Alternative Measures of Household Income:
BEA Personal Income, CPS Money Income, and Beyond

by

John Ruser, US Bureau of Economic Analysis
Adrienne Pilot, US Bureau of Economic Analysis
Charles Nelson, US Census Bureau

November 2004

Introduction and summary

Two of the most widely used measures of household income are BEA's personal income and the Census Bureau's money income. These two statistics spring from different traditions of measurement—personal income from national income accounting and money income from income distribution analysis. Yet, many of the conceptual difficulties in developing guidelines for income distribution statistics are the same or similar to the problems encountered in specifying guidelines for national income accounting.

This paper first considers briefly what is meant by the concept "income" and how the debate about the boundaries defining income has been framed. Then, personal income and money income are compared conceptually and empirically. This comparison highlights certain ways that the two measures differ—in the inclusion or exclusion of lump sum payments, of income of non-profit institutions serving households, and of in-kind payments; in the treatment of pension accruals versus disbursements; and in adjustments for underreporting.

Both personal income and money income are more limited concepts than the Haig-Simons-Hicks (HSH) theoretical concept of income as the maximum amount that can be consumed in a given time period while keeping real wealth unchanged. Both personal and money income, for example, do not capture income from capital gains. The Census Bureau has developed a set of alternative measures of money income designed to better measure economic well-being. These are briefly reviewed in the paper.

The final section of the paper discusses possible further extensions of the two income measures. Alternative measures of personal income are proposed that move away from an accrual and toward a disbursement approach to accounting for retirement income and that incorporate disbursements from a variety of tax-preferred assets. The alternative personal income measures address user needs to better measure the tax base or the capacity to spend.

Some of the principal points of the paper are the following:

- BEA personal income is the income received by persons from participation in production, from government and business transfer payments, and from government interest.[1] BEA estimates personal income largely from administrative data sources.

- The Current Population Survey (CPS) Annual Social and Economic Supplement is the source of the Census Bureau's official national estimates of poverty. CPS money income is defined as total pre-tax cash income earned by persons, excluding certain lump sum payments and excluding capital gains.

---

[1] "Persons" in BEA's state personal income consist of individuals and quasi–individuals who serve or act on behalf of individuals. Quasi–individuals consist of nonprofit institutions that primarily serve individuals, private noninsured welfare funds, and private trust funds.

- BEA estimates that personal income for the US was $8.678 trillion in 2001, as compared to a CPS money income estimate of $6.446 trillion.[2] Over 64 percent of this $2.232 trillion gap—$1.429 trillion—can be accounted for by differences in the income types that are included in the two measures, including the $982 billion of property income that is counted in personal income but not in CPS money income.

- Half of the remaining $804 billion money income gap can be accounted for by BEA adjustments to proprietors' income and wages and salaries for underreporting in BEA source data.

- The Census Bureau has developed a number of alternative measures of money income that may measure economic well-being better than CPS money income. These measures remove taxes, add in-kind transfers, add realized capital gains or losses, and add the imputed return on equity in own home. The Census Bureau has found that a broadened definition of income results in a more equal distribution of income and tends to reduce the gaps between the incomes of traditionally high- and low-income groups.

- An important issue in measuring income is whether certain income types should be captured when accrued or when disbursed. BEA personal income includes employers' contributions into pension plans, while CPS money income includes pension disbursments. The BEA approach measures payments to factors of production, but the CPS approach better measures current capacity to spend.

- Alternative measures of personal income and disposible personal income are considered at the end of the paper. These alternative measures might better serve users who need measures of the current capacity to spend or of the tax base. These proposed definitions also move toward the theoretical HSH concept of income, capturing incomes when disbursed from all types of retirement schemes and capturing realized capital gains.

What is income?

A variety of definitions of household income have been advanced in the literature. Many of these spring from the Haig-Simons-Hicks (HSH) concept of income as the maximum amount that can be consumed in a given period while keeping real wealth unchanged (Eisner, 1989). This very general concept, cited in the System of National Accounts at section 8.15, has been applied differently by macro-analysts interested in measuring the income of the macro economy and by micro analysts interested in the distribution of income.

