100.0	100.0

Income Levels and Changes (unadjusted for household size)

Year and Percent Change	1996 Income Percentile			All Income Groups
	0.1 to 1%	0.01 to 0.1%	Top .01%	
Mean Income				
1996	$675,507	$2,954,662	$18,033,145	$72,800
2005	$804,399	$3,036,725	$13,904,909	$97,822
Percent Change	19.1	2.8	–22.9	34.4
Median Income				
1996	$581,067	$2,485,732	$12,128,295	$50,106
2005	$365,922	$1,067,835	$3,952,973	$60,761
Percent Change	–37.0	–57.0	–67.4	21.3

Notes: The table includes taxpayers age 25 or over and in the top 1 percent of tax returns in 1996 who filed for both 1996 and 2005. Income breaks for the quintiles and top percentiles are based on the full cross–sections of tax returns for each year, where the taxpayer is age 25 and over. Income is household equivalent cash income in 2005 dollars as defined in the Technical Appendix. In the third panel, the reported mean and median incomes are not adjusted for household size due to the difficulty of interpreting adjusted values, but the income groupings remain the same.
Source: Tabulations by the authors using data from IRS Statistics of Income, Individual Income Tax Files for tax years 1996 and 2005.

Table 6 shows comparable mobility data for the two time periods using the first measure of relative income mobility that compares each initial period sample to the total population in the ending year. For each initial income quintile, the upper row shows the income mobility over the 1987–1996 period and the lower row shows the income mobility over the 1996–2005 period. Thus, one can examine how income mobility changed by comparing the upper and lower rows for the various initial and final income quintile combinations. For example, the upper left part of the table shows that during both time periods 43.7 percent of taxpayers in the lowest income quintile remained in the lowest quintile. Thus, the degree of upward mobility from the lowest quintile was the same in the two time periods: 62.3 percent. Similarly, the percentage of taxpayers remaining in the top 1 percent was 41.5 percent in the more recent period as compared to 41.3 percent in the earlier

TABLE 6
INCOME MOBILITY RELATIVE TO THE TOTAL TAX FILING POPULATION, AGE 25 AND OVER, 1987–1996 AND 1996–2005

Initial Income Quintile	Time Period	End of Period Income Quintile (1996 or 2005)						
		Lowest	Second	Middle	Fourth	Highest	Total	Top 1%
Lowest	1987–1996	43.7	29.7	14.5	7.3	4.8	100.0	0.2
	1996–2005	43.7	28.8	14.9	8.0	4.5	100.0	0.2
Second	1987–1996	16.4	34.8	27.7	14.8	6.3	100.0	0.1
	1996–2005	15.3	30.3	30.2	16.9	7.3	100.0	0.2
Middle	1987–1996	7.7	20.4	32.1	27.3	12.5	100.0	0.2
	1996–2005	5.9	15.0	31.8	32.7	14.5	100.0	0.2
Fourth	1987–1996	4.0	10.7	22.8	35.8	26.7	100.0	0.4
	1996–2005	3.4	7.3	17.4	37.7	34.2	100.0	0.3
Highest	1987–1996	2.1	4.3	9.8	21.6	62.1	100.0	5.0
	1996–2005	2.6	3.1	7.0	18.1	69.1	100.0	4.6
Top 1%	1987–1996	2.3	2.0	3.4	4.7	87.6	100.0	41.3
	1996–2005	3.2	1.4	2.1	5.6	87.8	100.0	41.5
All Income Groups	1987–1996	13.5	18.9	21.2	22.1	24.3	100.0	1.3
	1996–2005	13.2	16.1	19.9	23.2	27.6	100.0	1.2

Notes: For each initial income quintile, the upper row shows the 1987–1996 period and the lower row shows the 1996–2005 period. The table includes returns of primary and secondary taxpayers who filed in both years where the taxpayer is age 25 or over in the initial year. Income breaks for the quintiles and top percentiles are based on the full crosssections of tax returns for each year, where the primary taxpayer is age 25 and over. Income is household equivalent cash income in 2005 dollars as defined in the Technical Appendix.
Source: U.S. Department of the Treasury, Office of Tax Analysis, 1987–1996 Family Panel, Tax Year 1996 and 2005 Individual Income Tax Files.

period. Overall, 57.5 percent of individuals changed income quintiles in the more recent period as compared to 58.3 percent in the earlier period, with all of the difference accounted for by less downward mobility out of the top income quintile.

Most of the cell differences between the two periods are only a few percentage points or less. Such differences are neither economically nor statistically meaningful for several reasons. Each cell of the table is based on a sample, albeit a very large one, so that the values are subject to sampling error as well as measurement error from misreported incomes. In addition, while our measure of cash income is quite comprehensive, it falls short of an ideal measure of economic income in some cases.[25] An examination of the various cells suggests that income mobility was approximately the same in almost all income groups during these time periods. This result may seem surprising given the widening income gaps over time. However, it suggests that absolute mobility may have increased sufficiently to offset the effects of wider income gaps.

A few differences, however, are large enough to justify further analysis. For example, the percentage of households in the top income quintile that remained there increased from roughly 62–69 percent even though the percentage remaining in the top 1 percent stayed the same. This result suggests that the decrease in downward mobility occurred among households in the top 20 percent, but below the top 1 percent of the popula-

[25] For example, net business income is based on tax depreciation which may differ from economic depreciation and capital gains are counted when realized rather than as they are accrued.

tion.[26] In addition, the percentage of households in the middle–income quintile that moved to a higher income quintile increased by 7.4 percentage points (7.4 = (32.7 – 27.3) + (14.5 – 12.5)), a change that suggests slightly greater upward mobility among middle–income households. While these differences are interesting, more careful analysis is needed to understand them, such as whether they reflect changes in family status, life cycle effects, regional economic factors or other effects. The basic finding of this analysis is that relative income mobility is approximately the same in the last 10 years as it was in the previous decade.

