

**Assessing the Quality
of the March Current Population Survey
and the Survey of Income and Program Participation
Income Estimates,
1990 - 1996**

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June 16, 2000

This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone a more limited review than official Census Bureau publications. This report is released to inform interested parties of research and to encourage discussion.

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Introduction

This investigation attempts to develop administrative benchmarks of income compatible with the March Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP), two income surveys conducted by the U.S. Census Bureau. Many people are reluctant to reveal their incomes to survey researchers, and this reluctance makes such surveys particularly prone to response errors. A respondent can fail to report receipt of income, fail to report the amount, under-report or over-report the amount, or misclassify income. These errors can in turn cause an imputation system to mis-allocate incomes to those respondents who do not provide answers to questions. Because of the potential for error, many researchers and data users would like to know how complete the March CPS and SIPP income estimates are. Comparing aggregate income from the surveys to administrative benchmarks addresses this need by quantifying the net effect of response and other errors.

There are many sources of data from which one could choose benchmarks of income, for instance the U.S. Social Security Administration for Social Security payments, the U.S. Department of Labor for wages, and the U.S. Department of Health and Human Services for Aid to Families with Dependent Children. However, using the National Income and Product Accounts (NIPAs) produced by the U.S. Bureau of Economic Analysis (BEA) offers the advantages of comparability with previous work in this area, ease of access, and consistent definitions of income and coverage universe over periods of time.

Because the NIPA income definitions and population coverage are not the same as those of the March CPS and SIPP, adjustments are necessary to construct benchmarks from the NIPA figures. Table 1 summarizes the differences in the income concepts and populations covered. Personal Income, the series in the NIPAs

from which most of the benchmarks derive, is a more comprehensive measure than Money Income. The components included in the Personal Income concept but not the Money Income concept are larger and more numerous than those included in Money Income but not in Personal Income. The population coverage of Personal Income is also larger than that of Money Income. This investigation considers categories of income that are measured both in the NIPAs and the Census Bureau surveys, numbered 1 to 16 on the table.

This paper has four aims. The first is to establish a methodology for deriving benchmarks from the NIPAs. The BEA's traditional adjustments reconcile income definition differences, and ratios from the Decennial Census of Population and from a Monte Carlo simulation adjust the coverage universe. Documenting these and other methods facilitates future benchmark comparisons and fleshes out the issues researchers need to consider generally when comparing survey data to administrative data. The second aim is to evaluate the quality of the March CPS and SIPP income estimates for the period 1990 to 1996 by comparing the surveys' aggregates to the benchmarks. The working definition of "quality" is the degree of difference between the survey and NIPA-based estimates. Third, the analysis considers the possible causes of shortfalls and overestimates by the surveys. Finally, it identifies and attempts to explain changes in the relationship between the surveys' income estimates and administrative benchmarks that occur during the period.

The remainder of this section briefly describes the March CPS, the SIPP, and the NIPAs. The following section describes the universe and definition adjustments required for the reconciliation, the next section presents and discusses the results, and the final section summarizes conclusions.

The March CPS and SIPP

The Census Bureau conducts several household surveys that measure the economic situation of people, families, and households in the United States. The basic Current Population Survey (CPS) takes place every month. Its primary focus is to collect information on current employment status. In March of every year, a supplementary questionnaire gathers information about income received during the previous calendar year. The March CPS interviewed people in approximately 60,000 households from 1991 until 1996, when the sample size decreased to 50,000 households. Besides the change in sample size, a new sample design was introduced and the survey converted from a paper questionnaire to a computerized instrument in March 1994. Weights based on the results of the 1990 Census were introduced in 1993.

The Survey of Income and Program Participation (SIPP) aims to overcome some of the shortcomings of the March CPS by focusing specifically on income rather than labor force participation, using a four-month rather than one-year reference period, and covering more income sources. The 1990 SIPP Panel ran for two and a half years and began with 22,000 households; the 1991 Panel also ran for two and a half years but began with only 14,000 households; the 1993 Panel ran for three years and began with 20,000 households; and the 1996 Panel ran for four years and began with 37,000 households. The SIPP interviews are staggered, collecting data from one-quarter of the sample each month about the previous four months' income and program status. Each completed four-month cycle of interviews is called a wave. The survey instrument was automated beginning with the 1996 Panel, and several new income sources were added.

Although it is primarily the potential for response error --respondents misreporting receipt or amounts of income-- that motivates comparing the surveys' aggregates to independent estimates, both surveys are

subject to other types of nonsampling error. Failure of the Census Bureau to contact sampled units, item nonresponse and imputation, attrition, population undercoverage, and errors in the sampling frame contribute to the differences between the survey's income estimates and the benchmarks as well.

The NIPAs

The National Income and Product Accounts (NIPAs) are an extensive set of tables produced by the Bureau of Economic Analysis (BEA). They include estimates of Gross Domestic Product, Gross National Product, and Personal Income. In contrast to the Census Bureau surveys, which focus on cash regularly available to individual people, families, and households, the NIPAs' purpose is to describe aggregate amounts of income and products flowing through the personal, business, and government sectors of the United States economy. The NIPAs include many statistical and conceptual adjustments to source data that reflect an accounting framework based on economic theory.

This analysis derives independent income estimates from the Personal Income and related series of the NIPAs. In compiling Personal Income, the BEA uses data sources such as employers' reports to the Department of Labor, records of the Social Security Administration, data from the Federal Reserve Board, and many other administrative sources. Besides the definition and universe differences between the NIPAs and the Census Bureau surveys, their vastly different purposes, methodologies, modes of data collection, and underlying income concepts contribute to different estimates of income.

Although Personal Income might often be mistaken as analogous to the Census Bureau's Money Income, it is actually quite a different concept, and is generally more comprehensive. Among the components of

Personal Income that are not included in Money Income are employer contributions to private pension and welfare funds; capital consumption and inventory valuation adjustments to farm and nonfarm self-employment income; the rental value of owner-occupied homes; imputed interest from banks, credit agencies, investment companies, life insurance carriers and private noninsured pension plans; benefits from hospital and medical insurance; public assistance medical care; business transfer payments; interest, dividends, rent, proprietorship income, and partnership income paid to fiduciaries and nonprofit institutions; unredeemed interest on US savings bonds; small corporation income; and lump sum payments. Some of these items are quite large.

Clearly a household survey cannot capture many of the components of the BEA's Personal Income, nor are they necessarily desirable in a household survey's income concept. However, it is possible to isolate the components that are roughly comparable to the sources of income that appear the March CPS and SIPP, and adjust these components to account for the differing income concepts and populations covered. The next section describes the adjustments and some of the methodologies for quantifying them. Further details and sources for the adjustments are in Appendix I.

Adjustments to the NIPAs

The strategy of adjusting NIPA figures to conform to the surveys' coverage universe and income definitions involves some difficulties. First, the NIPAs undergo annual and comprehensive revisions. Revisions to certain income components such as rent cause quite wide variation. Each revision may require different reconciliation work.¹ Second, the NIPAs, as well as the Census Bureau surveys, are subject to error. The

¹ This investigation uses the 1998 revision of the NIPAs.

BEA faces imperfect source data and a lack of adequate information to correct it. Indeed, some of the NIPA estimates derive in part from household survey data such as the March CPS. Third, some data needed to make NIPA measures compatible with survey measures is simply not available. However, the NIPA income definitions are consistent within each revision, the errors in the NIPA estimates for many categories of income are small, and most of the adjustments required for the reconciliation are also small. Keeping the limitations in mind and inspecting trends over a consistently-adjusted series should allow reasonable judgements about the completeness of the income estimates from the surveys.

Universe Adjustments

The March CPS and SIPP exclude people who live in institutions, on military bases, overseas, or who die before the interview date (decedents). Accordingly, estimates of the income of these groups should be subtracted from the NIPA figures to arrive at appropriate benchmarks.² Moreover, some people are eligible for the survey during the reference period but become ineligible by moving to military, institutional, or overseas residences before they are interviewed. Accordingly, Coder and Scoon-Rogers (1996) use different universe adjustments deriving benchmarks for the March CPS and SIPP to reflect the lag between the reference period and the March CPS interview that is negligible in the SIPP.³

² Theoretically, the comparison should also exclude the income of children and emigrants from the benchmarks, but the income of these groups is certainly too small to cause concern. Only people 15 years or older are eligible for the CPS March Supplement and SIPP.

³ March CPS interviews begin Monday of the week containing the nineteenth. SIPP interviews begin immediately at the end of the 4-month reference period.

Current work takes a different approach. Apart from the decedent adjustment, an assumption of steady-state movement in and out of survey eligibility applies, allowing the same universe adjustments deriving benchmarks for both the March CPS and the SIPP. The assumption is that the same number of people with the same incomes enter and leave the sampling frame during the reference period and the lag. It is possible that a greater number of people normally enter institutions such as prisons and nursing homes than leave them to return to the noninstitutional setting, but any bias to the benchmarks resulting from this assumption should be very small.

Institutionalized. The adjustment for the institutional population uses the ratio of income received by institutionalized persons to the total from the 1990 decennial census.⁴ Institutionalized people are those receiving full-time care or supervision in hospitals, nursing homes, prisons, military stockades, and so forth, that do not keep a regular residence elsewhere. The March CPS and SIPP also exclude employees who live on the grounds of institutions, such as in nurses' dormitories, but such employees certainly comprise a very small number, and are not part of the adjustment. For example, in the state of Ohio, staff residents of institutions received only 0.0017 percent of total wage and salary income.

⁴ The census covers 1989 income in 8 categories and there are 16 categories in this investigation. The decennial income categories are: 1) wage and salary; 2) non-farm self-employment; 3) farm self-employment; 4) interest, dividends, and rent; 5) Social Security and Railroad Retirement; 6) public assistance: Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), and other; 7) private, federal, state and local pensions; military retirement; and disability; 8) veterans' payments, unemployment compensation, and child support. Categories 1, 2, 3, and 5 are the same as those in the March CPS and SIPP. The following assumptions apply to the adjustment ratios in the remaining categories. Category 4 covers all property income and 7 covers all pensions. Categories 6 and 8 apportion into components according to the ratios observed in unadjusted NIPA estimates for 1989. In category 6, all income of the institutionalized is SSI. In category 8, all of the income of the institutionalized is veterans' payments, and all that of the military on US post without family is unemployment compensation (presumably received before entering the military).

Decedents. A Monte Carlo simulation provides estimates of income received by people alive only for part of the reference year. The procedure applies 1996 death rates by age, sex, and race from the National Center for Health Statistics to March 1997 CPS persons.⁵ In the simulation, some respondents “die” and their 1996 incomes are aggregated. Because all March 1997 CPS persons lived for the entire 1996 calendar year, these aggregates represent 12 months of income. Deaths actually occurred throughout 1996, and if they are distributed evenly across months, then one-half of each of these aggregates approximates actual decedent income for the calendar year. The March CPS requires additional accounting for deaths occurring from January to the time of the interview. Because respondents in the SIPP are interviewed 3 times in 12 months, the decedent adjustment in the SIPP context employs one-third of the March CPS 12-month decedent ratio.

Overseas. The March CPS and SIPP obtain proxy interviews for sample persons who are overseas or otherwise absent from a household temporarily, but exclude people residing overseas who do not have a regular residence stateside. The NIPAs include some income received abroad, and estimates of these payments, including wage and salary income, property income, and unemployment compensation appear in the BEA’s State Personal Income series and can thus be subtracted directly.

The BEA estimate of property income (interest, dividends, rent and royalties) received overseas is zero. The assumption is that, because those living abroad included in the NIPAs are mostly military personnel and relatively young, their property income must be very small. Two observations are worth noting here. First,

⁵ Pairing civilian noninstitutional survey data with death rates of the whole population may cause some small bias. Under the assumption that the results of the simulation would not be substantially different for the years 1990 through 1995, the 1996 decedent ratios apply to all years in the series.

the overseas population is very similar to those living on U.S. military posts without families, in that they are primarily young, single military personnel. Second, our estimates of the wage and salary income of these two groups are nearly identical. For these reasons, the overseas adjustment equals the stateside military adjustment in property income categories. The total income resulting from this procedure, for example \$165 million in 1996, though quite small, might still be larger than what BEA analysts would accept.

The NIPAs explicitly exclude federal government program payments (such as Social Security, Supplemental Security Income, and federal employee pensions) paid outside the fifty states and the District of Columbia. Accordingly, no overseas adjustment is necessary. However, the BEA is not able to quantify state and local government transfers or private pension payments received abroad, and includes them in the NIPA estimates. Therefore, these income sources require reasonable guesses to serve as estimates of overseas payments. Overseas state and local government transfer payments are likely near zero. The ratio of overseas Social Security payments to total Social Security payments applies to state and local government employee pensions and private pensions.⁶

Military on Post in the United States without Family. The March CPS and SIPP include military personnel only who live off base or on base with their families. An adjustment is necessary to accommodate military personnel not meeting this definition. This adjustment is the ratio of income of military (and some civilian) personnel living in barracks or dormitories that house 10 or more unrelated individuals to the income of the total population, based on the 1990 decennial census. The same assumptions described in the

⁶ The NIPA estimate of state and local government pension benefits excludes payments to recipients living in the U.S. territories, but includes payments received in foreign countries. NIPA private pension benefits include both.

previous section on the institutionalized apply to the military adjustment. These ratios should approximate the income of on-base single military men and women.

Definition Adjustments⁷

Census Bureau Money Income is regularly-received cash that people can spend. The NIPAs include noncash and imputed income such as employer-provided food and lodging, the rental value of living in one's own home, the value of a free checking account, and payments for medical care. The NIPAs also include the income of fiduciaries and some nonprofit institutions that is not collected in the March CPS or the SIPP. Lump-sum (one-time) payments excluded from the March CPS and SIPP are explicitly included in the NIPA definition of income.⁸ In some categories of income such as worker's compensation and private pensions, lump sum payments are quite large.