---

[2] As discussed in footnote 5, the BEA estimate reported here differs from the estimate in the National Income and Product Accounts because it is a national total of State Personal Income.

Income measures produced by different government agencies can in part be distinguished by definitional boundaries of income. The debate about these boundaries is well summarized in the report of the Canberra Expert Group on Household Income Statistics (The Canberra Group, 2001). According to the Group, the debate has centered on the following three questions:

1. Should income include only receipts that are recurrent (i.e., exclude large and unexpected, typically one-time, receipts)?

2. Should income only include those components that contribute to current economic well-being or extend also to those which contribute to future well-being?

   Components of income that contribute to future well-being include employer contributions to pension funds and social insurance, interest and dividends earned on retirement-based assets and capital gains.

3. Should income allow for the maintenance of the value of net worth?

The Canberra group recognized that there are two traditions of measurement that have influenced the estimation of income. The macro approach has its roots in national income accounting and in particular in the System of National Accounts (SNA). This approach aims at estimating income for the macroeconomy as a whole or for other geographic aggregates. The BEA measure of personal income comes from this tradition. In contrast, the micro approach to income measurement has its roots in microeconomics and in particular the study of poverty and income distribution. The Census Bureau's estimates of money income arise from this approach. Notwithstanding the different traditions, the Canberra Group notes that many of the conceptual difficulties in developing guidelines for income distribution statistics are the same or similar to the problems encountered in specifying guidelines for national income accounting.

The micro and macro approaches differ in whether they stress the type of income or the means of payment (Harrison, 1999). The macro approach categorizes income according to the type of transaction giving rise to an income flow without regard to the means of payment. The types of transactions identified in the macro approach include income generated in the course of production, from the distribution of property income, or from current transfers.

The micro approach focuses on the means of payment, without regard to the how the income flow is generated. According to the Canberra Group, the definition of income in the micro approach is driven mainly by what the individual perceives to be an income receipt of direct benefit. Such an approach implies that it is current economic well-being, as opposed to future well-being, which is of interest to the micro analyst. The recipient may be scarcely aware of income components that contribute to future economic well-being (such as contributions to pension plans). Therefore, in addition to there being an

issue as to whether these should be included in income, there is the practical difficulty of collecting such information from survey respondents.

BEA personal income and Census money income

Two of the most widely used measures of household income are BEA's personal income and the Census Bureau's money income. These two measures differ in the scope of individuals covered, in the income items included, in the sources of the data and in the extent of disaggregation of the estimates. This section will discuss the general definitions, sources and uses of these two measures, while the next section presents a reconciliation of aggregate income estimates as a means of indicating the nature and size of differences.[3]

Personal income and disposable personal income

Personal income is the income received by persons from participation in production, from government and business transfer payments, and from government interest. Personal income includes income received by non-profit institutions serving households, by private non-insured welfare funds, and by private trust funds.[4] Income from production is generated both by the labor of individuals and by the capital that they own. Private income not earned in production, such as from capital gains or the sale of assets, is excluded. Personal income is calculated as the sum of wage and salary disbursements, employer contributions for employee pension and insurance funds, proprietors' income, property income (personal interest, dividend and rental income), and transfer payments to individuals, less personal contributions for social insurance.

Disposable personal income is personal income less personal tax payments. While personal income does not include capital gains realized through the sale of assets, personal income taxes do include the taxes paid for these capital gains.

Personal income and disposable personal income are released by the BEA both as aggregate and as per capita estimates for differing geographic areas and time periods. Estimates are not available according to demographic characteristics of individuals.

---

[3] A third widely used measure of income is IRS adjusted gross income (AGI). For a comparison of BEA personal income and IRS AGI, see Ledbetter (2004).

[4] Mead, McCully, and Reinsdorf (2003) identify the following 5 categories of nonprofit institutions serving households:

1) Religious and welfare, including social services, grant-making foundations, political organizations, museums and libraries, and some civic and fraternal organizations;
2) Medical care;
3) Education and research;
4) Recreation, including cultural, athletic, and some civic and fraternal organizations; and,
5) Personal business, including labor unions, legal aid, and professional associations.

