

# HOUSEHOLD INCOME CHANGES OVER TIME: SOME BASIC QUESTIONS AND FACTS.

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## I. INTRODUCTION

Recent analyses have seemingly told quite different stories about how income groups fared in the 1980s. Some discussions suggest that the rich got richer, the poor got poorer,

and the incomes of the middle class stagnated. Others present a quite different picture: one of broad-based income gains with some of the largest gains going to families who were at the bottom of the income ladder in 1980.

What accounts for these strikingly different accounts of income changes in the 1980s? Here are three explanations:

- o The analyses are addressing different questions about income changes, sometimes without carefully distinguishing among the questions.
  
- o The analyses rely on different **facts** or data, collected in different ways, and covering different time periods.
  
- o In some cases, articles are misinterpreting the results of technical studies, answering questions with the wrong data. The results are '**facts**' that are misleading, as opposed to insights about changes in income during the 1980s.

This article provides a nontechnical guide to basic questions and **facts** about changes in income over time. Section II describes typical ways in which the incomes of individuals and households change through time. Section III then describes the different ways that statistical data on incomes are gathered, how households are grouped by income from these data, how typical household income changes will show up in these data, and which questions about income change we can sensibly try to answer with each type of data. Section IV compares recently released U.S. Treasury data from tax returns with data from other sources, and attempts to clear up the apparent confusion in some recent press reports about the Treasury data and what they tell us about income changes in the 1980s.

## II. HOW INCOMES CHANGE OVER TIME

Although patterns of change differ from person to person and some individuals remain in poverty for extended periods of time, most of us experience fairly large changes in income over time. Our earnings from work and our investment income are likely to change over our lifetime as we first enter, and then leave, the [\*1066] workforce; we may receive irregular or infrequent sources of income; persons may enter or leave our households; and our incomes are influenced by factors affecting the economy as a whole. This section describes each of these sources of change in income.

### A. Lifetime Earnings Pattern

Over the course of our working careers, most of us experience fairly substantial income changes as our earnings follow the typical lifetime pattern. We usually begin our working careers at relatively low-paying entry-level jobs. As we gain skills and work experience,

move to new jobs that better match our skills and interests, and further our on-the-job training and formal education, we become more valuable as employees and are rewarded with increases in pay. During our working years, we may defer some portion of current earnings for later years. As we near retirement, our pay is likely to peak, and then be partially replaced by pensions and Social Security -- forms of deferred compensation -- when we fully retire from the workforce.

#### B. Lifetime Investment Income Pattern

Our incomes also tend to change in a regular pattern as our savings behavior, and therefore our investment income, changes over our lifetimes. We typically do not save much from the relatively low pay we earn when we first enter the labor force. Over time, as our pay increases, we usually begin to save some of our income, purchase homes, and make other investments. The income from these investments added to our increasing pay gives us much higher incomes than we had as young adults. By the time we retire, we often have accumulated investments that provide a source of income that can be drawn down over time.

#### C. Fluctuating Patterns of Income

While most of us will have income from earnings and investments that follow the regular lifetime patterns outlined above, others will experience relatively large year-to-year fluctuations in their incomes. For example, workers in economically cyclical industries, such as construction, often have some good years, when income is well above average, and some bad years, when income is well below average. Farmers and other small business owners also often experience wide fluctuations in income.

Further, even workers whose incomes normally follow a regular lifetime earnings pattern may, for a variety of reasons, experience income fluctuations in some years. For example, a spell of unemployment will make income abnormally low in a year, while a large bonus or sales commission will make the year's income abnormally high.

Finally, many of us experience infrequent or one-time large increases in annual income reported for tax purposes, such as when we sell our homes or small businesses or shift our investment portfolios.

#### D. Household Membership and Work Patterns

A household's total income will reflect changes in the number of persons in the household. In addition, household income will change when members enter or leave the workforce or change their hours of work.

1. Marriage and children. Marriage reduces the number of households and increases household income if both spouses are employed. If the couple at some point decides to have children, one of the spouses may leave the labor market, or both spouses may reduce the number of hours worked, thereby reducing the household's income. Later,

when the children are older, both spouses may again work full time and the household's income will increase. The household's income will also increase when, for example, a teenager works after school or has a summer job.

2. Death and divorce. The death of a working spouse or other household member reduces a household's income, sometimes quite substantially. Divorce typically splits a household into two households, and one or both usually have a lower income than that of the original household.

3. Other household changes. There are a number of other changes in household makeup or work patterns that affect household income. For example, when a widow joins her daughter's household or an adult child moves back into his or her parent's household, that household's income typically increases. /1/

#### E. Economywide Changes

Broad economic trends as well as lifetime income patterns and other particular circumstances of households cause incomes to change over time. These trends include economic growth, inflation, technological change, international trade flows, and population growth.