The finding that relative income mobility remained unchanged raises the related issue of whether absolute income mobility changed over this time period. As shown in Table 7 below, absolute income mobility increased at all income levels in the 1996–2005 time period as compared to the 1987–1996 time period. For example, median incomes of taxpayers in the lowest income quintile (adjusted for household size) increased by 68 percent in the 1987–1996 period, but by 77 percent in the more recent period. Similarly, median incomes of taxpayers initially in the middle quintile increased by 9 percent in the earlier period and 24 percent in the more recent period. Median incomes of taxpayers in the top quintile declined 5 percent in the earlier period, but increased 9 percent in the more recent period. Finally, the median income of taxpayers initially in the top 1 percent declined by 32 percent and then 31 percent in the two periods. The percentages of each initial income group whose real incomes doubled also increased for every income group. For example, the percentage of taxpayers initially in the lowest income quintile whose income doubled increased from 41 to 47 percent. Real incomes (adjusted for household size) increased for two–thirds of taxpayers (67.6 = 17.1 +14.8 +16.9 +18.9) in the 1996–2005 period compared to 59 percent (58.7 = 18.7 +12.9 +12.7 +14.5) in the earlier period. Overall, the table shows that the distribution of changes in real incomes shifted toward more increases and fewer decreases in the most recent period as compared to the previous one.

MOBILITY AND AFTER–TAX INCOME

Table 8 shows data on the changes in after–tax income comparable to the changes in pre–tax income shown in Table 7. The base year income groups are defined using pre–tax cash income adjusted for household size and are therefore identical to the income groups in other tables in this paper. The changes in income, however, use after–tax cash income (cash income less income tax liabilities plus any refundable tax credits) adjusted for household size.

In general, the distribution of changes in after–tax income appears similar to the distribution of changes in pre–tax income in Table 7. Overall, the after–tax median income rose 26 percent from 1996–2005 as compared to 8 percent in the earlier period. As with pre–tax income, mean and median after–tax incomes rose more rapidly for those initially in the lower income groups and increased more rapidly (or declined less) in the more recent period for all income groups. As would be expected under a progressive income tax system, changes in after–tax income in various income groups are generally smaller than the changes in pre–tax income. For example, the median after–tax incomes for taxpayers initially in the top 1 percent decreased by 29.0 and 25.0 percent in the two periods as compared to

[26] A more detailed version of this table shows that the percentages of households remaining in the top income groups increased from 56–62 percent for the top 10 percent and from 51–54 percent for the top 5 percent. Thus, the decrease in downward mobility occurred for all but the top 1 percent of households.

TABLE 7
ABSOLUTE INCOME MOBILITY OF TAXPAYERS AGE 25 AND OVER, 1987–1996 AND 1996–2005

Initial Income Quintile	Time Period	Percent Distribution of Changes in Income in $2005							% Change in:	
		Decreased more than 50%	Decreased 25 to 50%	Decreased up to 25%	Increased up to 25%	Increased 25 to 50%	Increased 50 to 100%	Increased 100% or more	Mean Income	Median Income
Lowest	1987–1996	8.0	5.4	8.0	10.4	10.9	16.2	41.1	172.0	67.8
	1996–2005	7.4	4.8	7.6	8.4	9.7	15.6	46.5	186.8	77.2
Second	1987–1996	6.0	9.3	16.9	20.0	16.2	17.1	14.6	38.3	21.9
	1996–2005	6.6	7.6	12.7	15.5	15.7	21.0	21.1	60.4	36.9
Middle	1987–1996	6.5	11.5	22.5	22.9	15.2	13.4	7.9	22.7	9.1
	1996–2005	5.6	8.4	15.0	21.2	18.0	19.2	12.6	40.0	24.4
Fourth	1987–1996	7.5	17.1	24.5	22.1	12.8	10.1	6.1	14.3	1.1
	1996–2005	6.3	10.8	17.7	21.5	17.2	16.9	9.5	31.7	17.9
Highest	1987–1996	15.2	20.6	21.6	16.9	9.7	8.2	7.9	9.3	–5.1
	1996–2005	14.0	15.6	18.5	17.5	12.9	12.2	9.3	25.8	8.6
Top 1%	1987–1996	40.9	14.8	12.9	8.8	6.4	6.0	10.2	–1.2	–32.1
	1996–2005	41.7	14.4	10.8	8.0	5.7	6.3	13.0	10.1	–30.9
All Income Groups	1987–1996	8.9	13.3	19.2	18.7	12.9	12.7	14.5	20.9	7.8
	1996–2005	8.1	9.7	14.6	17.1	14.8	16.9	18.9	37.1	22.7

Notes: For each initial cash equivalent income quintile, the upper row shows the distribution of changes in cash income over the 1987–1996 period and the lower row shows the 1996–2005 period. Each row sums to 100 percent across the first seven columns. The table includes taxpayers who filed in both years and are age 25 or over in the initial year. Household equivalent cash income breaks for the base year quintiles and top percentiles are based on the full population of taxpayers age 25 and over.
Source: U.S. Department of the Treasury, Office of Tax Analysis, 1987–1996 Family Panel, Tax Year 1996 and 2005 Individual Income Tax Files.

32.1 and 30.9 percent decreases in pre–tax incomes. For those initially in the lowest income quintile, median after–tax incomes rose 59.4 percent and 63.0 percent in the two time periods compared to 67.8 and 77.2 percent changes in pre–tax income. After–tax income increased more rapidly for this group and the differential between pre–tax and after–tax income growth was larger in the more recent period despite the major expansion of the EITC during the earlier period.

EFFECTS OF THE LIFE CYCLE OF INCOME ON OBSERVED INCOME MOBILITY

Some of the observed income mobility is due to life cycle effects. The stylized life cycle story is that, on average, the incomes of younger individuals and households rise more rapidly than the total population as they accumulate human capital through formal education and experience, earn promotions or move to higher paying jobs. (Of course some younger individuals suffer income declines as a result of job loss, divorce, or dropping out of the labor force to raise children.) Incomes peak in middle age and then decline with retirement as pensions, social security and income from personal savings replace only a portion of prior wages.