Estimates of personal income are based primarily on data from administrative records and from censuses and similar surveys. The data from administrative records may originate either from the recipients of the income or from the source of the income. The most important sources of these data include the state unemployment insurance programs, the social insurance programs of the Center for Medicare and Medicaid Services and the Social Security Administration; the Federal income tax program of the Internal Revenue Service, veterans benefits programs, and military payroll systems of the U.S. Department of Defense.

The data from censuses are mainly collected from the recipients of the income. The most important sources of census data are the Census of Agriculture, which is now conducted by the U.S. Department of Agriculture (USDA), and the Census of Population and Housing, which is conducted by the Census Bureau. Some estimates are based on data from other sources. For example, the USDA's national and state estimates of the income of all farms constitute the principal basis for BEA's national and state estimates of farm proprietors' income. The USDA uses sample surveys, along with census data and administrative–records data, to derive its estimates.

State personal income estimates are used widely in the public and private sectors to study economic trends for States and regions and to measure and track the levels and types of income that are received by the people who live or work in a State. Federal Government agencies use the estimates as a basis for allocating $167 billion and for determining matching grants. Federal agencies also use the estimates in econometric models, such as those used to project energy and water use. State governments use the estimates in econometric models to project tax revenues and the need for public services. Many states have set constitutional or statutory limits on State government revenues and spending that are tied to State personal income or to one of its components. The estimates are also used in market and economic research.

Census money income

The Census Bureau collects income data on several major surveys, including the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS), the Survey of Income and Program Participation (SIPP), the decennial Census and the American Community Survey (ACS). The CPS is the source of official national estimates of poverty and the most widely used source of annual national income estimates.

The CPS measure of money income is defined as total pre-tax cash income earned by persons, excluding certain lump sum payments and excluding capital gains. It includes money wages and salaries, self-employment income, property income (dividends, interest and rents), money transfer payments from a variety of government and private welfare and social insurance schemes (such as social security, unemployment and workers' compensation, and public assistance), private and government retirement income, interpersonal transfers (such as alimony and child support) and other periodic income.

Unlike BEA's measure of personal income, CPS money income excludes employer contributions to government employee retirement plans and to private health and pension funds, lumps-sum payments except those received as part of earnings, certain in-kind transfer payments—such as Medicare, Medicaid, and food stamps—and imputed income.[5] Money income includes, but personal income excludes, personal contributions for social insurance, income from government employee retirement plans and from private pensions and annuities, and income from interpersonal transfers, such as child support.

The Census Bureau releases estimates of household money income as medians, percent distributions by income categories and on a per capita basis. Estimates are available by demographic characteristics of householders and by the composition of households.

Census money income estimates are based on the Annual Social and Economic Supplement (ASEC) of the CPS. Data are collected from a sample of households by means of a structured questionnaire. For each person in the sample age 15 years or older, the ASEC asks questions about the amount of money income received in the previous year from up to 50 different income sources. In 2002, survey responses were obtained for approximately 78,000 households. While data collectors attempt to collect data directly from each eligible household member, proxy reporting by other household members is approximately 50 percent. According to the Census Bureau, this may introduce nonsampling error because respondents may provide less accurate information on other members of the household than about themselves.

As mentioned previously, the CPS is the source of official U.S. poverty estimates and the income and poverty measures are widely used as barometers of economic well-being for the Nation. In addition to their importance to researchers and policymakers, income and poverty data from the CPS are also used in federal funding formulas that allocate billions of dollars annually to localities based on differences in economic well-being. For example, the State Children's Health Insurance Program (SCHIP) allocates approximately $4 billion annually based on CPS-derived figures on the number of low-income uninsured children in each state. Also, the Title I Program uses CPS poverty data to allocate $14 billion dollars annually to school districts.

Comparison of BEA Personal Income and CPS Money Income Estimates

This section presents a reconciliation of aggregate estimates of BEA personal income and CPS money income. BEA's national estimate of personal income derived from state personal income (SPI) estimates is converted to an "SPI-derived money income" estimate

---

[5] Imputed income is the market value of certain transactions that do not occur in the market economy or that are not observable in BEA data. BEA's measure of imputed income includes pay-in-kind in the form of meals and lodging, the rental value of owner-occupied housing, the value of farm products consumed at home by the producers, the value of investment income earned on life insurance, and the value of services provided to persons by depository institutions without an explicit charge

by adding and subtracting income types to bring personal income to the same scope as CPS money income.[6]

BEA estimates that state personal income for the US was $8.678 trillion in 2001, as compared to a CPS money income estimate of $6.446 trillion. Sixty-four percent of this $2.232 trillion gap—$1.429 trillion—can be accounted for by differences in the income types that are included in the two measures (see Table 1).