1. Economic growth. Investment in plant and equipment and other factors increase labor productivity over time. The benefits of higher productivity are generally reflected in higher wages for workers and lower prices for consumers. Thus, economic growth tends to raise the real incomes of all households.

2. Inflation. Wage increases not matched by productivity growth, and price increases not matched by increases in product quality are purely inflationary. Data on incomes in different years must be adjusted for changes in the price level in each year so that comparisons are of 'real' or 'constant dollar' income changes across years.

3. Technological change. There are fewer telephone operators today than there were 50 years ago, even though the volume of telephone calls has grown tremendously. Technological advancements in telecommunications equipment have replaced the need for many operators. On the other hand, technological changes over the past decade or so are responsible for the emergence of the personal computer industry, which has increased demand for workers in computer design and engineering, parts manufacturing and assembly, distribution and sales, repair, software [\*1067] development and support, and related fields. These are only two examples of how technological change shifts the demand for labor with particular skills and training. These shifts in turn are reflected in income changes at the individual and household level.

4. International trade flows. Like technological change, changing patterns of international trade also shift the demand for labor with particular skills and training, and these shifts are reflected in income changes at the individual and household level.

5. Population growth. As noted above, household income changes as the young enter the labor force and as older workers retire and leave the labor force. Over time, labor force changes mirror population changes through births and deaths and changes in labor force participation rates. /2/ Our population also changes due to people moving to the United States from other countries. Immigration increases the number of households as well as the number of workers, and these in turn affect measures of relative household income changes over time.

### III. STATISTICAL DATA ON INCOME CHANGES

This section describes the different ways that statistical data on incomes are gathered, how households are grouped according to income from these data, how typical household income changes will show up in these data, and which questions about income change we can sensibly try to answer with each type of data.

#### A. How Income Data Are Gathered

Income data come from two main sources: questionnaire surveys and government administrative records such as income tax returns. In surveys, a statistical sample of households voluntarily answer questions on the amount and types of income received by all members of the household in the preceding year. One of the largest and most comprehensive surveys is conducted annually by the Census Bureau. The Current Population Survey (CPS) gathers income data for the preceding year from a sample of households each March. Individual income tax returns contain information on income received by tax filers in the preceding year. The Internal Revenue Service (IRS) maintains a master file consisting of all income tax returns filed in a year. However, because the entire population of tax filers in a year is very large, a statistical sample of tax returns is used to study most income data. Data from a sample of federal individual income tax returns is released in various forms each year by the Statistics of Income (SOI) Division of the IRS.

Both questionnaire survey and tax return samples are designed so that the results can be weighted to represent all households in the population from which the sample was drawn. For example, if the total number of households was 100 million, and the sample randomly included one out of every thousand households, the sample would consist of 100,000 households and the weight assigned to each household in the sample would be 1,000. /3/ As discussed below, the various surveys and tax returns differ in which types of income are covered, the definition of what constitutes a 'household,' and which individuals are omitted from the covered population. They also differ in how much data on household characteristics (for example, the age and education of household members) are gathered, and how well incomes are reported.

#### B. How Households Are Grouped by Income

Households are usually grouped according to total household income in one of two ways.

Each household in the sample can be assigned to a fixed dollar income class, such as '\$ 20,000 to \$ 30,000' or '\$ 50,000 to \$ 75,000.' The lowest income class might be 'Under \$ 20,000,' while the highest might be '\$ 200,000 and Over,' so that all households can be assigned to an income class. Grouping by income class is relatively easy to do and the groups are easy to understand, but some questions about income growth are harder to answer with this grouping because each income class generally contains a different number of households.

The second grouping, which is used later in this article, first requires ranking all households in the sample from lowest to highest income. The first 20 percent of households (on a weighted basis) are then grouped together into the first (lowest) quintile, the second 20 percent into the second quintile, and so on, with the last 20 percent grouped into the fifth (highest) quintile. Thus, each group contains exactly the same number of households.

Once households have been grouped, summary data on the income of each group can be calculated. For example, for each quintile, we can compute the average income for all households in the quintile, the total income for all households in the quintile, or the share that total income in the quintile represents of total income of households in all quintiles.

### C. How Income Changes Show Up in These Data

If we examine household data for a year, such as data from the CPS, ranked by quintile, we find that household heads in the lowest quintile are more than twice as likely as household heads in the other four quintiles to be young people, typically just entering the labor force, or older, retirement-aged people. /4/ In addition, some households [\*1068] are only temporarily in the lowest quintile because they are having bad years -- experiencing unemployment, business losses, or similar setbacks.