There are a few situations, however, where it is uncertain what definition adjustments are appropriate. The surveys aim to capture all regular cash income a respondent receives, but the surveys may fail to question respondents about certain income sources. Alternatively, income sources may be mentioned specifically, but it is unrealistic to expect respondents to include all the income in their answers. In these "gray" areas such as interest and dividends paid on retirement accounts, interest on U.S. savings bonds, small corporation

⁷ Many of the definition adjustments rely on the BEA's reconciliation work which extends back to the 1970s, and are published in the NIPAs. Others come from Thae Park of the BEA, who yearly reconciles NIPA Personal Income with the Internal Revenue Service's Adjusted Gross Income. Further adjustments were developed by the author based on earlier work by Vaughan (1993) and Coder and Scoon-Rogers (1996).

⁸ Both surveys include bonus pay in earnings. The SIPP allows respondents to report "retirement lump sums" and "lump sum payments," but because the source of these payments is not specific, they must be excluded from the analysis.

income, and others, the investigation has no option other than to proceed according to informed assumptions about how respondents interpret and are able to answer questions. Readers who prefer different assumptions may use the benchmark derivation tables in Appendix I to perform separate analyses.

Definition adjustments are most complex for earnings and property income. Under wages and salary, the NIPAs classify director's, judicial, and marriage fees as other labor income and the wages of foreign professional and migratory workers as payments to the rest of the world. These earnings are part of wages and salary in the March CPS and SIPP, and are added to the benchmark.

The NIPA measure of non-farm self-employment income includes inventory valuation and capital consumption adjustments, income paid to fiduciaries, the gain of those who default on loans, the value of people's labor in building their own homes, and the income of telephone and electric cooperatives. These items are excluded from the March CPS definition of self-employment income, which is based on responses to questions about net profit from a business, and from the SIPP definition, which is based on responses to questions about income respondents drew from businesses to support themselves and their families. Therefore these items are removed from the NIPA estimates to construct the benchmark.

NIPA farm self-employment income includes a capital consumption adjustment, the rental value of owned farm housing, the value of farm products consumed on the farm, a measure of the change in farm inventories, interest received by farm corporations, and a valuation adjustment of Commodity Credit Corporation loans. The March CPS and SIPP do not measure these items, so they are subtracted from the NIPA estimates. The surveys may capture the patronage dividends received from farm cooperatives if they

are disbursed as cash (not as reduced prices). These dividends are not included in NIPA farm self-employment, so they are added to the benchmark.

For comparability, the following components are removed from NIPA personal interest income: imputed interest (containing interest on life insurance and private pension plans, and the value of free checking accounts and other free financial services), interest paid to non-profits and fiduciaries, interest on Individual Retirement Accounts (IRAs) and Keogh plans (retirement plans for the self-employed), unredeemed interest on U.S. savings bonds, and tax-exempt interest.⁹ The March CPS interview asks for interest earned on IRAs as well as savings accounts, money market funds, bonds, treasury notes, certificates of deposit (CDs), checking accounts, and any other investments that pay interest. The SIPP interview covers interest earned on checking and savings accounts, money market deposit accounts, CDs, municipal or corporate bonds, and U.S. government securities. It excludes IRAs and Keogh plans. Because of the emphasis on regularly-received cash income that people can spend in the March CPS interview, it is likely that respondents report little tax-exempt interest or interest on tax-deferred retirement accounts. Therefore interest on IRAs and Keogh plans and tax-exempt interest are removed from the NIPA measure when comparing it to March CPS and SIPP interest.

An issue arises around NIPA personal interest and mutual funds. Mutual funds other than money market mutual funds include both interest-bearing assets such as bonds and dividend-producing assets such as stocks. The NIPAs attempt to classify mutual fund earnings based on the type of asset with which the

⁹ The 1999 revision of the NIPAs also places interest and dividends paid on government employee retirement plans in personal interest. See Seskin, 1999.

payment originated. The Census Bureau surveys refer to all earnings on mutual funds (other than money market) as dividends. An estimate of the earnings of interest-bearing assets held by mutual funds is reallocated from the benchmark for interest to the benchmark for dividends.¹⁰

Nonprofit and fiduciary dividend income, IRA and Keogh dividends, and small business corporation income are removed from the NIPA measure to adjust for the definition differences. The March CPS interview asks for income from shares of stock in corporations and from mutual fund shares. The SIPP interview covers dividends from stocks or mutual fund shares, and dividends credited to a margin account or reinvested in stocks or mutual funds.

A small business corporation (S corporation) is an entity similar to a partnership, but it may have as many as 70 shareholders who may or may not work for the business. The corporation is not subject to the corporate income tax. Rather, the shareholders pay income tax on their shares of profits using Schedule E. It is possible that some respondents report small corporation income as dividends in the March CPS and SIPP, for two reasons. First, such income is regular cash and second, shares in a small business venture might be construed as stock in a corporation. It is also possible that shareholders employed by the corporation include the income in wages or self-employment income. However, neither survey mentions the income source specifically.

¹⁰ The author estimates interest on assets of mutual funds by applying the ratio of interest-bearing assets of mutual funds to all assets of mutual funds, based on Federal Reserve Board data, to the BEA's estimate of the amount of Regulated Investment Company interest in personal interest income.

Several other income categories require definition adjustments. Rent and royalties require subtracting NIPA nonprofit and fiduciary income, capital consumption adjustment, and the rental value of owner-occupied housing. Lump sum payments must be removed from NIPA estimates of all types of pension plans and most transfer programs. The NIPAs require a final adjustment for family assistance (cash benefits from Aid to Families with Dependent Children and Temporary Assistance to Needy Families). Although the 1999 revision of the NIPAs excludes them, the NIPA family assistance figures used here include adoption assistance and foster care payments. These payments are subtracted to create benchmarks for the surveys.

Results and Discussion

This section assesses the completeness of each of the March CPS and SIPP aggregates by comparing them to their respective NIPA-based benchmarks over the period 1990 to 1996 for the 16 categories of income resulting from the reconciliation. There is particular focus on categories that show compelling changes in the relationship between the surveys' aggregates and the benchmarks during the period, where an exact match data set of March CPS and Internal Revenue Service (IRS) data allows tests of explanatory hypotheses, and where current reconciliation work differs significantly from that of previous authors. Changes that occur over the period in some categories of income defy convincing explanation, and in such cases perhaps simply describing the results is useful to the reader.

The surveys' aggregate income estimates are in Table 2a (March CPS) and Table 3a (SIPP). The aggregates result from direct calculation from the Census Bureau's internal files, which have high amounts limited by the survey instrument but not by the top-coding that applies to public use data, and include both reported

and imputed income.¹¹ Not all the income covered by the surveys is contained in the aggregates, only that which is compatible with the benchmarks. Lists of the components of the aggregates from each survey are in Appendix II.

The SIPP aggregates result from a method of calculation analogous to the “sum of waves” method of Coder and Scoon-Rogers (1996). Their investigation compared three methods of calculating aggregates and numbers of income recipients: the March basis, the longitudinal basis, and the sum of waves. Because at this writing there is no March CPS look-alike or longitudinal file from the 1996 SIPP Panel, only sum of waves aggregates are possible. The 1990 estimates come from the 1990 Panel, the 1991 and 1992 estimates from the 1991 Panel, the 1993 through 1995 estimates from the 1993 Panel, and the 1996 estimates from the 1996 Panel. For some categories of income, different panels show different levels of completeness. See Appendix III for details on the method of calculating aggregates and counting recipients in the SIPP.

Before delving into the results for specific categories of income, let us consider some general categories: earnings, property income, transfers, and pensions. See Tables 2b and 3b which show respectively the March CPS and SIPP aggregates each as a percent of the NIPA-based benchmark. In earnings (the sum of job and self-employment income), the March CPS estimate remains more complete than any other general category, beginning in 1990 at 93 percent of benchmark and steadily increasing to 96 percent. SIPP earnings are at a similar level relative to the benchmark as the other general categories, beginning at 90 percent and decreasing to 88 percent.

¹¹ Except as it relates to interest income, it is beyond the scope of this paper to discuss in detail the effects of imputation.

In property income (interest, dividends, rent and royalties), the surveys' aggregates remain in the 60 to 70 percent range of completeness, but the relationship between the March CPS and SIPP aggregates reverses. March CPS has property income starting below SIPP and increasing from 63 to 71 percent of benchmark, while the SIPP aggregate begins the period above the March CPS at 65 percent of benchmark and decreases to 57 percent.

Transfer income (Social Security, worker's compensation, unemployment compensation, etc.) in the March CPS remains about the same relative to benchmark. The aggregate varies between 84 and 90 percent complete during the period. However SIPP transfer income loses some ground, decreasing from 92 percent complete in 1990 to 86 percent in 1996, a level similar to the March CPS. Pension benefits (private, military, federal, and state and local employee) in the March CPS decrease substantially during the period, falling from 89 percent of benchmark to 77 percent, while SIPP pension benefits remain at levels between 84 and 91 percent.

SIPP aggregate earnings, property income, and transfer payments have all declined relative to the benchmark during the 1990 to 1996 period. Among general categories of income, only SIPP pensions have improved relative to March CPS and perhaps slightly relative to benchmarks.

However, reciprocity statistics complicate the story. Tables 4 and 5 contain the number of recipients identified in each of the surveys, and Table 7 presents the ratio of SIPP recipients to March CPS recipients. In 1996, the number of recipients in the SIPP exceeds that of the March CPS for all categories of income except worker's compensation. For 12 of the 16 categories, this difference increases from 1990 to 1996, in

some cases dramatically. The SIPP should show higher counts of recipients because respondents have a greater number of opportunities to report receipt. The SIPP has more frequent interviews and mentions a greater number of specific income types. However, it is troubling that the SIPP aggregates are often smaller than those of the March CPS, as Table 6 shows. Why do the greater numbers of SIPP recipients fail to result also in greater aggregates? Perhaps the SIPP fails to elicit complete responses from recipients it identifies. On the other hand, perhaps the explanation lies with the March CPS. Respondents may overestimate the number of months they received income during the previous year, or include lump sum payments that the more detailed SIPP interview more successfully disallows.

Earnings

Wages and salary. Table 2b shows the trend in the completeness of the March CPS estimates over the period 1990 to 1996. The wages and salary figures are rather conspicuous from 1994 forward in that they exceed the benchmark by more than 1 percent, compared with 4 percent shortfalls during 1990 to 1992. Below is discussion of several possible explanations: changes to the amount of income respondents can report, automation of the periodicity questions, respondents extrapolating last year's wages from current salary, and increased rounding of income amounts. Following that discussion is a comparison of March CPS wages to matched tax returns.

The limits on amounts of wage and salary income the March CPS collects changed in 1994, from \$499,997 to \$2,099,999 when the interview moved from a paper and pencil instrument to a computer-assisted instrument. This change should enhance the aggregate. How much of the increase relative to the benchmark does the change explain? Reimposing the old limits on the 1996 data results in a drop between 2.1 and 2.7

percentage points relative to the independent estimate.¹² The upper bound of the effect for 1993 through 1995 is 1.9, 2.2, and 2.1 percentage points. Therefore the higher limits do increase the aggregate, but nevertheless leave 3 or more percentage points of the increase relative to the benchmark unexplained.

The computer-assisted interview may enhance the aggregate in other ways. The ratio increases rather suddenly from about 96 percent during 1990, 1991, and 1992 to almost 100 percent in 1993, the first income year affected by the computerized questionnaire. For example, the new instrument automates the process of identifying periodicity, the interval of time covered by the income amount that a respondent reports. The instrument asks if the amount given was a weekly, biweekly, monthly, or annual amount, and then how many times the respondent received that amount. This process was not automatic with the paper instrument. Perhaps before the computerized instrument, respondents misreported periodicity.

March CPS respondents may report current salary, which in a growing economy is probably higher than the previous year's. This would inflate the aggregate. A test of this hypothesis is possible using data from the Basic CPS, the monthly labor force portion of the survey, and the March CPS and tax return exact match data set. In the Basic CPS, one-quarter of the sample is asked what their earnings were the week before the interview. The number of respondents who report their last year's wages equaling the product of their last

¹² Respondents can now report earnings from longest job up to \$1,000,000; other wage and salary income up to \$1,000,000; and other income up to \$99,999. Previously the limits were, respectively, \$299,999, \$99,999, and \$99,999. In the vast majority of cases, respondents report wages only in earnings from longest job and in other income. The data available to the author combines other income either with earnings from longest job or with other wage and salary income; therefore it is not possible to quantify more precisely the effect of the limits. Note that the Census Bureau lowers (top-codes) the high amounts in the micro-data it releases to the public to ensure respondent confidentiality.

week's wages times the number of weeks they worked last year increases from 10.6 percent to 23.7 percent from 1990 to 1996.¹³

This increase is substantial, but do these wage-extrapolators necessarily over-report? Based on matched tax returns, they do not.¹⁴ The ratio of March CPS wages to tax return wages among the extrapolators is the same as the ratio among non-extrapolators, 1.06. Therefore the data do not support the hypothesis that reporting current wages causes overestimation, and may in fact imply that extrapolating from current wages is as accurate as respondents' other reporting strategies.

Inspecting the distribution of March CPS wages reveals that it contains an increasing incidence of rounding. From 1990 to 1996, amounts that are multiples of \$5,000 increase from 19.8 percent to 25.1 percent of all cases with wages. Rounding to \$10,000 increments increases from 10.7 to 14.2 percent. However, comparing against tax returns reveals that on average, rounding occurs in the downward direction. Among matched tax units with fully reported March CPS wages and tax return wages, the ratio of March CPS wages (of both filers on joint returns) to tax return wages is 1.03 for those with March CPS amounts rounded to \$5,000 increments and 1.06 for those with unrounded amounts. Rounding appears to work against the survey's overestimate of wages.

¹³ These figures draw from the universe of those in the quarter-sample who were asked for last week's wages and who had fully reported last year's earnings from the longest job.

¹⁴ The universe for this comparison is further restricted by excluding cases matched to joint returns where one filer extrapolated March CPS wages and the other did not.

Tax returns provide an alternative mode of evaluating the quality of the March CPS wage data. However, there are universe and income definition differences that may preclude strong conclusions. Tax returns exclude non-filers, that is, those who are not required to file a tax return or who illegally fail to file. Tax returns exclude deferred wages, that is, wages that employees deposit directly into retirement plans such as 401(k)s and thrift savings plans. They also exclude income that filers conceal in order to reduce their tax burden. The March CPS is designed to include non-filers, deferred wages, and wages from the underground economy.