Personal income contained $2.241 trillion in 2001 that was not in CPS money income. Personal income exceeds money income in part because the former includes not only income received by individuals but also income received on behalf of individuals. In 2001, $982 billion in property income (dividends, interest and rents) was received on behalf of individuals by pension plans, nonprofit institutions serving households, and fiduciaries. Personal income also contains other income categories not in CPS money income. Most notably, personal income included $563 billion in employer contributions for employee pension and insurance funds and $593 billion in transfer payments, mostly non-cash, like Medicaid, food stamps, and energy assistance.

SPI-derived money income in 2001 included $813 billion not in personal income. Almost half (44 percent) of that—$360 billion—came from disbursements of retirement income benefits.[7] Money income also included $372 billion in personal contributions to social insurance (largely social security) that was deducted from personal income.

While not affecting the total gap between income estimates, BEA and the Census Bureau categorize some types of income differently. The principal difference is the treatment of S corporation profits. Shareholders of S corporations report their share of company profits (whether distributed or not) on their individual tax returns. BEA classifies as dividends all S corporation profits distributed to shareholders, regardless of whether the shareholders are employees of the corporation. Census money income treats these profits as dividends when they are received by non-employee shareholders, but treats them as

---

[6] The reconciliation uses BEA's national estimate constructed from state personal income (SPI) rather than the national estimate from the National Income and Product Accounts (NIPA's). The main differences between the NIPA and SPI estimates of personal income stem from the treatment of the income of U.S. residents who are working abroad and the treatment of the income of foreign residents who are working in the United States. The national total of the state estimates of personal income consists of only the income earned by persons who live within the United States, including foreign residents working in the United States. This is closer to the scope of the CPS, though the CPS excludes certain individuals residing in the US, including military on US posts without family, the institutionalized, decedents in the reference year, and child workers under 15 (agricultural workers can legally be as young as 10).

[7] To produce SPI-derived retirement money income, estimates of lump-sum payments were removed from BEA's national retirement benefit estimates. While lump sum payments (including withdrawals) constitute a negligible portion of public retirement payments, they appear to comprise over half of private retirement payments. BEA national private pension benefits are based primarily on Department of Labor (DOL) tabulations of Form 5500 reports filed by employers and data compiled by the American Council of Life Insurance (ACLI). BEA estimated private pension lump sum payments using the 1998 Form 5500 ratio of benefits from defined contribution plans to total private retirement benefits applied to the 2001 BEA national private pension benefit estimate. Although the unadjusted BEA national estimate of private pension benefits was substantially greater than the CPS figure, after the removal of lump sum payments the SPI-derived money income measure exceeded the CPS figure by only $6 billion or 6 percent.

wage and salary income to shareholder-employees. $189 billion was reallocated from dividends to wages and salaries to make the personal and money income estimates comparable. Another difference occurs in the treatment of distributed earnings from money market accounts. These are classified as interest by BEA and dividends by the Census Bureau; therefore, $52 billion was reallocated from interest to dividends in this reconciliation.

The Money Income Gap by Type of Income for 2001

After adjusting for differences in income types included in the two measures, SPI-derived money income still exceeds CPS money income by $804 billion. What accounts for this "money income gap?" Some insights can be gleaned by comparing the gap by type of income as shown in Table 1, line 38. The gap occurs primarily in wages and salaries, proprietors' income, personal dividends, personal interest, social security, and other retirement and disability income.

The income category experiencing the largest money income gap is proprietors' income. BEA's estimate of SPI-derived proprietors' money income (that is, BEA's estimate of proprietors' income adjusted to include CPS money income categories) is $630 billion in 2001, as compared to a reported CPS money income estimate of $329 billion. The nearly $302 billion gap in these estimates can be fully accounted for by BEA misreporting adjustments.