The relationship of the life cycle to income mobility and inequality is illustrated in Table 9 and Figure 1. For each time period, the median income of the initial age 25–34 population cohort was by far the lowest of any age group in the base year, but the growth rate of median income was by far the greatest. From 1996–2005, the real incomes of this cohort increased by about 56 percent and their median income increased from 73–93 percent of the median income of the age 25 and over population. In the earlier period, the median income of the age 25–34 cohort was actually higher at the end of the period than for the full sample population. By contrast, the age 45–54 cohort had the highest median income in each base year, but by the end of the period the median income of this group had fallen behind that of the younger age group. In the 1987–1996 period, the real income of this age cohort actually declined. Also noteworthy in this Table is the fact the median income of the age 25–34 group in the 1996 cross–section was 14 percent lower than the median income of that age group in 1987. Similarly, the median income of the age 35–44 age group in 1996 was 5 percent lower than for that age group in 1987. The median incomes of the older age groups were higher in 1996 than in the 1987 cross–section.

As discussed earlier, these results help to explain the absolute income mobility results in Tables 4 and 5. Part of the decline in income of households in the top income groups reported in these tables is likely related to these life cycle income patterns. The highest income quintile (and top 1, 5 and 10 percent) in any given year includes many households in their peak earnings years, while the lower income quintiles include many younger households whose peak earnings years are still ahead of them.

Additional dimensions of the relationship between changes in income and the life cycle are illustrated in box plots in Figure 1 which shows the distribution of the changes in percentile rankings of taxpayers by age cohort for the lowest, middle and highest initial income quintiles for the two time periods. For each age cohort, income group, and the two panel time periods, the box plots show the mean (+), median (horizontal bar inside the main boxes), 25th and 75th percentiles (bottom and top of main boxes) and the 5th and 95th percentiles (lower and upper horizontal "whiskers"). These box plots provide a simple way to provide a visual summary of complex information. Consider, for example, the box plot for the lowest income quintile. Since all of

TABLE 8
AFTER–TAX INCOME MOBILITY OF TAXPAYERS AGE 25 AND OVER, 1987–1996 AND 1996–2005

Initial Income Quintile	Time Period	Percent Distribution of Changes in Income in $2005							% Change in:	
		Decreased more than 50%	Decreased 25 to 50%	Decreased up to 25%	Increased up to 25%	Increased 25 to 50%	Increased 50 to 100%	Increased 100% or more	Mean Income	Median Income
Lowest	1987–1996	8.2	5.2	8.9	11.2	11.6	17.3	37.7	150.9	59.4
	1996–2005	6.6	4.5	8.1	10.6	11.6	16.4	42.2	154.3	63.0
Second	1987–1996	5.3	9.1	17.2	21.4	17.0	17.5	12.5	34.2	21.1
	1996–2005	5.1	7.1	12.4	15.3	16.7	22.4	21.0	59.4	40.5
Middle	1987–1996	5.5	11.1	22.9	24.9	16.7	12.4	6.5	19.7	9.5
	1996–2005	4.5	7.4	14.3	21.4	19.2	21.0	12.2	40.8	28.1
Fourth	1987–1996	6.2	15.6	26.4	24.2	13.5	9.0	5.1	12.2	1.6
	1996–2005	5.0	9.1	17.0	22.3	18.6	18.5	9.4	33.4	21.9
Highest	1987–1996	12.2	20.0	24.1	18.6	10.0	8.0	7.2	8.1	–3.6
	1996–2005	11.3	14.0	18.5	18.9	13.8	13.7	9.9	32.0	14.5
Top 1%	1987–1996	38.2	14.8	14.4	10.0	6.4	6.3	9.9	–3.6	–29.0
	1996–2005	38.2	14.3	11.7	8.5	6.1	7.6	13.8	18.8	–25.0
All Income Groups	1987–1996	7.6	12.7	20.5	20.3	13.6	12.5	12.9	19.2	8.1
	1996–2005	6.6	8.7	14.3	18.0	16.1	18.3	18.1	41.1	26.0

Notes: For each initial income quintile, the upper row shows the distribution of changes in after tax income adjusted for household size over the 1987–1996 period and the lower row shows the 1996–2005 period. Each row sums to 100 percent across the first seven columns. The table includes returns of taxpayers who filed in both years and are age 25 or over in the initial year. Household equivalent cash income breaks for the base year quintiles and top percentiles are based on pre–tax cash income and the full population of taxpayers age 25 and over. The income groups are defined as in earlier tables, but income is defined as cash income less income tax liabilities adjusted for household size.
Source: U.S. Department of the Treasury, Office of Tax Analysis, 1987–1996 Family Panel, Tax Year 1996 and 2005 Individual Income Tax Files.

TABLE 9
INCOME LEVELS AND CHANGES BY AGE CLASS, 1987–1996 AND 1996–2005

	1987–1996 Changes for 1987 Population			1996–2005 Changes for 1996 Population		
Age Group in Base Year	Median Income in 1987	Median Income in 1996	Percent Change in Median Income	Median Income in 1996	Median Income in 2005	Percent Change in Median Income
25–34	42,252	54,975	30.1	36,367	56,636	55.7
35–44	57,524	60,696	5.5	54,401	62,281	14.5
45–54	60,133	52,237	–13.1	61,082	64,794	6.1
55–64	55,703	46,290	–16.9	56,460	63,824	13.0
65 and over	49,397	43,162	–12.6	50,285	56,493	12.3
All	51,843	53,214	2.6	50,106	60,761	21.3

Notes: The table includes taxpayers who appeared on returns in both years and is age 25 or over in the initial year. Income is cash income in 2005 dollars as defined in the Technical Appendix. Median incomes are not adjusted for household size due to the difficulty of interpreting adjusted values.
Source: U.S. Department of the Treasury, Office of Tax Analysis, 1987–1996 Family Panel, Tax Year 1996 and 2005 Individual Income Tax Files.

the main boxes are above zero, at least 75 percent of taxpayers in the bottom quintile moved up at least a few centiles in every age group and both time periods. For the age 25–34 group in the 1987–96 period, the median low–income taxpayer rose about 12 centiles and mean increase was about 20 centiles. Over the 1996–2005 period, the median low–income taxpayer in this age group rose approximately 20 centiles or one full quintile and the mean increase was nearly 40 centiles. The distribution is skewed upward, with about 5 percent rising by over 70 centiles. It appears that the distribution of centile changes was somewhat higher during the later period but the spreads for the inter–quartile range (25th to 75th percentiles) were wider in all age groups. The distributions for the middle income quintile are lower, but still centered above zero, while the distributions for the top income quintile are generally centered around downward movements in the income distribution.