In the highest quintile, households are more than twice as likely as households in the other quintiles to be aged between 45 and 54, which are typical peak earnings years. Households in the highest quintile are also much more likely (82 percent) than other households (49 percent) to be headed by a married couple. /5/ In addition, some households are only temporarily in the highest quintile because they are having good years -- receiving bonuses, having good business years, and so on.

These survey data for a year therefore confirm what we would expect from our own experience about the effects of income on lifetime earnings patterns, changing household membership and work patterns, and other factors discussed above. We also would expect from our own experience, however, that the same broad factors that cause households to fall in a particular quintile in a year will also tend to change and therefore move households to different quintiles over time. Thus, we would expect that households headed by young workers will tend to move into higher quintiles as earnings increase over the lifetime of a household head, while households headed by older workers will tend to move into lower quintiles as they retire and earnings cease. We would also expect that households will tend to move up or down the income quintiles as they follow their

lifetime investment income patterns, as they experience fluctuations in income, and as household membership and work patterns change. The economy-wide changes discussed above -- economic growth, inflation, technological change, international trade flows, and population growth -- can also be expected to affect households differently, and so to move some households upward or downward in the overall income distribution.

These considerations suggest what we should expect to find if we examine household movements across quintiles over, say, a 10-year period (as the Treasury data discussed below do). We should find that some households in the lowest quintile in the first year of the period are in higher quintiles in the last year of the period. We should also find the reverse: Some of the households in the lowest quintile in the last year were in a higher quintile in the first year. Some households may be in the lowest quintile in the first and last years but not in all 10 years, while others may be in the lowest quintile in all 10 years. Similarly, we should find that some households in the highest quintile in the first year are in lower quintiles in the last year; some of the households in the highest quintile in the last year were in a lower quintile in the first year; some households were in the highest quintile in the first and last years but not in all 10 years; and that some households were in the highest quintile in all 10 years. We would expect to find the same patterns in the middle three quintiles, with the added **fact** that unlike the lowest and highest quintiles, households can move both up and down from the middle quintiles.

#### D. Which Questions Can We Sensibly Try To Answer?

Survey questionnaire and tax return samples can be designed in one of two ways, and whether we can sensibly try to answer a question using a statistical data set depends critically on which of the two sample designs was used for the data sample.

1. Annual sample design. These samples are meant to be representative of all households in the population in a single year. /6/ The sample is constructed so that all households in the population in that year have a chance of being included in the sample. When an annual sample is weighted, it represents all the households in the population in that year. New annual samples are taken each year, so a household that is actually included in an annual sample in one year will normally not be in the sample in following years. /7/

2. Panel sample design. Panel samples are specifically designed to study change by following the same households or tax-filing units from year to year. In the first year, a panel sample is typically designed to be representative of all households or tax-filing units in the population in that year. The panel sample is a snapshot of the population in the first year of the survey. The panel then follows the people in the snapshot for a number of years. In subsequent years, a basic panel sample continues to represent the population as measured in the first year of the panel, although the sampling process can be designed to add new households over time as the population grows. Since the total population changes in the years following the first year of the panel, however, the most basic type of panel sample will not be fully representative of the entire population of households after the first year. /8/ Thus, if a second snapshot were taken of the population in a later year, and this new snapshot were compared to the original panel, as seen in that

year, the pictures could be very different.

3. Which questions can annual sample data help answer? By design, data from an annual sample can help us answer questions about household income in [1069] the year covered by the sample. /9/ For example, annual sample data should provide reliable answers to such questions as: What were the total and average amounts of income received by all households in the year? What were the total and average amounts of income received by households in each income group in the year? What share of total income earned by all households in the year was received by households in each income group?

Annual sample data can also be used to answer certain questions about changes in income over time, but these questions must be carefully asked and their answers carefully interpreted. For example, with annual sample data for two years we can ask: What was the percentage change in average income received by all households between the two years? The computed percentage change in average income for all households does not equal the average change in income for any group of households. This is because the number and composition of households will have changed between the two years, due to young adults leaving their parents' households to form their own households, marriages and divorces, immigration from other countries, and other factors discussed above. Average household income is affected by these changes, so the computed percentage change in average household income between the two years reflects both changes in income and changes in the composition of the households.

A second question that some have attempted to answer with annual sample data for two years is: What was the percentage change in average income received by households in a particular income group (say, the first quintile) between the two years? The answer to this question must be interpreted with extreme care. Like the computed percentage change in average income for all households, this computation will give a change in the average for all households in the income group, and does not measure the average change in income for any household or subgroup of households because the computation is affected by the change in the number and composition of households between the two years. For example, households will have moved out of and into the income group between the two years. Therefore, the computed change in average income for the group does not measure the average change for households that were in that group in the first year, nor does it measure the average change for households that were in that group in the second year.