A separate issue stems from the existence of joint tax returns. Such returns do not distinguish the incomes of the two filers and contain only the total. For this reason the following analysis is based on non-joint returns, and joint returns only where each filer matches a March CPS person. Further restricting the universe to those cases with fully reported wages, where no part of March CPS wages is imputed, makes the comparison as clean as possible.¹⁵

How closely do March CPS wages and tax return wages correspond? Figure 1 presents the percent of matched tax units in specified intervals of the IRS wage distribution that have March CPS wages falling within different tolerances of the IRS wages. For example, among tax units with IRS wages between \$20,000 and \$30,000, about 80 percent have March CPS wages within 25 percent of IRS wages. In the same interval, slightly less than 40 percent have March CPS wages within 5 percent of IRS wages. The overall pattern is

¹⁵ The exact match data set contains 16,727 joint tax returns and 23,168 non-joint returns totaling 39,895 matched tax units. Of these, 28,213 have fully reported (non-imputed) March CPS wages. In the case of joint returns, fully reported means neither filer has any imputed wages. “Noise” remains in the exact match, notably in the form of some late returns that cover tax years other than 1996. Such returns are not distinguishable from the 1996 returns.

the same regardless of the degree of tolerance around IRS wages, namely, that correspondence between the data sources is worst at the tails of the income distribution and best in the middle. Tellingly, this correspondence seems to worsen quite suddenly at the high end.

Do discrepant tax units have March CPS wages above or below IRS wages? Figure 2 tabulates the total amount of the discrepancies in the same IRS wage intervals as Figure 1 adding an interval for tax returns with zero wages. Overall, there are more March CPS dollars above IRS wages than below. This pattern should result from the deferred wages contained in the March CPS. The survey nets excess wages in all intervals except the highest, where the relationship reverses dramatically and the survey falls short of matched tax returns.¹⁶ The large amount of dollars exceeding IRS wages at the low end of the distribution may be evidence not only of deferred wages but of the underground economy.

These results demonstrate several things. First, March CPS respondents appear to report deferred wages not appearing on tax returns. Second, relative to tax returns, the survey shows a net shortfall only at the high end of the income distribution. Third, it may capture wages from the underground economy. Finally, the exact match shows that the relationship between March CPS wages and administrative data is more complex than the simple comparison of the survey's aggregate to benchmark reveals. Both over-reporting and under-reporting occur in the survey. The strategy of inspecting the aggregate relative to an administrative benchmark belies more complex processes that operate beneath the surface between survey responses and

¹⁶ The survey's limits on wage amounts do not affect this result. All the tax units in the highest interval have both tax return and March CPS wages less than \$1,000,000.

objective truth. Indeed, Moore et al.'s (1999) review of research comparing income survey responses to administrative data finds similar complexities in categories of income besides wages.

The SIPP estimate of wages and salary remains at the same level relative to benchmark throughout the period, around 90 percent. The small increase in 1996 to 91 percent of benchmark is perhaps disappointing because the redesign of the SIPP for the 1996 Panel adds two new types of wages and salary income, moonlighting and severance pay.¹⁷ The computerized instrument also begins with the 1996 Panel and attempts to allow SIPP respondents more flexibility to report weekly, biweekly, monthly, or pro-rated annual amounts.¹⁸

Although there are extensive checks in the SIPP instrument to prevent response errors, the usual thinking about the difference in March CPS and SIPP estimates is that the shorter reference period of the SIPP makes its respondents more likely to report take-home pay instead of gross pay, fail to report pay increases or bonuses, or omit third or fifth paychecks that occur in a month. How damaging can these response errors be on the aggregate? Omitting extra paychecks and pay increases would have to be extremely pervasive to affect the aggregate greatly. The entire sample of SIPP respondents would have to report wages at the rate of 48 weeks per 52 weeks actually worked AND fail to include a pay raise equal to the 1996 Consumer Price Index to cause the 1996 shortfall of 9 percent.

¹⁷ The new income types seem mainly to cause respondents to classify income differently. In 1995, incidental and casual earnings amount to 0.61 percent of total wage and salary income. In 1996, incidental and casual earnings plus the new income sources comprise 0.67 percent of the total.

¹⁸ A further redesign of the SIPP instrument is underway and will be implemented in 2004.

On the other hand, only 30 percent of SIPP respondents would have to report 70 percent of their true wages (a hypothetical figure for take-home pay) to have the same effect. Coder (1988) compares monthly wage data from the 1984 SIPP Panel to wage data from an annual roundup interview conducted in May through August following the reference year. The analysis covers fully-interviewed respondents who had one employer for the whole year. Those reporting fully have monthly wages summing to 6.8 percent lower than the annual wages they report in the roundup interview the following year. If this pattern holds generally for all wage earners, it would explain a large portion of the shortfall. Omitted bonus pay, which may comprise a larger portion of wages at the high end of the distribution, and other response errors could perhaps account for the rest of the discrepancy.

Comparing the two surveys' size distributions may be informative. Figure 3 shows the total number of wage dollars collected in the March CPS and SIPP for 1990 through 1996 by income range. Strikingly, there are far greater aggregate dollars below \$25,000, and far fewer aggregate dollars above \$25,000 identified in SIPP relative to March CPS. The SIPP seems to favor low wage amounts and miss high wage amounts. Can the different distributions be solely due to errors of omission by low-wage and part-year workers in the March CPS and high-wage respondents in the SIPP?

It is possible that people with high income are less apt to participate in the SIPP than the CPS because the burden on respondents is higher in the SIPP. Selection bias could result if sample persons who refuse the initial interview and are permanently dropped from the survey are recipients of higher amounts of income than those who agree to participate. Further bias may result from dropping respondents who refuse two consecutive wave interviews. However, a simple test for differential attrition, comparing those who leave

the SIPP 1996 Panel by the third wave because of refusal or unlocatability to those who remain, shows that “attriters” have lower, not higher mean wages. Their wages in Wave 1 average \$5,626, substantially lower than the mean of \$8,878 for respondents who remain in the sample.

Unless sample persons who refuse the survey from the start are very different from those who leave later in the panel, it would seem that selection bias is not operating. However, the SIPP’s pattern of having lower aggregate income but greater number of recipients than the March CPS --which occurs for many income categories in certain years-- persists throughout the period for wages.¹⁹ This pattern motivates further investigation of the hypothesis that the higher response burden of the SIPP interviews differentially dissuades higher wage earners from participating.

Further research in this area is needed. Checking SIPP data against records such as tax returns as done with the March CPS would facilitate unraveling the puzzle. SIPP wage amounts showing shortfalls relative to matched tax return amounts would be evidence that respondents report take-home rather than gross pay. Fewer high wage earners appearing in the SIPP than in the March CPS based on a record check would suggest that the deficit of high wage amounts in the SIPP relative to the March CPS is not due to response omissions but to differential selection in the SIPP or March CPS sample.

Self-employment. Self-employment income is one of the most problematic categories of income to measure. The BEA depends largely on tax returns as a data source, where recipients have an incentive to hide income

¹⁹ This is true for only one other category of income, interest, which one would also expect to be sensitive to the effects of high income sample persons.

to avoid taxes. The BEA estimates the amount of under-reporting on tax returns and includes this adjustment in the NIPA measure of self-employment.²⁰ The adjustment is somewhat suspect, however. It is based on a study of taxpayer compliance covering 1989 income and tabulations of 1990 income from an exact match of the March 1991 CPS and tax returns. Therefore it may be out of date by 1996. For example, if reporting of self-employment income to the IRS improved during the period, the BEA's under-reporting adjustment would be too large as a result.

Several points are worth noting from Figure 4. First, both surveys diverge from the adjusted NIPA estimate.²¹ Unless both surveys have experienced increasing response error, such divergence supports the hypothesis that the NIPAs increasingly overstate self-employment income. Second, the March CPS converges on the IRS measure. Therefore, either that tax compliance improved, or reporting in the March CPS worsened relative to earlier years, or some other factors are at work.

Third, the SIPP aggregate shows no consistent change relative to the IRS data. However, there is an income definition problem here. The SIPP definition of self-employment income --the amounts drawn from a business for supporting oneself and one's family-- makes its aggregate inconsistent with the other measures which relate to net profit.

²⁰ Similar respondent reticence may exist in the March CPS and SIPP as well, but the Census Bureau makes no adjustment analogous to the BEA's.

²¹ The words "adjusted NIPA estimate" or "NIPA-based estimate" substitute for "benchmark" where there is a large degree of uncertainty about comparability to the surveys.

Despite the inconsistent definitions of income, the numbers of recipients in the two surveys are comparable to each other. As Table 7 shows, in 1996, the number of people identifying themselves as self-employed in the SIPP is 41 percent higher than in the March CPS, a large increase over previous years when the difference was only 10 or 20 percent more recipients.

Property Income

As outlined earlier, the definition differences between property income as measured in the NIPAs and the Census Bureau surveys are substantial. In particular, the growth of mutual funds and money market funds in recent years causes greater uncertainty developing appropriate benchmarks.²² Moreover, the starting points for each of the interest and dividends benchmarks, NIPA personal interest income and NIPA personal dividend income, are residuals. These items are each the sum of all payments minus estimates of amounts paid to business and government. Such methodology weakens somewhat the power of the comparison between the NIPA and Census Bureau measures despite all efforts to reconcile them.

Previous authors use tax return information as alternative independent estimates of interest and dividends. However, as mentioned earlier, tax returns classify money market earnings as dividends. While it is possible to distinguish money market accounts from other sources in the SIPP, the March CPS combines their earnings with those of other interest-bearing assets, disallowing a valid comparison. Moreover, tax returns exclude the universe of nonfilers.

²² According to the Federal Reserve Board, shares of money market funds (a subset of mutual funds) held by the household sector have doubled between 1990 and 1998. Shares of other mutual funds have quintupled.

Perhaps combining interest and dividends and comparing the sum to the combined NIPA-based estimate is appropriate in these circumstances. This at least eliminates the administrative inconsistency and respondent confusion around interest and dividends. The March CPS captures between 60 percent and 62 percent of the combined NIPA-based estimate in 1990 through 1992. Beginning in 1993, the survey captures between 71 and 76 percent. Except for an anomaly in 1993, the SIPP aggregate falls steadily from 60 percent of the combined NIPA-based estimate in 1990 to 51 percent in 1996.

The March CPS's sharp increase in 1993 deserves further consideration. Wages also increase dramatically relative to benchmark in 1993. Does the new sample design that begins with the March 1994 CPS contain more respondents with high income and wealth than the previous sample?

Interest. Proceeding with the NIPA-based estimate, one finds the March CPS performing substantially better in interest income. The aggregate increases from 67 percent in 1990 to 84 percent in 1996.

Interest, however, receives special treatment in the imputation process of the March CPS. Comparing imputed and reported amounts to matched tax returns, Charles Nelson (1985) of the Census Bureau discovered that the shortfall of amounts imputed by the usual hot-deck procedure was systematically greater than the shortfall of amounts reported by respondents. For this reason, an enhanced imputation procedure is in place that attempts to increase the imputed amounts to a level at which the ratio of imputed amounts to tax return amounts approximates the ratio of reported amounts to tax return amounts. If reporting patterns have changed, this procedure could be responsible for the increase in aggregate interest relative to the adjusted NIPA measure.

Among cases that had both March 1983 CPS interest and 1982 tax return interest, reported amounts totaled 76 percent of matched tax return interest, and hot-deck-imputed interest totaled 47 percent of matched tax return amounts. The factors applied to increase the imputed amounts are based on age, amount of income other than interest, and marital status, but on average should be the ratio of these two figures, 76/47 or 1.62. If response patterns changed since 1983, the March 1997 exact match data set will show a different result.

The evidence does not show a change in the suspected direction. Interest amounts reported in the March 1997 CPS total 113 percent of matched tax return amounts, and the imputed amounts (after removing the enhancement) total 63 percent.²³ The ratio of these figures is 1.80, higher than the factor of 1.62 found in the March 1983 CPS exact match.

Another way to discern the effects of the enhancement is to remove it and then compare the unenhanced aggregates to the adjusted NIPA estimate. With the enhancement, the aggregate increases by 17 percentage points over the 1990 to 1996 period, from 67 to 84 percent of the adjusted NIPA estimate. Without the enhancement, the aggregate increases only by 10 percentage points, from 58 to 68 percent. The increase without the enhancement is 7 percentage points less than with it. These results make it unclear whether the enhancement contributes to the increase in aggregate interest relative to the independent estimate.

The SIPP's trend in interest income is unfortunately downward. Aggregate interest in 1996, at 50 percent of the NIPA-based estimate, is moderately lower than in 1990 when it was 57 percent. Note two facts here.

²³ The March CPS reported amounts may exceed the matched tax return amounts because tax returns classify money market mutual fund earnings as dividends, not interest. An update to the enhancement procedure is currently underway.

First, the SIPP aggregate is more consistent over time than the March CPS relative to the adjusted NIPA measure; second, the SIPP's count of recipients is consistently between 116 and 122 percent of the March CPS. These points suggest that the greater completeness of the March CPS aggregate in 1996 relates to something about the March CPS amounts.

Dividends. March CPS aggregate dividends increase relative to the adjusted NIPA estimate from 41 percent in 1990 to 59 percent in 1996. If the benchmark is reliable, it is truly a mystery why the aggregate improves, although the large increase in both interest and dividends in 1993 makes one suspect something at work in the new sample design. Another possibility is that the survey captures some portion of growing small business corporation income.²⁴ Restoring this component of NIPA dividends eliminates the increase, flattening the ratio of the March CPS to the NIPA-based estimate to between 31 and 35 percent over the period.

As a percent of the NIPA-based estimate, the SIPP 1996 Panel performs similarly to the 1991 Panel, capturing about 50 percent of dividends. The 1990, 1994, and 1995 aggregates vary from 62 to 66 percent. An anomaly occurs in 1993 when the ratio is 96 percent. A tabulation of the high end of dividend amounts in the first and second waves of the 1993 Panel suggests that this aberration is a result of outliers serving as donors in the hot deck for many item nonrespondents, inflating the aggregate substantially. The 1992 SIPP Panel has similarly high aggregate dividends in 1993, and a similar proportion of imputed dollars at the high end of the size distribution.