While many other comparisons are possible, the next section uses a regression approach to examining mobility.

A NEW APPROACH TO MODELING FACTORS ASSOCIATED WITH MOBILITY

This section examines the factors associated with income mobility using the panel data presented in the previous sections of the paper. The dependent variable for the analysis measures the change in the centile position of a taxpayer or spouse from the base period to the end of the period, that is, from 1987–1996 or 1996–2005. The simplest variable would be the difference in the two centile positions; a taxpayer moving from the 40th centile to the 50th centile would have moved up 10 centiles. However, this variable would present consistency problems since the centile range is bounded by zero and 100.

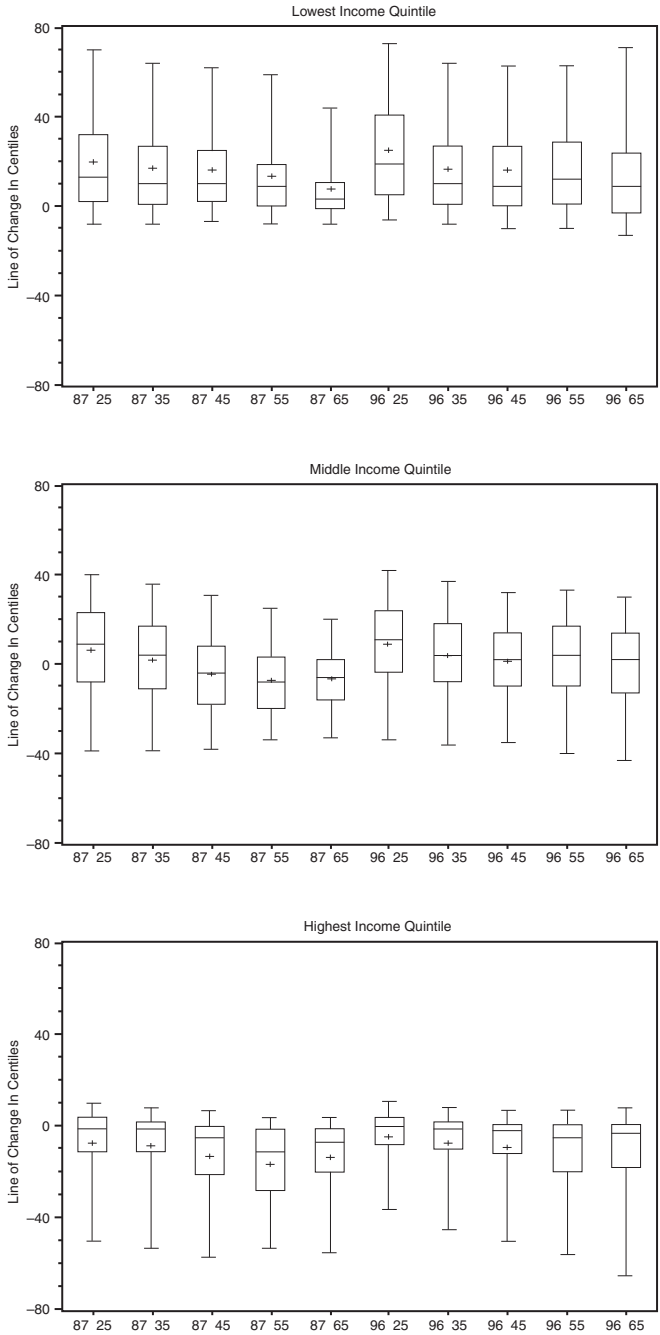
We model the relative change in cash income with a logistic regression that measures how a person's cash income changed over the duration of each panel relative to the total population, measured by their cash income percentile at the beginning and end of the panel. The dependent variable is defined as

$$y = \text{logit}(dcent) = \ln\left(dcent/(1-dcent)\right)$$

$$dcent = \frac{\frac{1}{2}\left(endcentile - startcentile\right) + 50}{100}$$

This transformation allows us to use the familiar tools of logistic regression to model relative movement in the population while avoiding the awkward problems of estimating a bounded dependent variable with a linear function such as nonsensical predictions outside the

Figure 1. The Distribution of Changes in Centile Rankings of Taxpayers Age 25 and Older by Age and Income, 1987–1996 and 1996–2005



Notes: The box plots describe the distribution of changes in centile rankings of taxpayers by age and income group in the 1987 Family Panel (denoted 87) and 1996–2005 Panel (denoted 96). The age groups are 25–34 (25), 35–44 (35), 44–54 (44), 55–64 (55), and 65 and over (65) in the starting year of the respective panels. The lowest, middle and highest cash income quintiles in the starting year of each panel are shown. The main box of each plot represents the interquartile range—the 25th to 75th percentile—of percentile changes. The cross bar and plus sign represent the median and mean, respectively. The lower and upper whiskers represent the 5th and 95th percentiles, respectively.

bounds and heteroskedastic errors. The transformation is scaled such that an individual whose cash income percentile remains the same over the duration has a dependent variable with a value of zero. Roughly, individuals whose systematic effect equaled 0.2 ($X\beta = 0.2$) would be predicted to increase their relative position in the income distribution by 10 percentile points. Since each panel is based on a stratified random sample, we use a Taylor series method to estimate appropriate standard error for the model.

Among the factors that may be associated with the observed income mobility patterns are the life cycle of incomes, the initial position in the income distribution, changes in family status such as marriage and divorce, differences in regional economic growth, and factors involving individual actions such as starting a business.