4. Which questions can panel sample data help answer? Data from panel samples, by design, can help us answer questions about the income changes over time for a household or fixed groups of households. /10/ There are three basic types of questions that panel data help us answer. The first is: How much did the income of the household or group change absolutely between years? Panel data allow us to answer this type of question by computing the amount or percentage change in income for each household or group of households.

The second type of question is: How did the income of the household or group change



relative to that of other households or groups in the panel between years? A specific question might be: If we keep households grouped by the quintile they were in the first year of the panel, how much did their average income change by the second year? This is one of the questions that an Urban Institute study, discussed below, used survey panel data to answer. The answer requires computing the average change in income for households grouped by quintile in the beginning year. The average changes can then be compared to see how the different groups fared relative to each other.

The third type of question is: How did the income of the household or group in the panel change relative to that of all other households or groups in the population between years? A specific question might be: How much did the income of households represented by the panel sample change on average relative to the change in average income of all households in the population between two years? To answer this question, we must compute the average change in income between the two years for the panel households, and from annual samples for the two years compute the change in average income for all households in the population.

Another specific question is the one the U.S. Treasury data discussed below were used to answer: Between years, how often did households represented by the panel sample move to higher or lower quintiles defined for all households in the population? This question lets us distinguish the income changes for a fixed group of tax-filing units (the panel) from changes in the income for the population, which changes in response to changes in population growth and composition discussed above. To answer the question, we must first determine the income boundaries between each quintile in each year for all tax-filing units in the population using annual sample data. Then, the tax-filing units in the panel sample can be assigned to a population quintile in each year, and we can determine directly how often these units moved to higher or lower quintiles between years. The more the panel shows that income changes move household units to different population quintiles in different years, the more skeptical we must be about statements about income changes which make comparisons based on annual (cross-section) data. We can also use panel data that contain information on household characteristics (such as the age and education of members of the household, their work experience, occupation, etc.) to try to answer questions about why household income changes as it does. For example, we can ask: What effect does the age of family members have on changes in earnings? What effect does education have? Work experience? Occupation? These questions for the most part can only be addressed using panel data from questionnaire surveys, since income tax returns do not contain much information on household characteristics other than income.

[\*1070]

5. Which questions cannot be answered by either type of data? Neither annual sample data or existing panel data are well-suited to help us answer some basic questions about household income change. We would like to know: How do individuals' and households' incomes change over their entire lifetimes? We would also like to know: How have lifetime incomes changed across generations? Full answers to these questions will require

carefully constructed panel samples that continue for very long periods of time.

#### IV. THE RECENT U.S. TREASURY STUDY

On June 1, the Office of Tax Analysis released a study, 'Household Income Mobility During the 1980s: A Statistical Assessment Based on Tax Return Data.' This section briefly describes the data, how the Treasury tax return data differ from questionnaire survey data, the questions asked and **facts** presented in the Treasury study, and how the Treasury study results compare to the results of other recent studies.

##### A. The Data Used in the Treasury Study

The Treasury study used data from a 10-year panel of federal individual income tax returns. The sample for this panel was initially selected in 1981 in two parts. The first part is a sample, not directly of all tax returns filed in 1981, but of the annual SOI sample of all tax returns filed in 1981. The second part of the panel sample is a purely random sample of all tax returns filed in 1981. The two parts combined contain about 20,000 tax filing units. All of these tax filing units were then followed backward two years (to 1979), and then forward to 1988. /11/ The weights used for the full panel are for 1981, and make the panel represent all 95.4 million tax returns filed in 1981. For the Treasury study, only tax-filing units in the panel who filed returns for all 10 calendar years 1979-1988 were used. This left 14,351 tax filing units in the panel, which represent some 58 million returns filed in 1981. The income data for the panel were then adjusted for inflation to constant 1989 dollars and also adjusted for changes in the definition of taxable income over the period. /12/

##### B. How the Treasury Data Differ From Survey Data

The tax return data used in the Treasury study differ from most survey data in five important respects: the definition of a 'household'; the covered population; the definition of 'income'; the amount of data on household characteristics; and the reliability of the data.

1. Definition of household. Surveys such as the CPS generally define a household as all persons, whether or not related, who occupy a housing unit. Household income includes all income received by all members of the household who are over 14 years of age. Income tax returns are filed by each individual with a tax filing requirement, or by married couples filing jointly, and include only the income of the filer(s). /13/ Hence, some individuals who live in the same housing unit as an income tax return filer may have their own income, and may be separate income tax return filers. Conversely, in some circumstances a jointly filed tax return may cover a married couple who occupy separate housing units (for example, some spouses live and work in separate cities for an extended period of time). Further, dependents claimed on a tax return may not occupy the same household as the tax filer (for example, the child of a divorced couple may live with one parent but be supported, and claimed as a dependent, by the other parent).