²⁴ Small business corporation income is increasing. It comprises 25 percent of NIPA dividends in 1990 and 42 percent in 1996.

Rent and royalties. As mentioned earlier, the NIPA estimate of rent varies widely with the annual and comprehensive revisions. Reconciling the estimate of rental income from the 1992 revision produces a “benchmark” of \$35 billion for 1990. Data from the 1998 revision results in \$45 billion for the same year. Perhaps it is unwise to make the comparisons attempted here. Nonetheless, the adjusted NIPA, March CPS, and SIPP estimates are in the same ballpark. The March CPS aggregate varies from 59 to 85 percent of the adjusted NIPA estimate. The SIPP aggregate includes mortgage interest (as does the adjusted NIPA estimate) and varies from 69 to 113 percent of the adjusted NIPA estimate over the period.

Transfer Payments

Social Security, Railroad Retirement, and Supplemental Security Income. Although some respondents may confuse Social Security with Supplemental Security Income (SSI), the March CPS consistently performs well against the benchmark for Social Security and Railroad Retirement, capturing around 90 percent of the independent estimate each year from 1990 to 1996. However, the ratios during 1990 through 1993 average 88 percent, and 92 percent during 1994 through 1996. Including follow-up questions in the Social Security section of the computerized instrument may have reduced the incidence of respondents excluding the medicare deduction and reporting monthly amounts as annual amounts. The ratio of Supplemental Security Income (the sum of federal and state SSI) to the benchmark remains fairly consistent, in the range of 76 to 85 percent.

In the SIPP, the Social Security and Railroad Retirement aggregate drops gradually to 88 percent of benchmark in 1996 from 97 percent in 1990. It is tempting to attribute this change to respondent difficulty distinguishing Social Security from SSI, because the SSI aggregate increases to nearly 100 percent of

benchmark in 1996 from 83 or 86 percent in previous years. However, there is no reason to expect respondents suddenly to misclassify more income in 1996 than in previous years, and it appears that there is a more general trend of poorer performance by the SIPP recently measuring Social Security and Railroad Retirement. It is likely that some level of misclassification occurs, but the increase in the SSI aggregate to 101 percent of benchmark in 1996 must be due to including more explicit questions about payments received for children in the 1996 Panel questionnaire.

Family assistance and other cash welfare.²⁵ The ratio of March CPS family assistance to the adjusted NIPA measure drops from 74 to 68 percent. Although the percent of benefits captured by the March CPS declines in the 1990s, the survey's measure of family assistance follows nearly the same pattern as administrative records, the aggregate and recipient count increasing until 1993 and subsequently decreasing.²⁶ The ratio of other cash welfare to benchmark varies from 78 to 105 percent. The other cash welfare aggregate should be more erratic because the estimate is based on a small number of respondents, but it generally stays in the same range as the benchmark.

One compelling explanation of the increasing shortfall of March CPS family assistance relates to declining welfare caseloads, a trend that began in 1995 according to administrative records. Respondents who do not

²⁵ The NIPA line item "family assistance" is the basis for this benchmark. It includes Aid to Families with Dependent Children (AFDC) and in 1996, programs administered under the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). Accordingly, this paper refers to AFDC and Temporary Assistance for Needy Families (TANF) collectively as family assistance. The NIPA basis for other cash welfare is "general assistance," which encompasses state programs similar in structure to family assistance. Neither NIPA item includes any non-cash benefits.

²⁶ Caseload data (the administrative count of recipients) comes from an unpublished memo by the Office of Management and Budget (OMB).

currently receive benefits are less likely to remember having received them during the previous year. One can infer from this that while caseloads decline, there are a greater number of recent recipients whose benefits have ceased and faded from memory by the time of the March CPS interview. The fact that the March CPS indicates 1994 as the first year of a recipient decrease, and caseload data indicates 1995, might support the hypothesis. The March CPS-based decrease in 1994 derives from interviews that took place in 1995.

SIPP aggregate family assistance is consistent, varying moderately from a low of 70 percent of benchmark in 1992 to 76 percent in 1990, 1991, and 1996, except during 1993 through 1995 when it increases to around 88 percent. The higher ratio in 1993 through 1995 suggests a peculiarity in the 1993 SIPP Panel from which the estimates for these years derive. The lack of a parallel increase in the shortfall of the SIPP also lends support to the declining caseloads explanation of the trend in the March CPS, because the greater frequency of SIPP interviews and shorter reference period should prevent large data losses due to the failure of respondents to recall receipt. The SIPP estimate of other cash welfare is erratic relative to benchmark, as is the March CPS estimate. The overestimate in 1996, 114 percent of benchmark, suggests that some respondents may have misclassified AFDC waiver program or TANF benefits, which were not mentioned by name in the SIPP interview, as other cash welfare.

Unemployment compensation. Completeness of the March CPS estimates in this category varies from 73 to 91 percent complete between 1990 and 1996. Strangely, the SIPP aggregate is often smaller than that of the March CPS, amounting to only 85 percent of the March CPS estimate and 69 percent of benchmark in 1996. One would expect the SIPP to capture more unemployment income than the March CPS because the

SIPP should be less prone to the recall problems associated with this temporary, short-term income source. However, the SIPP does identify more recipients every year in the series.

Worker's compensation. The NIPAs provide estimates of worker's compensation benefits from private, state and local, and federal government sources including black lung payments. Worker's compensation benefits include only payments to workers disabled from a work-related injury or illness and to dependents of workers whose deaths resulted from such injury or illness. They exclude payments from disability insurance and other insurance not tied to employment.

The NIPA measures contain noncash and lump sum payments that are quite extensive. To the best of this author's knowledge, an accurate method of identifying the magnitude of these payments does not exist. Coder (1996) uses information from Traveler's Insurance and the Social Security Administration, but this method is not possible to replicate because the Social Security Administration discontinued its series on worker's compensation.²⁷

Applying Coder's ratios to the NIPA figures may approximate appropriate benchmarks, but given the admittedly rough nature of his method and possible changes in the characteristics of worker's compensation payments since his investigation, they are not as robust as the benchmarks for other income sources. It would

²⁷ Coder estimates that 40.9 percent of the Social Security Administration's measure of total worker's compensation in 1990 comprises medical and hospitalization payments. To find the magnitude of lump sum payments, he tabulates the amount of cash awards and number of claims by type of benefit (death, permanent, partial, major or minor disability) with the approximate corresponding distributions of lump sums and periodic payments, estimating they comprise 22.2 percent of the total. Payments to people outside the survey universe he estimates amount to 2 percent of the cash awards.

behoove future research to develop a procedure to remove the noncash and lump sum worker's compensation payments in a more meaningful way.

There is a gradual decrease in the ratio of the March CPS aggregate to the NIPA-based estimate, from 90 percent in 1990 to 63 percent in 1996. Unless the characteristics of payments have changed greatly in recent years, the survey's shortfall seems to increase. The SIPP's aggregates seem to show some sensitivity to the panel from which they derive. The yearly ratios are above 60 percent in the 1990, 1991, and 1996 Panels, but consistently below 60 percent in the 1993 Panel. Noticeably, the SIPP aggregate is lower than the March CPS every year except 1996. Because lump sum worker's compensation payments comprise a large part of the total, one might speculate that the higher March CPS aggregate contains some lump sums that the detailed SIPP interview more successfully disallows.

Veterans' payments and military retirement. The March CPS shows an overall increase in completeness of veterans' payments (from 74 percent complete in 1990 to a high of 95 percent in 1995) and a steady decrease in completeness of military retirement (from 86 percent in 1990 to 58 percent in 1996).

Vaughan (1993) and Coder and Scoon-Rogers (1996) note respondents' tendency to confuse the two income sources. Combining the two income types into one category, one can test whether the response error of misclassification explains the trends. Indeed, the March CPS consistently captures approximately 80 percent of the combined benchmark every year from 1990 through 1995. The ratio drops to 70 percent in 1996; this results primarily from the large drop in military retirement from 71 percent of benchmark in 1995 to 58 percent in 1996.

Placement of the questions in the March CPS instrument may play a role here. Questions about veterans' payments appear alone, separately from other sources of income. In contrast, military retirement appears later in the questionnaire as one of several possible sources of disability, survivor's, or retirement income. Perhaps respondents tend to report income at their earliest opportunity in the interview. The increase in rounding and extrapolating of earnings discussed earlier suggests that respondents have grown less precise answering questions. Given the confusion between veterans' payments and military retirement, the placement of the questions in the survey, and the possibility that growing respondent imprecision extends to misidentifying sources of income may together may form a credible explanation of the increasing completeness of veterans' payments and decreasing completeness of military retirement.

Trends in the SIPP are dissimilar to those of the March CPS. Compared to trends in the March CPS, the SIPP's aggregates fall within a small range relative to benchmark. Veterans' payments decrease from 83 percent complete in 1990 to 73 percent in 1996, while military retirement remains between 83 and 92 percent complete during 1990 through 1995. An aberration seems to occur in 1996 when SIPP military retirement exceeds the benchmark slightly. The decrease in federal employee retirement in the same year suggests there may be confusion here with military retirement as well.

The dissimilarity in trends suggests comparing the structure of the questions in the two surveys. The SIPP establishes the respondent's veteran status before asking about veterans' payments. In the March CPS, respondents are simply asked if anyone in the household received payments. In the labor force portion of the SIPP, respondents are first asked if they ever retired from a job or business and then whether they received any retirement (including military retirement) income. In the March CPS, respondents are asked

directly if they received any retirement income. Judging by these facts and the greater consistency of its aggregates relative to benchmark, one might conclude that the structure of the SIPP questionnaire is superior in allowing respondents to distinguish veterans' payments and military retirement.

Pensions

Private pensions. Private sector pension plans introduce some interesting complexities to the reconciliation. Woods (1996) presents a summary of the components of pensions and the extent to which each appears in the NIPAs and the March CPS. Both the NIPAs and the March CPS include income from defined benefit (DB) plans, employees' Keogh plans, and non-qualified employer plans. These components are more or less compatible across measures. However, defined contribution (DC) plans, business owners' Keogh plans, Individual Retirement Accounts (IRAs), Simplified Employee Pensions (SEPs), and individual annuity contracts require special consideration.

Two issues stem from defined contribution plans. First, these plans, which comprise an increasingly large portion of private pension distributions, pay benefits primarily in the form of lump sums. These payments are explicitly part of the NIPA but not the Money Income concept. Here, as in Coder and Scoon-Rogers (1996), the ratio of DC plan payments to the total of DC and DB plans (according to the most current data from the Department of Labor) estimates the magnitude of these payments. A good deal of uncertainty exists about the accuracy of this method, but it is easily replicable from year to year and helps make the benchmarking process consistent. Moreover, to derive a compatible lump-sum estimate from another source, such as tax returns, would be a large research project unto itself and might not overcome other uncertainties in this income category.

Second, recipients “roll over” some lump sums into new pension plans either directly, without actual cash receipt, or indirectly by subsequent purchase or reinvestment. The BEA is unable to make the necessary distinctions in the source data that would identify these payments, and they remain in the NIPA estimate.²⁸ Including rollovers actually results in counting income a second time when the new pension plan pays benefits. This limitation biases the NIPA estimates upward to an unknown degree.

Besides defined contribution plans, the NIPAs and the March CPS also treat business owners’ Keogh plans, IRAs, SEPs (408[k]s), and individual annuity contracts differently. These plans are not part of the NIPA measure of pension benefits, because they are more akin to personal savings accounts than private pension plans in that they are elective and do not require contributions from employers. For the same reason, the BEA would like to exclude 401(k)s that employees fund entirely by themselves, but is unable to do so.

In sum, the NIPA private pension estimate includes no annuities, payments from paid-up life insurance, IRAs, or SEPs, but does include employees’ Keoghs and all 401(k)s. Is it possible to construct March CPS and SIPP aggregates compatible with this measure?

With the March CPS, disregarding annuities and paid-up life insurance is possible where income is classified as such, but the survey does not distinguish IRAs, Keoghs, and 401(k)s, combining them into “retirement

²⁸ The source data is primarily the Department of Labor’s Form 5500 and data from the American Council of Life Insurance (ACLI). The BEA defines private pension benefit payments as those related to employment and coming from funded or qualified, nonelective, deferred compensation plans or from elective deferral plans that entail employers’ matching contributions. However, the BEA is not entirely able to restrict its private pension benefits series to payments that meet this definition. See Park, 1992.

income, Keogh or 401(k)” or “retirement income, IRA, Keogh, or unknown source.” Income from these sources and from SEPs might also appear in “other” survivor or disability income. The limitations of the classification system appear to preclude constructing a March CPS aggregate analogous to the NIPA measure.

Perhaps a solution to this dilemma is to theorize a range of possible compatible values of the March CPS aggregate. For the low estimate, eliminate all categories except those that are most assuredly within the coverage of the NIPAs, and at the high end, aggregate all categories that could possibly fall within NIPA coverage (see Appendix II for a list of the components in each aggregate). For 1996, this strategy results in a lower bound of \$91.3 billion and a higher bound of \$103.7 billion. With the lump sum estimation method described above, these aggregates amount to 93 and 105 percent of benchmark. Tables 2 through 7 all reflect the more restrictive definition.

Similar logic for the SIPP indicates including in its private pensions aggregate only “pension from company or union,” and excluding “retirement, disability, or survivor benefit,” “draw from IRA/Keogh,” and “income from a paid-up life insurance policy or annuity.” The resulting SIPP estimates within each panel are quite consistent with the adjusted NIPA estimate, although there are moderate differences between panels. The estimate from the 1990 Panel amounts to 92 percent, the estimates from the 1991 Panel are around 86 percent, those from the 1993 Panel range around 100 percent, and the 1996 Panel captures 98 percent.

It may seem peculiar that the March CPS and SIPP measures of private pensions are at such high levels against the NIPA-based estimates, while pensions from government sources amount to only 60 or 80 percent.