The results of the basic analysis using the two panels are presented in Table 10. The first specification models income change only as a function of the initial income quintile or percentile group. The R–square using only income class variables is approximately 0.20 for both panels. The coefficients on income class in both equations generally decrease as one moves up the income scale and are negative for those starting in the top quintile. Starting in the lowest two income quintiles is associated with moving up about 22 and 12–15 centiles, respectively, in both time periods.[27] In the 1987–1996 period, starting in the top quintile is associated with moving down uniformly about 12–14 centiles, while in the second period, the downward movement increases from about 9 centiles in the 80th to 90th percentiles up to 12–13 centiles for the top five percent of taxpayers. While the age classes are highly statistically significant, their addition in the second specification adds very little to the explanatory power of the equations. Consistent with the analysis in the prior section, upward income mobility across percentiles declines with age with similar patterns for both time periods.

The third specification includes a number of additional control variables that have sometimes been associated with income mobility or changes in income. Being married in the base year is associated with a 5–6 centile rise in the income distribution, while getting married during the period is associated with a rise of approximately 16–17 centiles. Changes to un–married status as a result of divorce or widowhood are associated with a decline of about 12 centiles in the relative income distribution.[28] For the earlier period, being retired at the beginning and retiring by the ending period are both associated with modest downward income mobility of about 7 centiles. In the later period, being retired and retiring have small positive effects on position in the income distribution.[29] While having business income in the base year and starting a new business were associated with moving up 3 and 5 centiles, respectively, in the 1987–1996 period, they had little effect on mobility in the more recent period.[30] Regional dummy variables

[27] We calculate the predicted percentile changes relative to a theoretical individual that neither moves up or down (that is, a prediction of zero for the dependent variable) instead of a population average since all of the variables are categorical. Moreover, in samples where upward and downward mobility is readily observed and the weighted mean of the dependent variable is 0.04 and 0.11, the assumption is both sensible and simplifying.

[28] In a regression in which income was not adjusted for family size in computing the percentile rankings, the effects of marital status were approximately twice as large, illustrating the importance of this adjustment.

[29] The retirement variable is measured as the receipt of Social Security benefits or pension income by individuals age 60 and over. The definition of this variable likely affects the estimated parameters for this variable due to interactions with the age class variables and the definition of income.

[30] Business taxpayers are defined as taxpayers for whom the absolute value of the sum of sole proprietorship income, partnership income and S corporation income exceeded $10,000 in 1996 dollars. Starting a business is measured with error since it is difficult to distinguish with certainty from situations where an employer has converted a salaried position into an independent contractor relationship.

TABLE 10
INCOME MOBILITY REGRESSION RESULTS, 1987–1996 AND 1996–2005

	1987–1996				1996–2005			
	Initial Income Only	Income and Age Class	All Variables		Initial Income Only	Income and Age Class	All Variables	
Variables	Coefficient	Coefficient	Coefficient	Centile Effect	Coefficient	Coefficient	Coefficient	Centile Effect
Lowest quintile	0.443**	0.651**	0.704**	33.8	0.448**	0.725**	0.744**	35.6
Second quintile	0.241**	0.459**	0.510**	24.9	0.298**	0.573**	0.588**	28.6
Middle quintile	0.050**	0.271**	0.322**	15.9	0.136**	0.410**	0.420**	20.7
Fourth quintile	–0.145**	0.077**	0.127**	6.3	–0.043**	0.229**	0.242**	12.0
80–90th percentiles	–0.252**	–0.027*	0.024	1.2	–0.181**	0.089**	0.098**	4.9
90–95th percentiles	–0.278**	–0.050**	–0.002	–0.1	–0.208**	0.062**	0.066**	3.3
95–99th percentiles	–0.266**	–0.030*	–0.003	–0.1	–0.249**	0.020	0.021	1.0
Top 1%	–0.247**	na	na		–0.267**	na	na	na
Age 25–34		–0.221**	–0.311**	–15.4		–0.285**	–0.346**	–17.1
Age 35–44		–0.150**	–0.261**	–13.0		–0.276**	–0.342**	–16.9
Age 45–54		–0.224**	–0.305**	–15.1		–0.269**	–0.346**	–17.1
Age 55–64		–0.309**	–0.274**	–13.6		–0.246**	–0.352**	–17.4
Age 65+		–0.309**	–0.234**	–11.7		–0.277**	–0.358**	–17.7
Married initial year			0.092**	4.6			0.115**	5.7
Became married			0.327**	16.2			0.347**	17.2
Became unmarried			–0.246**	–12.3			–0.243**	–12.1
Female			–0.015**	–0.7			–0.005	–0.3
Child at home initial year			0.015*	0.7			0.005	0.3
New child at home			–0.195**	–9.7			–0.167**	–8.3
Retired initial year			–0.136**	–6.8			0.052**	2.6
Retired			–0.136**	–6.8			0.045**	2.3
Move to different state			–0.006	–0.3			0.030**	1.5
Business initial year			0.066**	3.3			–0.011	–0.5
New Business			0.106**	5.3			0.024*	1.2
Midwest initial year			0.059**	3.0			0.009	0.5
Midwest end of period			–0.051*	–2.5			–0.057*	–2.9
Southeast initial year			0.017	0.8			0.006	0.3
Southeast end of period			–0.059**	–2.9			–0.048**	–2.4
South Central initial year			0.043*	2.2			0.011	0.5
South Central end of period			–0.094**	–4.7			–0.070**	–3.5
West initial year			0.0005	0.0			–0.018	–0.9
West end of period			–0.0003	0.0			0.018	0.9
R–square	0.196	0.205	0.248		0.206	0.206	0.248	
Root MSE	0.518	0.516	0.501		0.504	0.504	0.490	
F–statistic – income groups	1705.7	1721.7	1504.1		1512.5	1586.4	1433.1	
F–statistic – age groups		198.7	26.8			8.4	0.3	
F–statistic – full model	1705.7	1113.7	519.7		1512.5	1026.6	468.2	
Mean of dependent variable	0.043	0.043	0.043		0.108	0.108	0.108	
Observations	124,005	124,005	124,005		163,739	163,739	163,739	