BEA uses Internal Revenue Service (IRS) tabulations of sole proprietorship and partnership income tax returns as the primary source for nonfarm proprietors' income estimates. IRS tax return data do not include the income of "nonfilers," that is, those who are not required to file tax returns or those who illegally evade filing. Further, some filers underreport income. While the IRS can verify certain types of income reported on individual returns, such as wages, interest, and dividends, by matching tax return information with corresponding third party reports, document matching is ineffective for verifying business income.

BEA adjusts for income earned, but not reported on tax returns, by adding an estimate of "misreporting". The adjustment is an extrapolation based primarily on the 1988 Taxpayer Compliance Measurement Program (TCMP) audit, 1999 exact match study, and current activity indicators, such as the Census Bureau's value of new construction. Proprietors' income has been consistently underreported to the IRS. The last TCMP audit estimated that proprietors' actual income was more than double levels reported on tax returns (Landefeld and Fraumeni, p. 33). The 2001 proprietors' income misreporting adjustment accounts for 42 percent of proprietors' state personal income and 49 percent of SPI-derived proprietors' money income in 2001.

Although the Census Bureau does not make a similar adjustment to money income estimates, BEA includes the misreporting adjustment in its derivation of SPI-derived money income in the belief that it is the best available approximation of actual unreported proprietors' money income. However, respondents who underreport to the IRS may also

underreport in a voluntary survey such as the CPS. At $308 billion in 2001, the proprietors' income misreporting adjustment fully accounts for the $302 billion proprietors' money income gap that year.[8]

The "other retirement and disability income" category constitutes another major source of the total money income gap. This income category consists primarily of retirement benefits from private, government, military, railroad, and individual funds. It also includes payments to beneficiaries of state temporary and disability insurance, black lung, pension benefit guarantee, and private accident insurance disability funds. It does not include either Social Security or workers' compensation. Large both in percentage and dollar terms, at $360 billion SPI-derived money income in this category exceeds the CPS level of $253 billion by 42 percent.

SPI-derived money income significantly exceeds CPS money income in every government retirement income category. SPI-derived pension benefit figures are 49 percent higher than CPS money income for federal retirement and 91 percent higher for state and local government. BEA estimates in these categories are based on data from the Monthly Treasury Statement and the Census Bureau. Estimates of individual annuity benefits also vary widely. The BEA figure, based on data from the National Association of Insurance Commissioners, exceeds the CPS estimate by 481 percent.

CPS and SPI-derived wage and salary money income differ by only 3 percent, but this small percentage represents $158 billion. BEA includes a $104 billion adjustment for wage and salary income earned in the underground economy, which estimates cash wages from legal activities that are earned "off the books."[9] Although the CPS is designed to include these wages, as with proprietors' income, individuals who don't report or underrepresent income to the IRS or other agencies may be unlikely to fully report these wages on a voluntary survey such as the CPS, despite assurances of confidentiality.

Census Bureau research by Roemer (2002) comparing CPS wage data with administrative earnings records from the Social Security Administration's Master Earnings File has shown that the CPS underestimates wages of part-year, part-time workers. Because the CPS does not survey military personnel living on a U.S. post without family, wages earned by military personnel from secondary jobs in the civilian sector would not be included. Underreporting by proxy reporters especially of secondary jobs may also be a factor. Finally, since the reference period for the CPS ASEC is the past calendar year, respondents may fail to recall small amounts and payments that are received infrequently. This might affect not only the reporting of wages for short duration jobs, but also the reporting of other small income components.

---

[8] Given that the two primary studies on which the misreporting adjustment is based have not been conducted in recent years, the reliability of the 2001 misreporting adjustment may be questioned. The IRS has replaced the TCMP with the National Research Program (NRP), which has as part of its mandate the measurement of filing and reporting compliance. NRP audits were begun in 2002 and will provide a more accurate picture of current filing and reporting gaps when results become available. (U.S. Internal Revenue Service, 2002)

[9] For a fuller discussion of the underground economy see Carson (May and July 1984) and Parker (1984)

Within property income, CPS and SPI-derived money income differ substantially in the personal interest and dividend income categories. At $259 billion, SPI-derived personal monetary interest exceeds the CPS level of $188 billion by 38 percent. In 2001, taxable and tax-exempt interest reported on individual tax returns totaled $243 billion.[10] Given the similarity between the BEA estimate and level of personal interest income reported to the IRS, the interest money income gap appears due to underreporting on the CPS survey. This may result in part from incomplete information provided by proxy reporters.