There are several reasons why this might be. First, lump sums comprise a very small amount of payments from government pensions plans, and it is only the instructions to the interviewers, not the content of the questions, that disallow the large private pension lump sums from the money income concept. Therefore it is reasonable to expect some reporting of private pension lump sums despite intentions. Second, due to its rough nature, the estimation method may overstate lump sum payments. Finally, it is possible that respondents who are uncertain of the source of their retirement income misclassify it into private pension categories.

Federal, state, and local government employee pensions.²⁹ The completeness of March CPS federal employee pensions remains at approximately the same level throughout the period, around 80 percent of benchmark. State and local employee pensions decrease gradually from 79 percent of benchmark in 1990 to 59 percent in 1996. It is disheartening that state and local pensions fall to such a low level relative to benchmark. One can speculate on the cause, but no compelling explanation emerges.

In the SIPP, federal employee pensions vary between 76 percent and 90 percent complete, with the 1991 and 1993 panels performing better than the 1990 and 1996 panels. SIPP state and local government employee pensions are at a low of 68 percent complete in 1996. During 1990 through 1995 the aggregate is between 74 and 84 percent of benchmark. It is peculiar that both the March CPS and SIPP suffer increasing shortfalls in state and local pensions, and there is no obvious reason why this should occur while private and federal government employee pensions remain relatively stable.

²⁹ See the section on veterans' payments for a discussion of military retirement.

Conclusions

Several important conclusions follow this analysis. In the March CPS, wage and salary income exceeds the benchmark measure since 1994, and although the automated questionnaire and sample design are strong explanatory candidates, the exact cause remains unclear. Respondents extrapolating last year's wages from current wages does not appear to contribute to overestimation. Interest and dividends in the March CPS also rise relative to independent estimates, but the survey seems to have increasing difficulty with family assistance, military retirement, and state and local pensions.

Redesigning the SIPP for the 1996 Panel does not seem to improve its income estimates. Although the survey continues to identify a greater number of recipients than the March CPS in many income categories, SIPP wages remain at the same level next to benchmark, while interest, dividends, and Social Security fall relative to independent estimates during the period ending in 1996. In some categories of income, SIPP estimates are less consistent than those of the March CPS and even contain occasional aberrations, effects one would expect from the SIPP's smaller sample size. The persistence of the SIPP's pattern of showing higher numbers of recipients and lower income aggregates poses a real challenge to income measurement in the United States, and may indicate that there are trade-offs inherent in using a shorter recall period, more numerous and detailed questions, and a longitudinal design.

Analysis of tax returns exactly matched to the March CPS reveals that both over-reporting and under-reporting occur in the survey, and suggests that comparing aggregate income to benchmarks may be an overly simplistic method of measuring the quality of the data. Use of matched administrative data such as earnings records of the Social Security Administration promises to address some of the questions the

benchmark comparisons raise. In particular, the concerns that SIPP respondents may report take-home pay instead of gross pay and that there may be differential selection of respondents into the surveys further motivate checking survey responses against administrative records.

**Table 1. Overview of Income Concepts:
National Income and Product Accounts Personal Income and Household Survey Money Income**

Sources of Income In Both Personal Income and Money Income	In Personal Income but not Money Income	In Money Income but not Personal Income
1 Wages	employer-provided food and lodging	
2 Farm and nonfarm self-employment	capital consumption adjustments inventory valuation adjustment construction adjustment defaulter's gain and bad debt expense income of cooperatives farm products consumed on farm change in farm inventories interest received by farm corporations	patronage dividends from farm cooperatives
3 Interest	interest on life insurance interest on private pension plans value of free financial services interest received by fiduciaries and nonprofits unredeemed interest on US savings bonds	
4 Dividends	IRA and Keogh dividends dividends received by fiduciaries and nonprofits small business corporation income	
5 Rent and royalties	rental value of owner-occupied housing rent received by fiduciaries and nonprofits capital consumption adjustment	
6 Social Security and Railroad Retirement		
7 Federal and state Supplemental Security Income		
8 Family assistance	adoption assistance	
9 Other cash welfare		
10 Federal and state unemployment compensation	employer contributions to private supplemental unemployment compensation funds	benefits from private supplemental unemployment compensation funds /2
11 Federal and state worker's compensation	employer contributions to private worker's compensation funds	benefits from private worker's compensation funds /2
12 Veterans' benefits		
13 [Private pensions] /1	employer contributions to private pension and profit-sharing funds	benefits from private pension and profit-sharing funds /2
14 Federal employee pensions		
15 Military retirement		
16 State and local government employee pensions		

Estates and trusts		
Education assistance		
Foster child care payments		
	federal hospital and medical insurance benefits	cash benefits from accident and disability insurance
	state public assistance medical care	state temporary sickness or disability insurance payments
	pension benefit guaranty	payments from annuities and paid-up life insurance
	food stamps	draw or regular payments from IRA or Keogh
	direct relief	child support
	earned income tax credit	alimony
	energy assistance	assistance from friends and relatives
	business transfer payments to persons	other cash income
	lump sum payments	personal contributions to social insurance
Populations Covered in Both Personal Income and Money Income	In Personal Income but not Money Income	In Money Income but not Personal Income
Civilian noninstitutionalized	institutionalized decedents overseas military on US post without family children emigrants	foreign professional and migratory workers

/1 The Personal Income and Money Income concepts of private pensions are mutually exclusive. The same is true of government pensions following the 1999 comprehensive revision of the NIPAs.

/2 These items are not part of Personal Income but do appear elsewhere in the NIPAs.

Table 2a. March CPS Aggregates (millions of dollars)

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	2,613,925	2,692,855	2,820,390	3,044,329	3,266,527	3,435,741	3,657,265
Self-Employment	228,195	224,580	224,379	246,336	233,929	222,729	250,162
Earnings	2,842,120	2,917,435	3,044,769	3,290,665	3,500,456	3,658,470	3,907,427
Interest	172,743	157,355	132,135	133,014	128,044	154,926	156,114
Dividends	39,459	43,470	43,363	48,227	54,305	62,722	76,658
Rent and Royalties	38,676	36,339	37,994	37,767	41,093	41,298	44,515
Property	250,878	237,164	213,492	219,008	223,442	258,946	277,287
Social Security and Railroad Retirement	214,337	226,700	237,325	252,772	278,330	290,813	302,224
Supplemental Security Income	12,050	14,397	15,415	18,949	18,562	19,550	22,261
Family Assistance	14,038	15,510	15,963	17,198	16,548	15,187	13,368
Other Cash Welfare	2,478	2,169	2,600	3,228	3,453	3,144	2,720
Unemployment Compensation	14,258	21,808	27,934	26,009	20,955	19,266	17,624
Worker's Compensation	13,784	14,998	14,279	13,969	13,941	12,106	10,668
Veterans' Payments	10,704	12,313	11,887	13,712	13,896	16,181	15,854
Transfers	281,649	307,895	325,403	345,837	365,685	376,247	384,719
Private Pensions	66,900	71,185	74,865	76,614	81,258	83,847	91,329
Federal Employee Pensions	25,082	26,546	27,558	28,154	28,712	29,042	31,111
Military Retirement	18,245	19,404	17,987	18,045	19,888	19,122	16,388
State and Local Employee Pensions	28,865	27,708	29,089	33,542	32,812	36,192	37,649
Pensions	139,092	144,843	149,499	156,355	162,670	168,203	176,477
Total	3,513,739	3,607,337	3,733,163	4,011,865	4,252,253	4,461,866	4,745,910

Table 2b. March CPS as a Percent of Benchmark

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	95.9	96.4	95.6	99.7	101.9	101.4	101.9
Self-Employment	68.5	65.3	58.6	58.9	54.8	48.5	52.6
Earnings	93.0	93.0	91.3	94.8	96.4	95.1	96.1
Interest	67.1	68.3	67.6	79.7	72.3	83.9	83.8
Dividends	40.9	45.7	49.2	54.3	54.6	62.6	59.4
Rent and Royalties	85.0	74.1	69.8	65.2	64.8	58.7	58.6
Property	62.8	63.3	63.2	69.8	65.7	72.9	70.9
Social Security and Railroad Retirement	90.6	88.6	87.1	87.8	92.3	92.0	91.7
Supplemental Security Income	78.9	84.6	75.5	84.2	78.0	77.1	84.2
Family Assistance	74.4	74.4	72.2	76.4	73.1	70.5	67.7
Other Cash Welfare	85.6	77.5	81.6	101.3	105.2	95.8	80.5
Unemployment Compensation	79.9	82.5	72.8	77.6	90.0	91.3	81.6
Worker's Compensation	89.5	89.1	82.5	77.0	77.7	69.3	62.7
Veterans' Payments	73.9	82.9	77.7	85.5	84.7	94.9	89.6
Transfers	87.6	86.8	83.6	85.6	89.5	89.2	88.3
Private Pensions	98.3	96.3	96.4	98.8	102.7	93.9	93.1
Federal Employee Pensions	82.7	82.6	84.5	82.7	80.9	77.9	80.8
Military Retirement	85.6	84.6	74.3	71.7	76.4	70.6	58.2
State and Local Employee Pensions	78.7	68.5	64.2	66.7	59.6	59.0	57.3
Pensions	88.9	85.5	83.1	83.6	83.1	78.2	76.6
Total	89.3	89.4	88.0	91.7	92.9	92.2	92.6

Table 3a. SIPP Aggregates (3-Wave, millions of dollars)

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	2,459,496	2,531,953	2,602,744	2,721,095	2,840,761	2,996,143	3,271,929
Self-Employment	284,183	325,785	298,059	319,399	301,850	345,118	329,117
Earnings	2,743,679	2,857,738	2,900,803	3,040,494	3,142,611	3,341,261	3,601,046
Interest	147,139	131,409	111,385	104,537	91,662	95,413	94,319
Dividends	63,892	51,016	44,807	85,713	62,585	66,391	66,167
Rent and Royalties	51,729	44,745	49,656	53,097	51,613	48,914	62,682
Property	262,760	227,170	205,848	243,347	205,861	210,718	223,168
Social Security and Railroad Retirement	233,277	246,592	259,003	271,025	277,857	291,520	294,317
Supplemental Security Income	12,769	15,161	17,412	18,756	20,583	21,979	26,969
Family Assistance	14,290	15,944	15,458	20,087	19,797	18,500	15,086
Other Cash Welfare	2,376	2,829	2,595	3,082	2,604	2,166	3,857
Unemployment Compensation	13,848	22,079	31,639	28,985	19,643	16,008	15,015
Worker's Compensation	10,444	10,358	11,870	10,748	10,374	8,941	12,206
Veterans' Payments	12,133	11,805	12,277	12,535	12,506	12,502	13,000
Transfers	299,138	324,768	350,254	365,219	363,363	371,615	380,450
Private Pensions	63,233	64,113	68,150	75,983	83,121	89,928	97,422
Federal Employee Pensions	23,329	29,244	27,965	29,766	31,985	33,449	29,502
Military Retirement	18,779	21,290	20,350	22,156	22,869	23,329	28,847
State and Local Employee Pensions	28,474	34,433	36,721	38,885	42,858	46,113	45,001
Pensions	133,815	149,080	153,186	166,789	180,833	192,819	200,772
Total	3,439,392	3,558,755	3,610,090	3,815,850	3,892,667	4,116,414	4,405,435

Table 3b. SIPP as a Percent of Benchmark

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	90.1	90.5	88.1	89.0	88.5	88.3	91.0
Self-Employment	85.1	94.6	77.7	76.2	70.5	75.0	69.1
Earnings	89.6	90.9	86.9	87.4	86.4	86.7	88.4
Interest	56.7	56.6	56.5	62.1	51.3	51.3	50.2
Dividends	65.8	53.3	50.5	95.9	62.5	65.8	51.0
Rent and Royalties	113.1	90.7	90.8	91.2	81.0	69.2	82.0
Property	65.3	60.2	60.5	77.0	60.1	58.9	56.6
Social Security and Railroad Retirement	97.1	95.0	93.6	92.7	90.8	90.9	87.9
Supplemental Security Income	83.1	88.6	84.9	82.9	86.0	86.2	101.4
Family Assistance	75.6	76.4	69.9	89.1	87.3	85.8	76.3
Other Cash Welfare	81.9	100.9	81.3	96.6	79.2	65.9	114.0
Unemployment Compensation	77.5	83.5	82.4	86.3	84.3	75.7	69.4
Worker's Compensation	67.8	61.5	68.6	59.2	57.8	51.2	71.7
Veterans' Payments	83.1	78.8	79.5	77.5	75.6	72.7	72.9
Transfers	92.0	90.5	89.0	89.4	87.8	87.0	86.3
Private Pensions	91.8	85.7	86.7	96.9	103.8	99.5	98.1
Federal Employee Pensions	75.9	89.8	84.6	86.3	89.0	88.5	75.6
Military Retirement	87.4	92.0	83.4	87.3	87.1	85.4	101.6
State and Local Employee Pensions	76.8	84.2	80.1	76.6	77.0	74.3	67.8
Pensions	84.6	87.0	84.2	88.2	91.4	88.6	86.1
Total	87.1	87.9	84.9	86.9	84.8	84.8	85.7

Table 4. March CPS Recipients (thousands)

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	124,601	124,676	126,086	127,383	129,890	132,569	135,168
Self-Employment	13,075	12,623	12,737	12,410	12,777	11,849	11,726
Interest	108,508	107,256	105,575	105,926	108,817	107,881	103,420
Dividends	23,281	23,601	24,814	27,445	28,282	29,700	30,787
Rent and Royalties	11,398	10,731	10,732	11,027	11,554	11,817	11,593
Social Security and Railroad Retirement	35,982	36,051	36,791	36,650	37,263	37,849	37,832
Supplemental Security Income	4,042	4,406	4,689	4,928	4,801	4,808	5,203
Family Assistance	3,951	4,327	4,518	4,649	4,224	3,806	3,634
Other Cash Welfare	1,183	1,186	1,220	1,239	1,223	1,200	1,024
Unemployment Compensation	7,627	9,197	9,765	8,896	7,755	7,064	6,570
Worker's Compensation	2,882	2,869	2,704	2,819	2,688	2,203	2,223
Veterans' Payments	2,622	2,658	2,503	2,606	2,689	2,549	2,356
Private Pensions	10,274	10,615	10,795	10,540	10,469	10,230	10,446
Federal Employee Pensions	1,934	1,843	1,822	1,896	1,807	1,722	1,701
Military Retirement	1,457	1,454	1,338	1,196	1,328	1,159	1,071
State and Local Employee Pensions	3,183	3,031	3,101	3,139	2,980	3,065	2,928