2. Population covered. The CPS and other survey data cover most individuals living in the United States. Not covered in the CPS, for example, are individuals living in military barracks and inmates of institutions. Income tax returns are in most cases only required to be filed when income subject to tax is above the tax filing threshold (generally, the combined amount of the standard deduction and personal exemption(s) for the filing status -- single, joint, etc.). /14/ Hence, individuals not required to file tax returns, and their dependents, will not be covered in a sample of tax returns unless the individual files to receive a refund of overwithheld income tax or a refundable earned income tax credit, or voluntarily files for other reasons. However, income tax returns must be filed by individuals living in military barracks or institutions if they meet the filing requirements. /15/ The net effect of these differences in the population coverage is that tax returns cover about 90 percent of all individuals in the United States as filers or their dependents, and cover about 80 percent of all households. /16/

3. Definition of income. Both survey data and income tax returns cover major sources of money income such as wages and salaries, interest, dividends, and net income from self-employment. The important differences in income coverage are that tax returns, but not most survey data, include income from realized capital gains, and most surveys include income from public assistance and other government transfer payments that are not subject to federal income tax. Since 1984, a portion of Social Security benefits have been subject to federal income tax for higher-income recipients, and are reported on income tax returns. For the Treasury study, however, it was necessary to exclude these [\*1071] amounts for 1984 and later years to make incomes reported in all years comparable. Therefore, another difference between survey and the income tax return data, as adjusted, used in the Treasury study is the exclusion from the Treasury data of all Social Security benefits.

4. Household characteristics. Tax returns contain relatively few data on household characteristics. We can tell from tax returns whether a taxpayer is married, and with supplemental data from the Social Security Administration we can determine a taxpayer's age. /17/ Survey data, in contrast, often include detailed data on household characteristics, such as the education of each household member, their work experience, industry and occupation, and other factors that influence income and income changes over time.

5. Reliability of the data. Income reporting on tax returns, particularly the reporting of nonwage income (such as interest and dividends) is considerably better than the reporting on surveys. Tax return income data are also more reliable for higher-income households, because nearly all of these households must file tax returns, but relatively few of these households will be included in a random survey sample or even a stratified survey sample unless it is quite large. /18/

### C. Questions Asked and **Facts** Presented in the Treasury Study

The Treasury study was motivated by the increasing attention and analysis that the

distribution of tax burdens has received in the deliberation of tax policy. Discussions of the distributional effects of tax changes (that is, their effect on different income groups) have frequently assumed that households do not often move to a higher or lower income group. The basic question asked in the Treasury study, therefore, was: Over a given number of years, how often do tax-filing units move to higher or lower income quintiles defined for all tax-filing units in the population? /19/

The Treasury study used the 10-year (1979-1988) panel of federal individual income tax returns described above to answer this basic question. /20/ Some of the main **facts** presented in the Treasury study are reproduced here in summary form. Table 1 shows how tax-filing units moved across population income quintiles between 1979 and 1988. Table 1 shows that at least one-third of the taxpayers in each 1979 population quintile had moved to a different population quintile by 1988. For taxpayers starting in the lowest three population quintiles in 1979, at least two-thirds had moved by 1988. For taxpayers starting in the lowest (first) population quintile in 1979, more had moved to the highest (fifth) population quintile by 1988 than remained in the lowest quintile in 1988. These results suggest that there are indeed significant movements of taxpayers to other income groups over time, especially from lower to higher groups.

Table 1  
Percentage Distribution Across Income  
Quintiles in 1988 of Taxpayers Grouped by  
Their Income Quintiles in 1979 /1/  
(Quintiles defined for all taxpayers)

Quintile in 1979	Quintile in 1988				
	First	Second	Third	Fourth	Fifth
First	14%	21	25	25	15
Second	11	29	30	20	11
Third	6	14	33	32	15
Fourth	3	9	15	38	35
Fifth	1	4	9	20	65

/1/ Reproduced from Table 1 in 'Household Mobility During the 1980s: A Statistical Assessment Based on Tax Return Data,' U.S. Department of the Treasury,, Office of Tax Analysis,, June 1,, 1992.