Notes: Regressions are estimated as a logistic regression that accounts for the sampling strata. Regions are based on Census regions except that Delaware, the District of Columbia and Maryland are grouped with the northeastern states in the omitted region. A business taxpayer is defined as the absolute value of sole proprietorship income and active income from partnerships and S corporations of at least 50 percent of cash income. Retirement is defined as at least 60 years of age and receiving Social Security benefits or pension income. Nonresident taxpayers and taxpayers from U.S. territories were dropped from the sample. The column labeled "Centile Effect" shows the approximate percentile effect of the parameter relative to the theoretical person predicted to neither rise nor fall in the income distribution and calculated using (((EXP(b)/(1+EXP(b)))*100)–50)*2, where *b* is the coefficient. * denotes significantly different from zero at 5% level. ** denotes significantly different from zero at 1% level.
Source: U.S. Department of the Treasury, Office of Tax Analysis, 1987–1996 Family Panel, Tax Year 1996 and 2005 Individual Income Tax Files

for both the initial and ending years of the panels were included to control for differences in initial income that may be associated with the cost of living and to examine the effects of regional economic changes on income mobility. The northeast region was the omitted region. Some of the coefficients are consistent with taxpayers in the northeast and western states having more positive effects on mobility relative to the other regions. While being in the Midwest in 1987 had a positive effect of 3.0 centiles,

this was roughly cancelled by a negative effect of 2.5 centiles for those who remained there in 1996. Being in the Midwest in 2005 was associated with a downward effect of about 3 centiles. Being in southeast or south central states at the end of each period was also associated with downward mobility of 2.4–3.5 centiles. While moving to a different state had a positive and statistically significant effect on mobility in the more recent period, the effect was only about 1.5 percentage points and the effect was not significant in the earlier period.

CONCLUSIONS

This study examined the income mobility of individual taxpayers age 25 and over for the last two decades using information reported on individual income tax returns. The key findings are that there was considerable income mobility of individuals in the U.S. economy during the 1996–2005 period, and that the degree of relative income mobility among income groups is roughly unchanged from the prior comparable period (1987–1996). The analysis found that more than half of taxpayers (57.5 percent by one measure and 55 percent by another measure) moved to a different income quintile between 1996–2005. About half (56 percent relative to the total population and 42 percent relative to the initial group of taxpayers) of those taxpayers in the bottom income quintile in 1996 moved to a higher income group by 2005. The analysis also found that the composition of the very top income groups changes dramatically over time. Less than half (39 percent or 42 percent by different measures) of those in the top 1 percent in 1996 were still in the top 1 percent in 2005. Less than one–fourth of individuals in the top 0.01 percent in 1996 remained in that group in 2005.

Economic growth resulted in rising incomes as median real incomes of taxpayers (adjusted for household size) increased by 24 percent. In addition, the real incomes of two–thirds of all taxpayers increased over this period. Further, the median incomes of those initially in the lower income groups increased more than the median incomes of those in the higher income groups.

Results of regression analysis suggest that initial position in the income distribution and changes in marital status are most closely associated with the largest upward or downward movements through the income distribution. In addition, remaining a resident of the Midwest, Southeast or South Central Regions was associated with downward movement of several centiles over each time period.

This study has been able to examine only a few dimensions of the issues of income dynamics and income inequality. It considered only long–term changes in income, but the high degree of turnover in the high income groups suggests that measured annual incomes may have large transitory components. Thus, over a period of years, many more households may experience positive income shocks that put them in higher income classes for a few years or negative income shocks that put them in a lower income quintile for a short time period.[31] Examination of shorter term income movements would likely provide useful insights, while the use of multi–year measures of income may provide better measures of longer–term income mobility.

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[31] For example, data from the IRS Statistics of Income (2008) on the 400 individual income tax returns with the highest Adjusted Gross Incomes from 1992–2006 showed that 3,305 different taxpapers appeared one or more times in this elite group. Only eight taxpayers appeared in all 15 years, while over two–thirds (2,394) appeared only once.

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TECHNICAL APPENDIX

The data for this study are based on income reported on individual income tax returns, supplemented by data on Social Security benefits from Form SSA–1099 for lower–income households that were not required to report this information on their income tax returns. The 1996 base year sample uses income tax data for the 1996 tax year from the 1996 IRS Statistics of Income (SOI) Individual Income Tax File and from late–filed returns included in the 1997 and 1998 files. Primary and secondary taxpayers under age 25 in 1996 and dependent filers were excluded. In order to obtain the maximum number of matches for 2005, the corresponding data for 2005 were obtained from the IRS Individual Returns Master File at the IRS Computer Data Warehouse. Data for 2005 were obtained for both primary and secondary taxpayers in cases where taxpayers who filed jointly in 1996 filed separately or were a secondary taxpayer in a different tax unit for 2005. The data for late–filed tax returns for tax year 2005 filed in 2006 have been added, but those filed in 2007 are not yet available. Late–filed tax returns are approximately one to two percent of tax returns filed, and are generally more complex tax returns of higher–income tax households. Matches were found for 88 percent of the primary and secondary taxpayers in the 1996 sample. This attrition rate is relatively low

for this long of a time period and, as discussed below, is primarily accounted for by the death of the taxpayer. The 1987 base year sample uses the 1987 Family Panel, which is described in Ackerman, et al. (2008), Cilke, et al. (2001), and Auten and Gee (2007). Our earlier paper followed only the tax returns of primary taxpayers, however, and the results reported in this paper for this period have been updated to include secondary taxpayers and other methodology improvements so as to be consistent with the data for the more recent period.