Table 5. SIPP Recipients (thousands)

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	131,760	131,068	132,346	134,561	135,331	137,318	137,508
Self-Employment	14,596	14,832	14,263	14,822	14,613	14,247	16,624
Interest	130,643	127,291	127,564	126,551	126,695	128,556	125,613
Dividends	30,637	30,057	30,128	33,016	32,126	32,005	38,063
Rent and Royalties	18,863	18,613	17,622	18,773	17,609	16,906	15,251
Social Security and Railroad Retirement	38,030	37,835	37,876	38,301	39,099	39,555	41,012
Supplemental Security Income	4,488	5,242	5,602	5,604	5,916	6,098	7,686
Family Assistance	3,939	4,298	4,414	5,188	5,350	4,985	4,996
Other Cash Welfare	1,347	1,725	1,575	1,652	1,512	1,278	2,135
Unemployment Compensation	8,178	10,053	11,801	10,454	8,671	7,303	7,256
Worker's Compensation	2,606	3,125	2,613	2,485	2,340	2,002	2,139
Veterans' Payments	3,461	3,623	3,606	3,358	3,367	3,159	2,846
Private Pensions	11,283	10,914	10,666	11,460	11,934	12,254	14,490
Federal Employee Pensions	1,805	2,085	2,087	2,054	2,145	2,271	2,239
Military Retirement	1,581	1,664	1,642	1,639	1,808	1,636	2,369
State and Local Employee Pensions	3,260	3,790	4,065	3,997	4,120	4,302	4,132

Table 6. SIPP as a Percent of March CPS Income

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	94.1	94.0	92.3	89.4	87.0	87.2	89.5
Self-Employment	124.5	145.1	132.8	129.7	129.0	155.0	131.6
Earnings	96.5	98.0	95.3	92.4	89.8	91.3	92.2
Interest	85.2	83.5	84.3	78.6	71.6	61.6	60.4
Dividends	161.9	117.4	103.3	177.7	115.2	105.9	86.3
Rent and Royalties	133.8	123.1	130.7	140.6	125.6	118.4	140.8
Property	104.7	95.8	96.4	111.1	92.1	81.4	80.5
Social Security and Railroad Retirement	108.8	108.8	109.1	107.2	99.8	100.2	97.4
Supplemental Security Income	106.0	105.3	113.0	99.0	110.9	112.4	121.1
Family Assistance	101.8	102.8	96.8	116.8	119.6	121.8	112.8
Other Cash Welfare	95.9	130.4	99.8	95.5	75.4	68.9	141.8
Unemployment Compensation	97.1	101.2	113.3	111.4	93.7	83.1	85.2
Worker's Compensation	75.8	69.1	83.1	76.9	74.4	73.9	114.4
Veterans' Payments	113.4	95.9	103.3	91.4	90.0	77.3	82.0
Transfers	106.2	105.5	107.6	105.6	99.4	98.8	98.9
Private Pensions	94.5	90.1	91.0	99.2	102.3	107.3	106.7
Federal Employee Pensions	93.0	110.2	101.5	105.7	111.4	115.2	94.8
Military Retirement	102.9	109.7	113.1	122.8	115.0	122.0	176.0
State and Local Employee Pensions	98.6	124.3	126.2	115.9	130.6	127.4	119.5
Pensions	96.2	102.9	102.5	106.7	111.2	114.6	113.8
Total	97.9	98.7	96.7	95.1	91.5	92.3	92.8

Table 7. SIPP as a Percent of March CPS Recipients

	1990	1991	1992	1993	1994	1995	1996
Wages and Salary	105.7	105.1	105.0	105.6	104.2	103.6	101.7
Self-Employment	111.6	117.5	112.0	119.4	114.4	120.2	141.8
Interest	120.4	118.7	120.8	119.5	116.4	119.2	121.5
Dividends	131.6	127.4	121.4	120.3	113.6	107.8	123.6
Rent and Royalties	165.5	173.5	164.2	170.2	152.4	143.1	131.6
Social Security and Railroad Retirement	105.7	104.9	102.9	104.5	104.9	104.5	108.4
Supplemental Security Income	111.0	119.0	119.5	113.7	123.2	126.8	147.7
Family Assistance	99.7	99.3	97.7	111.6	126.7	131.0	137.5
Other Cash Welfare	113.9	145.4	129.1	133.3	123.7	106.5	208.5
Unemployment Compensation	107.2	109.3	120.9	117.5	111.8	103.4	110.4
Worker's Compensation	90.4	108.9	96.6	88.1	87.0	90.9	96.2
Veterans' Payments	132.0	136.3	144.1	128.9	125.2	123.9	120.8
Private Pensions	109.8	102.8	98.8	108.7	114.0	119.8	138.7
Federal Employee Pensions	93.3	113.1	114.5	108.3	118.7	131.9	131.6
Military Retirement	108.5	114.4	122.7	137.1	136.1	141.1	221.2
State and Local Employee Pensions	102.4	125.0	131.1	127.3	138.2	140.4	141.1

Figure 1. Matched Tax Units with March CPS Wages within 25% of Tax Return Wages

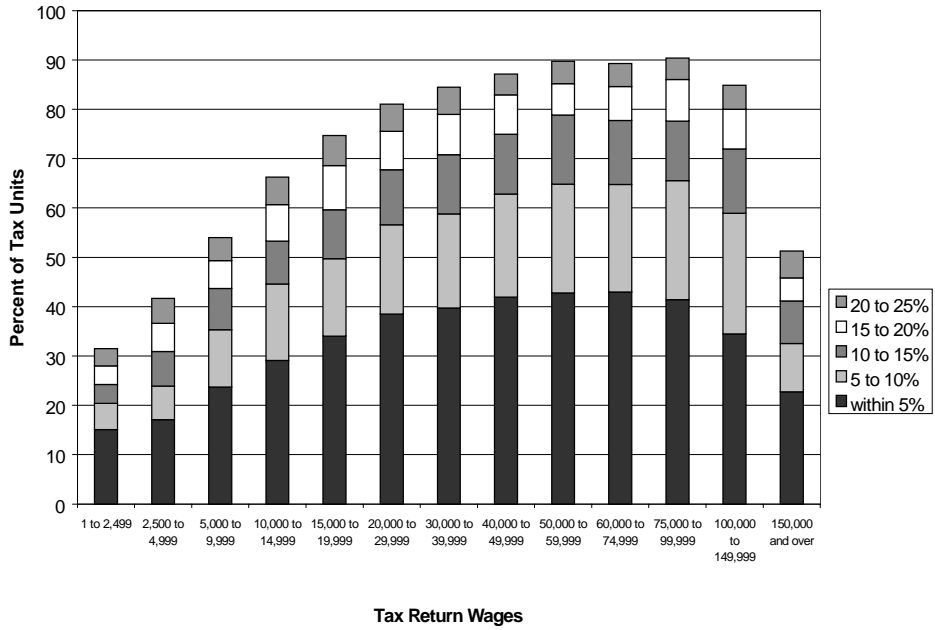


Figure 2. Discrepancy Between March CPS Wages and Tax Return Wages

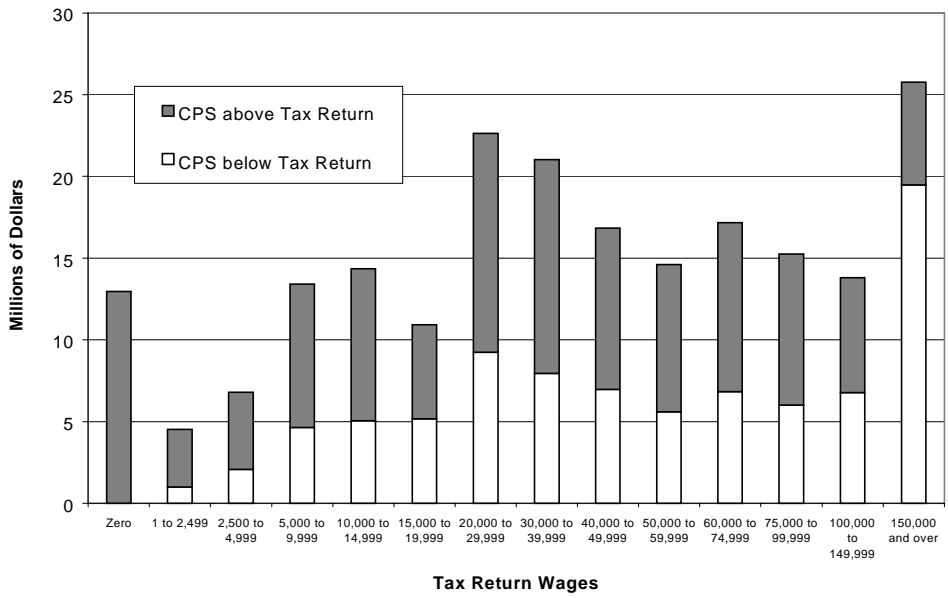


Figure 3. Size Distribution of Wage Amounts Collected in the March CPS and SIPP, 1990-1996 Total

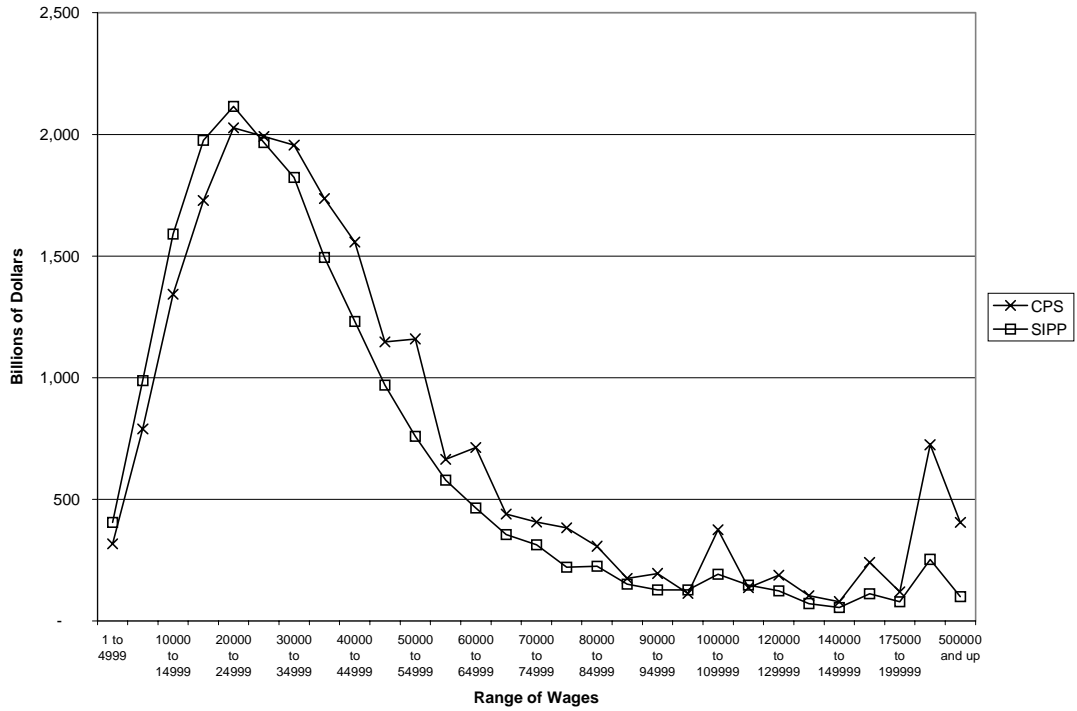
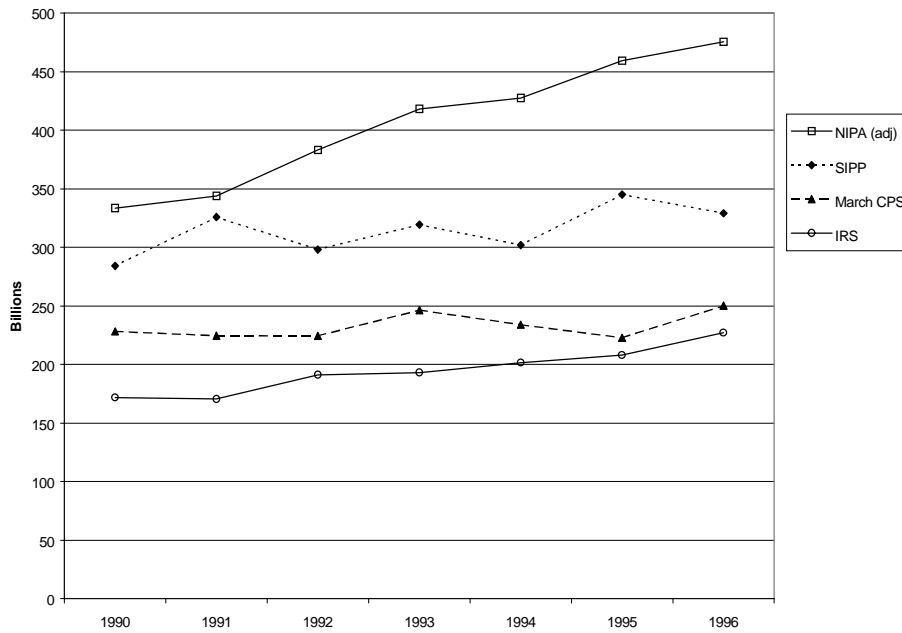


Figure 4. Self-employment Income: Adjusted NIPA, March CPS, SIPP, and IRS Aggregates



Appendix I: Derivation of Benchmarks (millions of dollars)