The Treasury study also examined other questions. One is the effect of age on movements across income quintiles. The study found, as we would expect from lifetime income patterns, that taxpayers who moved to higher quintiles over time tended to be younger, while taxpayers who moved to lower quintiles tended to be older. /21/ Another question is how closely income in each year is related to income averaged over the 10

years of the panel. The study found that the two income measures are very imperfectly related. /22/ The Treasury study also examined the importance of wages and salaries in income, and found that taxpayers who move to higher quintiles over time tend to have higher than average shares of wage and salary income. This finding indicates that wages and salaries are a major force behind upward income movements. /23/

One further question examined by the Treasury study was the effect of changes in filing status (which correspond in many cases to changes in household membership, as discussed above) on movements across income quintiles. The study presented summary data that indicated that changes in filing status did account for some movements, as we would expect, but that significant movements remained when the sample was restricted to taxpayers who had no change in filing status over the 10-year period. /24/ Table 2 shows the results for the restricted sample, confirming the summary data presented in the Treasury study.

[\*1072]

Table 2  
Same as Table 1, but only for  
Primary Taxpayers who did not Change  
Tax Filing Status Between 1979 and 1988

Quintile in 1979	Quintile in 1988				
	First	Second	Third	Fourth	Fifth
First	18%	27	28	20	7
Second	13	36	31	15	5
Third	6	15	36	33	10
Fourth	3	10	15	38	35
Fifth	1	4	9	19	67

#### D. How the Treasury Results Compare to Results of Other Recent Studies

1. The Urban Institute study. The Urban Institute released a study of household income mobility shortly after the Treasury study was released. As demonstrated below, when the data from the two studies are used to address the same questions, the answers are very similar.

The Urban Institute study, 'Is U.S. Income Inequality Really Growing?: Sorting Out the Fairness Question,' was written by Isabel V. Sawhill and Mark Condon. /25/ The study uses data from the Panel Survey of Income Dynamics (PSID), which has followed all members of a sample of households since 1967. Sawhill and Condon selected from the PSID all individuals aged 25 to 54 in two years, 1967 and 1977, and then calculated the change in their family income relative to the other families in this age-restricted group in

the following 10 years (1967 to 1976 or 1977 to 1986).

The second 10-year period (1977-1986) corresponds closely to the 10-year period covered by the Treasury study, so it is possible to compare the results of the Urban Institute and Treasury studies. Urban Institute results are reproduced here in Table 3, which shows how PSID families with members aged 25 to 54 in 1977 moved across income quintiles between 1977 and 1986. /26/ Table 3 shows considerable income movements: nearly half of all families in each 1977 quintile had moved to a different quintile by 1986, and in the middle three quintiles in 1977, two-thirds had moved by 1986.

Table 3  
 Percentage Distribution Across Income  
 Quintiles in 1986 of Families With Members  
 Aged 25-54 in 1977 by the Income Quintile the  
 Family was in in 1977. /1/ (Quintiles defined for  
 families in the PSID panel with  
 members aged 25 to 54 in 1977)

Quintile in 1977	Quintile in 1986				
	First	Second	Third	Fourth	Fifth
First	53%	25	11	7	4
Second	22	30	26	15	9
Third	15	19	30	24	13
Fourth	5	15	22	34	25
Fifth	6	11	13	21	50

/1/ Reproduced from Table 1,, 'Is U.S. Income Inequality Really Growing? Sorting Out the Fairness Question,' by Isabel V. Sawhill and Mark Condon,, in Policy Bites, The Urban Institute,, June 1992. For comparison to the Treasury Study,, numbers have been rescaled to add to 100 for each 1977 quintile. Data are from the Panel Study of Income Dynamics (PSID).\*

A comparison of the Urban Institute and Treasury study results (Tables 1 and 3) indicates that the Treasury data show more upward income movements. However, the Urban Institute data in Table 3 differ from the Treasury data in Table 1 in two important respects, because different questions were being asked. First, the Urban Institute calculated income changes relative to other families represented by their sample, whereas the Treasury study calculated income changes relative to all tax returns. Second, the Urban Institute restricted its sample to families with members aged 25 to 54 in 1977, whereas the Treasury study placed no age restriction on its sample. To determine the

importance of these two differences between the studies, we first restricted the Treasury sample to tax returns with filers aged 25 to 55 in 1979, and also recomputed the income breaks for each quintile from the annual samples of tax returns representing the entire population of tax filers, who were aged 25 to 64 in each year. /27/ This step tells us how important the age restriction alone is, because we are still computing income movements relative to the (age-restricted) population of all tax returns, rather than only to tax returns represented by the (age-restricted) panel. The results are shown in Table 4, which generally indicates more income movements than found in the Urban Institute study (Table 3), but less than was found in the Treasury study (Table 1).