Cash income is defined to include wages and salaries, tip income, taxable and tax–exempt interest, dividend income, alimony, net income from business (sole proprietorships, partnerships, and S corporations), farm income, net rental income, royalty income, net capital gain or loss in adjusted gross income (AGI), other gain or loss, unemployment compensation, taxable and non–taxable pension and annuity income, Social Security benefits (including the non–taxable portion), and other income included in AGI except for state income tax refunds. Net operating losses carried over from prior years were added back. Alimony payments were subtracted to reflect cash income. These sources of income reported on individual income tax returns were supplemented by data from information returns on Social Security benefits received but not subject to tax. The inclusion of tax–exempt interest and non–taxable Social Security benefits are important improvements to income as previously measured on income tax returns. The inclusion of Social Security benefits is particularly important because it is the main source of income of many older households. With the addition of non–taxable Social Security benefits, our measure of cash income accounted for about 84 percent of all cash transfer payments in 1995, the closest year to 1996 for which data were available. (See Technical Appendix A in Auten and Gee, 2007).

Overall, the income measure used in this study should generally provide a good measure of cash income for most households, though it may understate income for households receiving significant amounts of tax–exempt income from workers' compensation, Supplemental Security Income, family assistance, or certain disability programs for veterans. In addition, the refundable portion of the Earned Income Tax Credit is not included because cash income is a before–tax measure. Cash income can be affected by changes in financial and compensation arrangements. For example, in recent years many mutual funds have altered how they manage their portfolios so as to reduce currently taxable capital gains of investors (i.e. capital gains distributions), even though the market values of the mutual fund shares have been increasing. This change could reduce the incomes of households that owned mutual funds in 2005 compared to the income that would have been reported absent the change.

The definition of cash income used in this analysis is similar, but not identical, to measures used in other studies. For example, the definition used here includes capital gains income, while the Census measure of money income does not include capital gains. In our earlier study (Auten and Gee, 2007), we found that the mobility results were virtually identical whether capital gains were included or excluded from the definition of income. Some CBO and Treasury analyses have used measures of income that include employer–paid payroll taxes such as the employer share of Social Security taxes and unemployment insurance taxes. These employer–paid taxes are considered to be part of the economic income of households, but are not included in cash income in this study as households are unlikely to regard such items as part of their cash income. Income is adjusted for inflation using the Consumer Price Index Research Series Using Current Methods (CPI–U–RS).

Since the data for this study is based on income tax returns, an important question is the extent to which the sample accurately represents the total population. The sample includes individuals who are either primary or secondary non–dependent taxpayers on tax returns filed in 1996. While some low–income households are not required to file, the filing requirements have generally been lower than the Census poverty levels over this period for single persons, heads of households, and mar-

ried couples with at least one dependent (two dependents in 2005). Additional individuals may file to obtain refunds of withheld taxes or to take advantage of refundable tax credits such as the EITC and child tax credits. Table A1 shows that as of 1996, the population of income tax filers used in this study included 85.5 percent of the population age 25 and over and 90.7 percent of the resident population age 25–64. Thus, the sample is highly representative of the population aged 25–64. In addition, the 9.1 percent of individuals in the non–filing population includes non–compliant taxpayers who should have filed returns, late filers, individuals who filed but were claimed as dependents on other tax returns, and individuals who retired and began collecting Social Security benefits prior to age 65. Representation of younger and older individuals was not as complete. About 69 percent of individuals age 20 to 24 and 56 percent of individuals age 65 and over were represented on tax returns. The filing rate for older households declines because Social Security benefits constitute a large portion of the incomes of many older households, but are not subject to tax until modified adjusted gross income exceeds $32,000 for married couples filing jointly and $25,000 for non–married individuals.

Underreporting of income can be a problem for studies using income tax data as well as for studies using survey data. The table below shows the extent of underreporting by income quintile based on the 1988 Taxpayer Compliance Measurement Project (TCMP). Cash income as measured in this table does not include non–taxable Social Security benefits as these were not reported in the TCMP data. Overall about one–third of tax returns underreported total cash income. On those returns, total net unreported income was about 8.5 percent of reported cash income. In the lowest income quintile based on reported income, underreporting was less frequent (one–fourth of returns) but more severe in proportion to reported income as unreported income was 39 percent of reported income. Only 1.7 percent of returns (2.9 percent in the lowest income quintile had unreported income of 50 percent of reported income. Thus in a small percentage of cases, households could be in a different income quintile or may have a different mobility pattern if their reporting compliance changed significantly. When returns were categorized on the basis of post–audit corrected income, the differences in underreporting are less pronounced across income classes. Note that these data are not the same as those used in the IRS tax gap estimates because tax rates are higher for high–income taxpayers, high–income taxpayers are more likely to have itemized deductions which may be overstated, the IRS "multipliers" to estimate non–compliance not found by the examiners are not used, and other technical aspects of tax gap estimates.

As shown in the table below, overall attrition in the panel was 12.2 percent, which is considerably less than the 25 percent attrition reported for the PSID panel over a similar period (Acs and Zimmerman, 2008). Of the 24,451 individuals for whom no tax return was found for 2005,

TABLE A1
COMPARISON OF THE ADULT TAX FILING POPULATION WITHIN THE U.S.

Age in 1996	Resident Population, July 1, 1996	1996 Primary and Secondary Taxpayers	Taxpayers as Percent of Resident Population
20–24	17,508	12,604	72.0
25–64	158,675	143,856	90.7
55–64	21,353	18,831	88.2
65 and over	33,956	20,893	61.5
25 and over	192,631	164,749	85.5

Notes: Secondary taxpayer refers to the spouse of the taxpayer on joint tax returns filed by married taxpayers. Dependent taxpayers who are claimed as dependents on other tax returns are excluded from the numbers of primary and secondary taxpayers.
Source: Resident population from *Resident Population Estimates of the United States by Age and Sex: April 1, 1990 to July 1, 1999* , U.S. Census Bureau. Numbers of taxpayers from U.S. Department of the Treasury, IRS Statistics of Income, Individual Income Tax Files.