Table A. Wages and Salary	1990	1991	1992	1993	1994	1995	1996
/1, 2 Wage and salary (NIPA)	2,757,500	2,827,600	2,986,400	3,089,600	3,240,700	3,428,500	3,631,085
LESS:							
/1 Imputed food and lodging	8,300	8,600	8,900	9,100	9,500	10,100	10,500
PLUS:							
/1 Director's, judicial, and marriage fees	4,464	4,593	4,777	4,975	5,099	5,268	5,490
/1 Wages of foreign professional and migratory workers	1,177	1,206	1,241	3,319	3,719	3,986	4,020
subtotal.....	2,754,841	2,824,799	2,983,518	3,088,794	3,240,018	3,427,654	3,630,095
LESS:							
Not in sample universe	30,426	31,199	32,952	34,114	35,785	37,857	40,093
/3 Institutionalized	7,714	7,909	8,354	8,649	9,072	9,597	10,164
/4 Decedents (March CPS)	8,265	8,474	8,951	9,266	9,720	10,283	10,890
/5 Overseas	7,285	7,470	7,890	8,168	8,568	9,065	9,600
/3 Military on US post without family	7,163	7,344	7,757	8,031	8,424	8,912	9,438
Benchmark							
for March CPS.....	2,724,415	2,793,600	2,950,566	3,054,680	3,204,233	3,389,797	3,590,002
/6 for SIPP.....	2,728,350	2,797,636	2,954,829	3,059,092	3,208,862	3,394,694	3,595,188

Table B. Nonfarm self-employment income

	1990	1991	1992	1993	1994	1995	1996
/1, 2 Proprietor's income with inventory valuation adjustment and capital consumption adjustment, nonfarm (NIPA)	338,600	347,200	386,700	418,400	434,700	465,600	488,769
LESS:							
/1 Inventory valuation adjustment	(1,200)	(100)	(700)	(1,100)	(600)	(1,600)	(600)
/1 Capital consumption adjustment	27,700	23,000	25,000	27,500	21,000	25,400	28,600
/1 Proprietorship and partnership income paid to fiduciaries	900	900	1,000	1,000	1,100	1,100	1,100
/1 Defaulter's gain/Bad debt expense	4,500	3,800	3,900	3,700	3,600	4,600	6,076
/7 Construction adjustment	4,290	4,399	4,900	5,301	5,508	5,899	6,193
/7 Rural telephone cooperatives	204	210	233	253	262	281	295
/7 Rural electric cooperatives	599	614	684	740	769	824	865
subtotal.....	301,606	314,377	351,683	381,006	403,060	429,096	446,240
LESS:							
Not in sample universe	2,533	2,641	2,954	3,200	3,386	3,604	3,748
/3 Institutionalized	1,056	1,100	1,231	1,334	1,411	1,502	1,562
/4 Decedents (March CPS)	1,418	1,478	1,653	1,791	1,894	2,017	2,097
Overseas	0	0	0	0	0	0	0
/3 Military on US post without family	60	63	70	76	81	86	89
Benchmark for March CPS.....	299,073	311,736	348,728	377,805	399,675	425,491	442,492
/6 for SIPP.....	299,748	312,440	349,515	378,658	400,577	426,452	443,490

Table C. Farm self-employment income		1990	1991	1992	1993	1994	1995	1996
/1, 2	Proprietor's income with inventory valuation adjustment and capital consumption adjustment, farm (NIPA)	35,400	29,300	37,100	32,400	36,900	22,400	38,917
	LESS:							
/1	Capital consumption adjustment	(7,800)	(7,900)	(8,100)	(8,000)	(7,900)	(7,900)	(7,800)
/1	Farm housing rent	5,100	5,200	5,300	5,500	5,800	5,900	6,100
/1	Farm products consumed on farm	700	600	600	500	500	500	400
/1	Change in farm inventories	2,600	(1,100)	5,000	(6,200)	10,800	(9,300)	7,600
/1	Monetary interest received by corporations	700	600	500	500	600	700	800
/1	Valuation adjustment, Commodity Credit Corporation loans	(100)	(100)	(400)	(100)	(400)	(900)	(600)
	PLUS:							
/1	Patronage dividends received from cooperatives	400	400	400	500	400	600	700
	subtotal.....	34,600	32,400	34,600	40,700	27,900	34,000	33,117
	LESS:							
	Not in sample universe	429	382	408	480	329	401	391
/3	Institutionalized	246	230	246	289	198	241	235
/4	Decedents (March CPS)	163	133	142	167	114	139	136
	Overseas	0	0	0	0	0	0	0
/3	Military on US post without family	21	19	21	24	17	20	20
	Benchmark							
	for March CPS.....	34,171	32,018	34,192	40,220	27,571	33,599	32,726
/6	for SIPP.....	34,248	32,081	34,259	40,299	27,625	33,665	32,791

Table D. Interest		1990	1991	1992	1993	1994	1995	1996
/1, 2	Personal interest income (NIPA)	704,400	699,200	667,200	651,000	668,100	704,900	719,423
	LESS:							
/2	Interest received by nonprofits	22,911	22,251	20,214	21,316	21,675	20,074	17,322
/2	Interest received by fiduciaries	11,713	11,314	9,374	8,205	7,580	8,949	9,398
/1	Imputed interest income	310,800	333,000	343,100	358,800	358,100	386,700	397,500
/2	Unredeemed interest on US savings bonds	5,309	7,210	6,858	4,058	3,711	2,901	3,357
/2	IRA-Keogh	30,966	26,367	21,374	20,296	23,138	28,079	33,471
/2	Tax-exempt interest	38,763	43,237	45,140	44,895	45,250	45,420	45,394
/8	Interest on assets of mutual funds (to dividends)	18,041	17,958	19,397	21,127	25,771	22,129	20,718
	subtotal.....	265,897	237,863	201,743	172,303	182,875	190,648	192,263
	LESS:							
	Not in sample universe	8,349	7,469	6,335	5,410	5,742	5,986	6,037
/3	Institutionalized	3,776	3,378	2,865	2,447	2,597	2,707	2,730
/4	Decedents (March CPS)	4,361	3,901	3,309	2,826	2,999	3,127	3,153
/9	Overseas	106	95	81	69	73	76	77
/3	Military on US post without family	106	95	81	69	73	76	77
	Benchmark							
	for March CPS.....	257,548	230,394	195,408	166,893	177,133	184,662	186,226
/6	for SIPP.....	259,624	232,251	196,983	168,238	178,561	186,150	187,728

Table E. Dividends		1990	1991	1992	1993	1994	1995	1996
/1, 2	Personal dividend income (NIPA)	134,900	137,700	137,900	147,100	171,000	192,800	248,200
	LESS:							
/2	Dividends received by nonprofits	8,348	9,372	9,372	9,614	9,583	12,082	11,382
/2	Dividends received by fiduciaries	5,247	5,077	5,103	5,229	5,343	5,867	6,283
/2	IRA-Keogh	6,747	8,763	10,644	12,353	12,805	14,120	15,047
/2	Small business corporation income	33,332	34,649	41,531	49,664	66,608	79,758	103,459
	PLUS:							
	Interest on assets of mutual funds	18,041	17,958	19,397	21,127	25,771	22,129	20,718
	subtotal.....	99,267	97,797	90,647	91,367	102,432	103,102	132,747
	LESS:							
	Not in sample universe	2,799	2,758	2,556	2,577	2,889	2,907	3,743
/3	Institutionalized	1,410	1,389	1,287	1,297	1,455	1,464	1,885
/4	Decedents (March CPS)	1,310	1,291	1,197	1,206	1,352	1,361	1,752
/9	Overseas	40	39	36	37	41	41	53
/3	Military on US post without family	40	39	36	37	41	41	53
	Benchmark							
	for March CPS.....	96,468	95,039	88,091	88,790	99,543	100,195	129,003
/6	for SIPP.....	97,092	95,654	88,661	89,365	100,187	100,843	129,838

Table F. Rent	1990	1991	1992	1993	1994	1995	1996
/1, 2 Rental income with capital consumption adjustment (NIPA)	61,000	67,900	79,400	105,700	124,400	133,700	150,221
LESS:							
/2 Rental income received by fiduciaries	2,367	2,545	3,037	2,630	3,019	3,466	3,933
/2 Rental income received by nonprofits	1,113	1,155	2,983	1,369	1,578	1,881	2,048
/1 Imputed rent of owner-occupied dwellings	48,900	53,400	65,600	85,000	102,300	104,100	114,300
/1 Capital consumption adjustment	(38,100)	(39,600)	(48,100)	(42,800)	(47,600)	(48,000)	(48,100)
/1 Royalties	7,800	8,300	8,000	7,900	7,900	8,000	8,400
subtotal.....	38,920	42,100	47,880	51,601	57,203	64,253	69,640
LESS:							
Not in sample universe	1,031	1,116	1,269	1,367	1,516	1,703	1,845
/3 Institutionalized	553	598	680	733	812	912	989
/4 Decedents (March CPS)	448	484	551	593	658	739	801
/9 Overseas	16	17	19	21	23	26	28
/3 Military on US post without family	16	17	19	21	23	26	28
Benchmark for March CPS.....	37,889	40,984	46,611	50,234	55,687	62,550	67,795
/6 for SIPP.....	38,102	41,215	46,873	50,516	56,000	62,902	68,176

Table G. Royalties	1990	1991	1992	1993	1994	1995	1996
/1 Royalties (NIPA)	7,800	8,300	8,000	7,900	7,900	8,000	8,400
LESS:							
Not in sample universe	207	220	212	209	209	212	223
/3 Institutionalized	111	118	114	112	112	114	119
/4 Decedents (March CPS)	90	95	92	91	91	92	97
/9 Overseas	3	3	3	3	3	3	3
/3 Military on US post without family	3	3	3	3	3	3	3
Benchmark for March CPS.....	7,593	8,080	7,788	7,691	7,691	7,788	8,177
/6 for SIPP.....	7,636	8,126	7,832	7,734	7,734	7,832	8,223

Table H. Social Security		1990	1991	1992	1993	1994	1995	1996
/1	Old age, survivor's, and disability insurance (NIPA)	244,100	264,100	281,800	297,900	312,100	327,600	342,000
	LESS:							
/10	Lump sum payments	143	154	165	174	183	192	200
	subtotal.....	243,957	263,946	281,635	297,726	311,917	327,408	341,800
	LESS:							
	Not in sample universe	14,052	15,203	16,222	17,149	17,966	18,859	19,688
/3	Institutionalized	6,733	7,285	7,773	8,217	8,609	9,036	9,434
/4	Decedents (March CPS)	7,319	7,918	8,449	8,932	9,358	9,822	10,254
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	229,905	248,742	265,413	280,577	293,951	308,550	322,112
/6	for SIPP.....	233,390	252,513	269,436	284,830	298,407	313,227	326,995

Table I. Railroad Retirement		1990	1991	1992	1993	1994	1995	1996
/1	Railroad retirement (NIPA)	7,200	7,500	7,700	7,800	8,000	8,000	8,100
	LESS:							
/11	Lump sum payments	7	8	8	8	8	8	8
	subtotal.....	7,193	7,493	7,692	7,792	7,992	7,992	8,092
	LESS:							
	Not in sample universe	450	469	482	488	500	500	507
/3	Institutionalized	199	207	212	215	221	221	223
/4	Decedents (March CPS)	252	262	269	273	280	280	283
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	6,743	7,023	7,211	7,304	7,492	7,492	7,585
/6	for SIPP.....	6,862	7,148	7,339	7,434	7,625	7,625	7,720

Table J. Federal SSI		1990	1991	1992	1993	1994	1995	1996
/1	Federal supplemental security income (NIPA)	12,900	14,800	18,200	20,700	22,200	23,900	25,300
	LESS:							
	Not in sample universe	1,097	1,258	1,547	1,760	1,887	2,032	2,151
/3	Institutionalized	957	1,098	1,350	1,536	1,647	1,773	1,877
/4	Decedents (March CPS)	139	160	197	224	240	258	273
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	11,804	13,542	16,653	18,941	20,313	21,869	23,150
/6	for SIPP.....	11,870	13,618	16,747	19,047	20,427	21,991	23,280

Table K. State SSI		1990	1991	1992	1993	1994	1995	1996
/1	State supplemental security income (NIPA)	3,800	3,800	4,100	3,900	3,800	3,800	3,600
	LESS:							
	Not in sample universe	323	323	349	332	323	323	306
/3	Institutionalized	282	282	304	289	282	282	267
/4	Decedents (March CPS)	41	41	44	42	41	41	39
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	3,477	3,477	3,752	3,569	3,477	3,477	3,294
/6	for SIPP.....	3,497	3,497	3,773	3,589	3,497	3,497	3,313

Table L. Family Assistance		1990	1991	1992	1993	1994	1995	1996
/1	Family assistance (NIPA)	19,800	22,000	23,300	24,000	24,300	23,300	21,600
	LESS:							
/12	Foster care payments	798	1,023	1,038	1,266	1,387	1,446	1,433
/12	Adoption assistance	125	131	161	210	263	320	380
	subtotal.....	18,877	20,846	22,101	22,524	22,650	21,534	19,787
	LESS:							
	Not in sample universe	0	0	0	0	0	0	32
	Institutionalized	0	0	0	0	0	0	0
/4	Decedents (March CPS)	30	33	35	36	36	34	32
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	18,877	20,846	22,101	22,524	22,650	21,534	19,755
/6	for SIPP.....	18,891	20,862	22,118	22,541	22,667	21,550	19,770

Table M. Other Cash Welfare		1990	1991	1992	1993	1994	1995	1996
/1	General assistance (NIPA)	3,000	2,900	3,300	3,300	3,400	3,400	3,500
	LESS:							
	Not in sample universe	104	101	115	115	118	118	122
/3	Institutionalized	93	90	103	103	106	106	109
/4	Decedents (March CPS)	11	11	12	12	13	13	13
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	2,896	2,799	3,185	3,185	3,282	3,282	3,378
/6	for SIPP.....	2,901	2,804	3,191	3,191	3,288	3,288	3,384