Table 4  
 Percentage Distribution Across Income  
 Quintiles in 1988 of Taxpayers Aged 25 to 55 in  
 1979 Grouped by the Income Quintiles  
 They Were in in 1979 /1/  
 (Quintiles defined for all taxpayers aged  
 25 to 64 in each year)

Quintile in 1979	Quintile in 1988				
	First	Second	Third	Fourth	Fifth
First	33%	31	16	13	7
Second	14	28	32	18	9
Third	7	12	27	36	18
Fourth	3	8	15	37	37
Fifth	2	4	8	18	68

/1/ Based on tax return panel data described in 'Household Mobility During the 1980s: A Statistical Assessment Based on Tax Return Data,' U.S. Department of the Treasury,, Office of Tax Analysis, June 1, 1992.

We then computed income breaks for each quintile from the age- restricted Treasury panel, eliminating both differences from the Urban Institute study. The results, shown in Table 5, are virtually identical to the Urban Institute results in Table 3. Table 5, therefore, confirms that if we ask the same question of the Treasury panel that the Urban Institute asked of the PSID panel, we get the same answer.

Table 5  
 Same as Table 4, but Taxpayers in the  
 Panel Aged 25 to 55 in 1979 Compared  
 to Each Other Rather Than to all Taxpayers  
 Aged 25 to 64 in Each Year

(Quintiles defined for all taxpayers in  
the panel aged 25 to 55 in 1979)

Quintile in 1979	Quintile in 1988				
	First	Second	Third	Fourth	Fifth
First	50%	26	13	7	3
Second	25	36	20	13	6
Third	12	19	32	26	11
Fourth	8	12	23	33	24
Fifth	5	7	12	21	56

The Urban Institute study also asked how much average incomes changed between 1977 and 1986 for (age-restricted) families grouped by their starting quintiles in 1977. The results are shown in Table 6, which indicates that the largest dollar increase, as well as percentage increase, in average family income between 1977 and 1986 was realized by families in the first (lowest) quintile in 1977. The increases become smaller for each higher quintile, with the smallest increases realized by families in the fifth (highest) quintile. These results mean that income differences narrowed considerably for these groups of families over the 1977 to 1986 period.

Table 6  
Average Family Income and Change in Average  
Family Income,, 1977-1986, of Families Grouped  
by Their Income Quintile in 1977 (1991 Dollars)  
(Quintiles defined for families in the PSID panel with  
members aged 25 to 54 in 1977)

Quintile in 1977	Average family income		Change in average family income	
	1977	1986	Amount	Percentage
First	\$ 15,853	\$ 27,998	\$ 12,145	77%
Second	\$ 31,340	\$ 43,041	\$ 11,701	37%
Third	\$ 43,297	\$ 51,796	\$ 8,499	20%
Fourth	\$ 57,486	\$ 63,314	\$ 5,828	10%
Fifth	\$ 92,531	\$ 97,140	\$ 4,609	5%

/1/ Reproduced from Table 1, 'Is U.S. Income Inequality Really Growing? Sorting Out the Fairness Question,' by Isabel V. Sawhill and Mark Condon,, in Policy Bites, The Urban Institute, June 1992. Data are from the Panel Study of Income Dynamics (PSID).



2. The top one-percent calculation. Other recent news articles have reported that the top one percent of families (by income) received 70 percent of the increase in after-tax income between 1977 and 1989. The calculation underlying this **'fact'** is based on annual survey data. /28/ As we saw above, such a result is meaningless statistical artifact if it is interpreted as measuring the average change in income of any fixed group of households. /29/ The Treasury income tax return panel data allow us to make this calculation in a more statistically meaningful way, by calculating the share of the change in after-tax income between 1979 and 1988 for the top one percent of taxpayers in 1979. This group's share is 11.3 percent of the total change in income over the period, not nearly so much more than this group's 6.1-percent share of after-tax income in 1979 as the **'fact'** discussed above would imply. Thus, this fixed group of taxpayers, the top one percent in 1979, fared better on average over the 10-year period than many other taxpayers covered by the Treasury panel, but not as much better as that suggested in the calculation referred to above.

## V. CONCLUSIONS

- o Income mobility for persons or households is a concept with many legitimate definitions. In empirical studies of income mobility, it is important to select data that are appropriate for analyzing the question being asked.

- o Data from an annual sample of households can be used to answer questions about household income in the year covered by the sample. It is inappropriate, however, to make statements [\*1074]

about the income mobility of groups over time based on such data.

- o Panel data can be used to answer questions about how the incomes of households or groups change relative to those of all other households or groups in the population between years.