TABLE A2
UNDERREPORTING OF INCOME ON TAX RETURNS IN THE 1988 TCMP

1988 Income Quintile	Quintiles by reported income: Percent of returns with underreported income	Quintiles by reported income: Unreported income as percent of reported income	Quintiles by reported income: Percent of returns with underreported income of 50 percent or more	Quintiles by corrected income: Percent of returns with underreported income	Quintiles by corrected income: Unreported income as percent of reported income	Quintiles by corrected income: Percent of returns with underreported income of 50 percent or more
Lowest	25.2	39.1	2.9	30.4	16.7	6.7
Second	30.8	13.3	1.9	30.8	10.1	1.0
Middle	34.1	8.9	1.3	33.1	6.6	0.5
Fourth	37.3	7.3	1.0	36.0	5.2	0.2
Highest	42.6	7.7	1.4	39.6	4.6	0.2
Top 1%	53.2	6.2	2.0	50.1	3.7	0.2
All	34.0	8.5	1.7	34.0	8.5	1.7

Notes: For the first three columns, income quintiles and percentiles are determined based on the cash income as reported on the taxpayer's return. For the last three columns, these are based on cash income as audited. Unreported income is shown as a percentage of reported income. For comparability to the current study, returns of dependent filers are excluded.
Source: Tabulations by the authors from the 1988 Taxpayer Compliance Measurement Project (TCMP).

TABLE A3
ATTRITION IN THE 1996–2005 PANEL OF TAX RETURNS

1996 Income Quintile	Numbers of Primary and Secondary Taxpayers: 1996 Sample	Died	Only Social Security	No 2005 Match	1996–2005 Panel	Percent Attrition From 1996 Sample: Died	Only Social Security	No 2005 Match	Total Attrition
Lowest	19,320	1,504	1,702	1,211	14,903	7.8	8.8	6.3	22.9
Second	14,819	1,746	694	1,067	11,312	11.8	4.7	7.2	23.7
Middle	16,570	1,621	602	663	13,684	9.8	3.6	4.0	17.4
Fourth	17,979	1,300	497	266	15,916	7.2	2.8	1.5	11.5
Highest	131,560	8,431	2,721	426	119,982	6.4	2.1	0.3	8.8
Top 10%	120,700	7,777	2,434	346	110,143	6.4	2.0	0.3	8.7
Top 5%	111,570	7,321	2,148	282	101,819	6.6	1.9	0.3	8.7
Top 1%	83,811	5,410	1,245	160	76,996	6.5	1.5	0.2	8.1
Total	200,248	14,602	6,216	3,633	175,797	7.3	3.1	1.8	12.2
1996 Age									
25–34	21,904	188	1,462	111	20,143	0.9	6.7	0.5	8.0
35–44	47,860	538	2,172	190	44,960	1.1	4.5	0.4	6.1
45–54	56,830	1,311	1,776	390	53,353	2.3	3.1	0.7	6.1
55–64	40,002	2,527	488	1,371	35,616	6.3	1.2	3.4	11.0
65 and over	33,652	10,038	318	1,571	21,725	29.8	0.9	4.7	35.4
Total	200,248	14,602	6,216	3,633	175,797	7.3	3.1	1.8	12.2

Notes: The column labeled "Only Social Security" shows primary and secondary taxpayers for whom Form SSA–1099 information returns were found for 2005 but no income tax return was filed. The column labeled "No 2005 Match" shows cases for which neither Form SSA–1099 nor a tax return were found for 2005.
Source: IRS, Statistics of Income 1996 and 2005 Individual Income Tax Files.

14,602 or 60 percent died and information returns for Social Security benefits were found in 6,216 instances or 22 percent. These 6,216 individuals are not included in the analysis because of the lack of information about other potential sources of income such as interest, dividends, wages and self–employment income. It is likely that some additional late–filed 2005 returns could be found in later years. After accounting for these factors, the remaining attrition due to factors including non–compliance and income falling below the filing threshold is less than 2 percent of the sample.

In order to consider the potential effects of the lack of data on non–filers with Social Security income, Table A4 shows the effects of adding those individuals to the analysis under the assumption that Social Security was their only source of income. The mobility results for the lowest quintile and the top two quintiles

TABLE A4
INCOME MOBILITY RELATIVE TO THE TOTAL POPULATION INCLUDING SOCIAL SECURITY ONLY CASES, 1996–2005

		2005 Income Quintile					
1996 Quintile	Sample	Lowest	Second	Middle	Fourth	Highest	Top 1%
Lowest	Add SS only cases	44.6	26.7	14.9	9.4	4.3	0.1
	Table 2	43.7	28.8	14.9	8.0	4.5	0.2
Second	Add SS only cases	23.6	25.3	25.3	18.4	7.4	0.1
	Table 2	15.3	30.3	30.2	16.9	7.3	0.2
Middle	Add SS only cases	11.3	16.6	26.2	30.0	15.9	0.2
	Table 2	5.9	15.0	31.8	32.7	14.5	0.2
Fourth	Add SS only cases	5.9	8.5	19.5	32.4	33.8	0.4
	Table 2	3.4	7.3	17.4	37.7	34.2	0.3
Highest	Add SS only cases	3.9	3.5	8.8	19.9	63.9	4.6
	Table 2	2.6	3.1	7.0	18.1	69.1	4.6
Top 1%	Add SS only cases	3.8	1.4	3.2	5.6	86.0	39.1
	Table 2	3.2	1.4	2.1	5.6	87.8	41.5
All Income Groups	Add SS only cases	13.5	18.9	21.2	22.1	24.3	1.3
	Table 2	13.2	16.1	19.9	23.2	27.6	1.2

Notes: The upper row replicates Table 2 but includes nonfilers for whom only Social Security benefits are known.

are little affected and upward mobility into the top two quintiles from any initial quintile are also little changed. The largest changes are in the second and middle quintiles where larger percentages of individuals drop to the lowest income quintile rather than remaining in their initial quintile. For those initially in the second quintile, for example, the percentage dropping to the lowest income quintile increases from 15.3 percent to 23.6 percent with roughly half coming from each of the second and middle quintiles. This likely overstates downward mobility since many of these individuals likely have wages, self–employment income and/or portfolio income, although presumably not enough for them to be required to file. For example, nearly half of these non–filers age 65 and over reported over $1,000 of dividend and interest income on their 1996 tax return and some were in the top 1 percent of the population in 1996.