Table N. Unemployment Compensation		1990	1991	1992	1993	1994	1995	1996
/1	Government unemployment insurance benefits (NIPA)	18,100	26,800	38,900	34,000	23,600	21,400	21,900
/1	Supplemental unemployment (NIPA)	571	1,020	607	443	219	208	187
	subtotal.....	18,671	27,820	39,507	34,443	23,819	21,608	22,087
	LESS:							LESS
	Not in sample universe	255	380	540	471	326	295	301
	Institutionalized	0	0	0	0	0	0	0
/4	Decedents (March CPS)	50	75	107	93	64	58	60
/5	Overseas	85	127	180	157	109	99	100
/3	Military on post without family	119	178	253	220	152	138	141
	Benchmark for March CPS.....	17,845	26,420	38,360	33,529	23,274	21,105	21,599
/6	for SIPP.....	17,869	26,456	38,411	33,574	23,305	21,132	21,627

Table O. Worker Compensation		1990	1991	1992	1993	1994	1995	1996
/1	Worker compensation (NIPA)	38,821	42,803	44,100	46,417	46,147	45,104	43,843
	federal	1,500	1,600	1,800	1,800	1,900	1,900	1,900
	state and local	6,900	7,600	8,400	8,900	8,600	8,700	8,900
	private	30,421	33,603	33,900	35,717	35,647	34,504	33,043
	LESS:							
/13	Noncash payments	15,886	17,515	18,046	18,994	18,883	18,457	17,941
/13	Lump sum payments	8,622	9,507	9,795	10,309	10,249	10,018	9,738
	PLUS:							
/1	Black lung payments	1,400	1,400	1,400	1,400	1,300	1,200	1,200
	subtotal.....	15,713	17,181	17,660	18,514	18,314	17,830	17,365
	LESS:							
/13	Not in sample universe	314	344	353	370	366	357	347
	Benchmark for March CPS.....	15,399	16,838	17,306	18,144	17,948	17,473	17,018
	for SIPP.....	15,399	16,838	17,306	18,144	17,948	17,473	17,018

Table P. Veterans' Payments		1990	1991	1992	1993	1994	1995	1996
/1	Veterans benefits (NIPA)	15,800	16,200	16,700	17,500	17,900	18,600	19,300
	LESS:							
/10	Lump sum payments	125	128	132	138	141	147	152
	subtotal.....	15,675	16,072	16,568	17,362	17,759	18,453	19,148
	LESS:							
	Not in sample universe	1,198	1,228	1,266	1,326	1,357	1,410	1,463
/3	Institutionalized	923	947	976	1,023	1,046	1,087	1,128
/4	Decedents (March CPS)	274	281	290	304	311	323	335
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	14,478	14,844	15,302	16,035	16,402	17,043	17,685
/6	for SIPP.....	14,608	14,978	15,440	16,180	16,550	17,197	17,844

Table Q. Private Pensions		1990	1991	1992	1993	1994	1995	1996
/1	Pension and profit-sharing benefits (NIPA)	139,852	147,576	160,165	161,351	165,434	186,729	205,099
	LESS:							
/14	Lump sum payments (benefits from defined contribution plans)	68,131	69,729	78,367	79,705	82,055	92,618	101,729
	subtotal.....	71,721	77,847	81,798	81,646	83,379	94,111	103,370
	LESS:							
	Not in sample universe	3,636	3,947	4,147	4,139	4,227	4,771	5,241
/3	Institutionalized	853	926	973	972	992	1,120	1,230
/4	Decedents (March CPS)	1,714	1,861	1,955	1,951	1,993	2,249	2,471
/15	Overseas	1,069	1,160	1,219	1,217	1,242	1,402	1,540
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	68,084	73,900	77,651	77,507	79,151	89,340	98,129
/6	for SIPP.....	68,901	74,786	78,582	78,436	80,100	90,411	99,305

Table R. Federal Employee Pensions		1990	1991	1992	1993	1994	1995	1996
/1	Federal employee retirement, civilian (NIPA)	31,800	33,700	34,200	35,700	37,200	39,100	40,400
	LESS:							
/16	Lump sum payments	241	255	259	270	282	296	306
	subtotal.....	31,559	33,445	33,941	35,430	36,918	38,804	40,094
	LESS:							
	Not in sample universe	1,234	1,308	1,327	1,385	1,444	1,517	1,568
/3	Institutionalized	376	398	404	422	439	462	477
/4	Decedents (March CPS)	858	910	923	964	1,004	1,055	1,091
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	30,325	32,137	32,614	34,044	35,475	37,287	38,526
/6	for SIPP.....	30,734	32,570	33,053	34,503	35,953	37,789	39,046

Table S. Military Retirement		1990	1991	1992	1993	1994	1995	1996
/1	Federal employee retirement, military (NIPA)	22,100	23,800	25,100	26,100	27,000	28,100	29,200
	LESS:							
/17	Lump sum payments	168	181	191	198	205	214	222
	subtotal.....	21,932	23,619	24,909	25,902	26,795	27,886	28,978
	LESS:							
	Not in sample universe	623	671	707	736	761	792	823
/3	Institutionalized	261	281	296	308	319	332	345
/4	Decedents (March CPS)	362	390	411	427	442	460	478
	Overseas	0	0	0	0	0	0	0
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	21,309	22,948	24,202	25,166	26,034	27,094	28,155
/6	for SIPP.....	21,481	23,134	24,398	25,370	26,244	27,314	28,383

Table T. State and Local pensions		1990	1991	1992	1993	1994	1995	1996
/1	State and local employee retirement (NIPA)	40,600	44,700	49,600	54,800	60,300	66,500	71,700
	LESS:							
/18	Lump sum payments (withdrawals)	2,435	2,601	2,440	2,535	3,026	2,655	3,343
	subtotal.....	38,165	42,099	47,160	52,265	57,274	63,845	68,357
	LESS:							
	Not in sample universe	1,469	1,621	1,816	2,012	2,205	2,458	2,632
/3	Institutionalized	454	501	561	622	682	760	813
/4	Decedents (March CPS)	801	884	990	1,098	1,203	1,341	1,435
/19	Overseas	214	236	264	293	321	358	383
	Military on US post without family	0	0	0	0	0	0	0
	Benchmark							
	for March CPS.....	36,696	40,478	45,344	50,253	55,069	61,387	65,725
/6	for SIPP.....	37,077	40,899	45,816	50,775	55,642	62,025	66,409

Footnotes

- /1 National Income and Product Accounts, Tables 1.15, 2.1, 3.12, 6.3C, 6.11C, 8.8, 8.13, 8.16, 8.18, 8.19, 8.21, 8.22
- /2 Thae Park, BEA
- /3 ratio from the 1990 Decennial Census
- /4 ratio from Monte Carlo simulation (includes January through mid-March)
- /5 State Personal Income Estimates, BEA, Survey of Current Business, October 1998
- /6 Benchmark for SIPP retains two-thirds of 12-month decedent income
- /7 Willy Abney, BEA
- /8 Thae Park, BEA; Federal Reserve Board Z1 Tables L121-L122, L206, L214
- /9 nonzero; approximately equal to income of Military on US post without family
- /10 ratio from Statistical Abstract of the United States: 1998
- /11 ratio from Table H.
- /12 Joanne Buenzli, BEA
- /13 ratio from Coder (1996)
- /14 ratio from Private Pension Plan Bulletin, Spring 1998
- /15 ratio of OASDI received in foreign countries or US territories, Social Security Bulletin Annual Statistical Supplement, 1997
- /16 Office of Personnel Management
- /17 ratio from Table R.
- /18 Donna Hirsch, Bureau of the Census
- /19 ratio of OASDI received in foreign countries, Social Security Bulletin Annual Statistical Supplement, 1997

Appendix II: Components of the Aggregates

March CPS

Although not listed here for every category, aggregates include income appearing in Other Income.

Wages and Salary

wages and salary (includes self-employment, incorporated)

Self-employment

non-farm self-employment

farm self-employment

Interest

interest

Dividends

dividends

Rent and Royalties

rent (includes royalties)

Estates and Trusts

survivor income, regular payments from estates and trusts

Social Security

social security

Railroad Retirement

railroad retirement

railroad retirement disability

railroad retirement survivor pension

Supplemental Security Income

ssi

Aid for Families with Dependent Children (AFDC)

(includes Temporary Assistance for Needy Families, TANF)

afdc

both afdc and other public assistance

Other Cash Welfare

other public assistance

Unemployment Compensation

unemployment compensation

Worker's Compensation

- worker's compensation
- disability, worker's compensation
- state disability payments (worker's compensation)
- black lung miner's disability
- worker's compensation survivor
- black lung survivor pension

Veterans' Payments

- veterans' benefits

Private Pensions

upper bound:

- company or union survivor pension
- retirement income, company or union pension
- company or union disability
- other income, private pension
- survivor income, other or don't know
- retirement income, regular payments from Keogh or 401(k) accounts
- retirement income, other sources including IRA, Keogh or don't know
- disability income, other or don't know

lower bound:

- company or union survivor pension
- retirement income, company or union pension
- company or union disability
- other income, private pension

Federal Employee Pensions

- retirement income, federal government retirement
- federal government disability
- survivor income, federal government

Military Retirement

- retirement income, military retirement
- military retirement disability
- military retirement survivor pension

State and Local Government Employee Pensions

- retirement income, state and local government retirement
- state and local government employee disability
- state and local government employee survivor pension

SIPP

A * denotes that the income type is new to the 1996 Panel.

Wages and Salary

- job income (including self-employed, incorporated)
- moonlighting *
- severance pay *
- national guard or reserve pay
- incidental or casual earnings

Self-employment

- business income (excluding self-employed incorporated)

Interest

from the following sources:

- own checking account
- joint checking account
- own savings account
- joint savings account
- own money market deposit account
- joint money market deposit account
- own certificate of deposit
- joint certificate of deposit
- own municipal or corporate bonds
- joint municipal or corporate bonds
- own U.S. government securities
- joint U.S. government securities

Dividends

from the following sources:

- own mutual funds
- joint mutual funds
- credited against margin account or reinvested into own mutual fund
- credited against margin account or reinvested into joint mutual fund
- own stocks
- jointly owned stocks
- credited against margin account or reinvested into own stocks
- credited against margin account or reinvested into joint stocks

Rent and Royalties

from the following sources:

- property owned jointly with spouse
- property owned jointly with other
- property owned entirely in own name
- mortgage owned jointly with spouse
- mortgage owned entirely in own name
- royalties
- other financial investments
- roomers or boarders

Social Security

- social security
- social security, child payments

Railroad Retirement

- railroad retirement

Supplemental Security Income

- state ssi
- federal ssi
- federal ssi, child payments

Aid for Families with Dependent Children (AFDC)

- afdc

Other Cash Welfare

- general assistance or general relief
- other welfare

Unemployment Compensation

- state unemployment compensation
- supplemental unemployment benefits
- other unemployment compensation

Worker's Compensation

- black lung payments
- workers compensation

Veterans' Benefits

- veteran compensation
- the gi bill
- department of veterans affairs educational assistance

Private Pensions

- company or union pension

Federal Employee Pensions

- federal civil service pension

Military Retirement

- national guard reserve forces retirement
- military retirement

State and Local Employee Pensions

- state government pension
- local government pension

Appendix III: A Note on SIPP Calculation Methods

The complex design of the SIPP warrants a description of the methodology for calculating calendar-year estimates of aggregate income and number of recipients. See Table III-A. The 1996 Panel begins with interviews of Rotation Group 1 in April 1996, gathering information about this group for the reference period December 1995 through March 1996. Each month following, another of the four rotation groups completes interviews about income and program status during the previous four months.

Calculating calendar-year aggregate income poses a difficulty because some rotation groups lack data for certain calendar months. But because each rotation group is in itself a random sample, one can adjust the weights of the respondents for whom data exists to represent the whole population in such months. For example, only three rotation groups have data for February 1996. Multiplying the February weights of the respondents in these three rotation groups by four-thirds accounts for the rotation group that is missing. Applying this procedure to months lacking rotation groups and discarding data on months outside of 1996 assures that only dollars received in 1996 appear in the aggregate.

Alternatively, one could simply sum the total income from each of the 3 waves, ignoring the fact the some months fall outside the calendar year. For all of the 16 income categories, this 3-wave-sum falls within 1 percent of the calendar year aggregate in 1996. This fact and consistency with the recipient count justify using the 3-wave sum in the analysis for all years.

Counting the number of income recipients is perhaps more complex. The average number of recipients per month during 1996 would result from simply adjusting the weights as described above, summing the number of recipients in each reference month of each wave, and dividing the sum by twelve. However, the SIPP recipient count should be compatible with the March CPS. The March CPS recipient count is the number of people *who were ever a recipient* during the calendar year.

Calculating the number of people ever a recipient during 1996 from the SIPP proceeds as follows. First, link the three waves of data on individual respondents, keeping only those who remain in the panel in Wave 3 (each wave's weights are adjusted to account for attrition). Then apply the weight of Wave 3's fourth reference month to all of the Wave 3 respondents who received income during any reference month in any of the three waves. Allowing recipiency in months outside of 1996 into the count may cause a slight bias, but in an unknown direction because recipiency may be either more or less common in the 1995 and 1997 months relative to calendar year 1996. However, this method assures the consideration of an entire twelve month period.

The March CPS is weighted to the population in March following the reference year. Here, weighting SIPP aggregate income to the current month's population and the number of recipients to the population in November 1996 through February 1997 may slightly understate the aggregates and number of recipients relative to the March CPS figures. This possible understatement further motivates using a "March CPS look-alike" file.

For wages, Coder and Scoon-Rogers (1996) find the “sum-of-waves” method produces an aggregate 5.6 percent lower than that derived from a file constructed to resemble the March CPS. However, for most income sources, the difference is less than 5 percent, and total non-wage income is 2.8 percent higher by the sum-of-waves method.

Table III-A: Reference Months of Rotation Groups in the SIPP 1996 Panel															
	1995	1996												1997	
	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
<u>Wave 1</u>															
Rotation 1	1	2	3	4											
2		1	2	3	4										
3			1	2	3	4									
4				1	2	3	4								
<u>Wave 2</u>															
Rotation 1					1	2	3	4							
2						1	2	3	4						
3							1	2	3	4					
4								1	2	3	4				
<u>Wave 3</u>															
Rotation 1									1	2	3	4			
2										1	2	3	4		
3											1	2	3	4	
4												1	2	3	4
Weighting factors for calculating calendar-year aggregate income:															
	1995	1996												1997	
	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
	0.00	2.00	1.33					1.00						1.33	0.00

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