- o The Treasury study asked: Over a given number of years, how often do tax-filing units move to higher- or lower-income quintiles (defined for all tax-filing units in the population)? The study found evidence of significant movements of taxpayers to other income groups over time, especially from lower- to higher-income groups. Significant movements remained when the sample was restricted to taxpayers who had no change in filing status over the sample period.

o The Urban Institute study asked: Over a given number of years, how often do (an age-restricted sample of) families move to higher- or lower-income quintiles defined for the sample? The Urban Institute data indicate substantial mobility in family incomes. If the Treasury data are used to address the same question as that posed in the Urban Institute study, the answer is very similar.

o Recent calculations based on comparisons of annual data of the share of the increase in after-tax income received by the 'top one percent' of households are both technically incorrect and misleading.

#### FOOTNOTES

/1/ In addition, there will usually be one fewer household.

/2/ The labor force has also grown fairly substantially in the post-war period due to increased participation rates of women.

/3/ More complicated sampling designs apply higher sampling rates to analytically important, but relatively rare households (for example, those with very high incomes), so these households receive a smaller weight when the sample is weighted to represent the population. This 'stratified' sampling design is used, for example, in the SOI samples of individual income tax returns.

/4/ In 1990, householders (a Census term essentially synonymous with 'head of household') in the lowest quintile were more than twice as likely (9.2 percent) as the rest of the household population (4.2 percent) to be aged between 15 and 24. Likewise, householders in the lowest quintile were more than twice as likely (40.5 percent) as the rest of the householder population (17.1 percent) to be aged 65 or older. Households in the lowest quintile were less than a third as likely (20.8 percent) as the rest of the population (63.9 percent) to be headed by a married couple. Source: Computations based on Table 3 of 'Money Income of Households, Families, and Persons in the United States: 1990,' U.S. Department of Commerce, Bureau of the Census.

/5/ Ibid., U.S. Department of Commerce.

/6/ These samples are often referred to as 'cross-sections.'

/7/ In a large or highly stratified sample, some households may appear in the sample in following years simply because they have a high probability of being included in the sample. However, they are not otherwise purposely included in the sample.

/8/ It is sometimes possible, with proper weighting, to make a panel resemble the

population in later years in certain respects.

/9/ Recall that income data usually are for the year preceding the year the sample is conducted.

/10/ Panel data can also be used to answer the annual data questions for the first year of the panel, and with proper weighting or other design features, certain annual data questions in following years.

/11/ On joint returns, only the primary taxpayer, the taxpayer whose Social Security number was listed first on the return filed in 1981, were followed.

/12/ The Treasury study provides additional details on the construction of the panel sample and the adjustments for inflation and the tax code definition of income.

/13/ There is a minor exception for parents who in certain circumstances can include a child's income on their return in lieu of the child filing and paying tax. However, this exception began in 1989, so does not affect the data used in the Treasury study.

/14/ For example, in 1988 (the last year covered by the Treasury panel data on income tax returns), the standard deduction (for taxpayers under age 65) on a single return was \$ 3,000 and \$ 5,000 on a joint return, and the personal exemption amount was \$ 1,950. Hence, the filing threshold for a single filer was \$ 4,950 and for a joint return, \$ 8,900.

/15/ In some circumstances, a return must also be filed by a U.S. citizen living abroad.

/16/ The percentage coverage of households is smaller because nonfilers tend to be in smaller households than filers.

/17/ Occupations are reported on tax returns, but this reporting is difficult to use for statistical purposes.

/18/ In addition, even if a higher income household is sampled, nonresponse is more likely than for lower- and middle-income households.

/19/ Given that the constant-dollar breakpoints for the population quintiles did not change much over the period (see Table A2 in the original Treasury study), another way to ask this question is: How often do tax-filing units move relative to fixed-dollar breakpoints in the population's income distribution?

/20/ Recall that income tax filers generally exclude households with incomes below the tax-filing threshold. Hence, the Treasury data do not represent income changes for such households.

/21/ See Figure 4 of the Treasury study for additional details.

/22/ See Table 4 of the Treasury study for additional details.

/23/ See Figure 5 of the Treasury study for additional details.

/24/ See page 6 of the Treasury study.

/25/ The study appeared in the Urban Institute's Policy Bites for June 1992.

/26/ As indicated in the footnote to Table 3, the Urban Institute results have been rescaled (by multiplying them all by five) to make them comparable to the tables containing Treasury study results.

/27/ The quintile income breaks are for taxpayers aged 25 to 64 in each year because in the first year (1979), the youngest taxpayers in the (restricted) Treasury panel are aged 25, whereas in the last year (1988), the oldest taxpayers are aged 64.

/28/ For a careful statement of the calculation and its limitations, see the CBO Staff Memorandum, 'Measuring the Distribution of Income Gains,' March 1992.

/29/ This issue is also explored by Michael J. Boskin, 'Letter to the Editor,' The Wall Street Journal, July 3, 1992.

\*\*\*\*\* End of Document \*\*\*\*\*