SPI-derived dividend income is $148 billion, 69 percent higher than the CPS dividend income level of $88 billion. Dividend income reported on individual tax returns for 2001 totaled $116 billion. The dividend money income gap occurs at least in part due to CPS underreporting, since the CPS level falls $28 billion below the IRS reported level. SPI-derived interest may be expected to exceed the IRS level since individual tax return data do not include the income of nonfilers, but it is unclear whether this fully explains the $32 billion by which the SPI derived dividend figure exceeds the data from individual income tax returns.

Within transfer payments, the major gap occurs in Social Security. CPS money income reports Social Security as $376 billion. At $425 billion, SPI-derived Social Security (based on data from the Social Security Administration) exceeds the CPS level by $49 billion and 13 percent.

Alternative Census Bureau Income Definitions

Description

The traditional money income concept is limited and does not provide a completely satisfactory measure of economic well-being. For example, money income (unlike BEA's disposable income concept) does not include the effects of taxes and, therefore, does not reflect the effect of tax law changes on economic well-being. Similarly, the official measure of money income excludes the effect of noncash benefits (such as employment-related group health insurance and food stamps), which enhance economic well-being and are also included in BEA's personal income. The Census Bureau has a fairly long history of producing estimates that address these shortcomings.

Since the early 1980s, the Census Bureau has published analysis showing the effect of using a broadened income definition on measures of economic well-being. Currently, annual Census Bureau reports on income and poverty show the effect of using an income measure that includes the effect of noncash benefits and taxes on the distribution of income, prevalence of poverty, and level of income inequality based on the 17 income definitions as summarized below:

Definition 1: official money income

---

[10] See "Individual Income Tax Returns, Preliminary Data, 2001," SOI Bulletin, Winter 2002-2003, p. 137.

Definition 1b: definition 1 plus capital gains/losses less taxes
Definition 2: definition 1 less government cash transfers
Definition 3: definition 2 plus capital gains/less capital losses
Definition 4: definition 3 plus the value of employment-related health benefits
Definition 5: definition 4 less Social Security payroll taxes
Definition 6: definition 5 less federal income taxes (excluding the Earned Income Tax Credit)
Definition 7: definition 6 plus the Earned Income Tax Credit
Definition 8: definition 7 less state income taxes
Definition 9: definition 8 plus non-means-tested government cash transfers
Definition 10: definition 9 plus the value of Medicare
Definition 11: definition 10 plus the value of regular-price school lunches
Definition 12: definition 11 plus means-tested cash transfers
Definition 13: definition 12 plus the value of Medicaid
Definition 14a: definition 13 plus the value of other means-tested government noncash transfers less Medicare and Medicaid
Definition 14: definition 13 plus the value of other means-tested government noncash transfers
Definition 15: definition 14 plus net imputed return on equity in own home

Obviously, the construction of 17 definitions of income was not based on the premise that each of these definitions represented a viable income concept. Rather, the construction of so many income definitions was to facilitate the analysis that examines which components of a broadened income measure are most responsible for the significant changes in income summary measures as one transitions from the money income concept to an expanded definition of well-being. That said, there are several expanded income definitions that the Census Bureau has found useful to track trends and differences between groups. For example, the 2002 CPS income report (U.S. Bureau of the Census, 2003) highlighted four definitions of income in addition to the traditional money income definition. These were definitions 1b, 14a, 14, and 15. It should be noted that in the 2002 income report for the first time these alternative income measures were featured in the main body of the report and presented along with the money income measures (in previous reports these figures were examined in supplemental report sections).

Discussion

Clearly, an expanded definition of income has a significant effect on income and poverty summary measures. Looking at 2002 data for definition 15, for example, we see that while the median income is somewhat higher under the most comprehensive definition of income ($43,760 based on definition 15 vs. $42,409 based on money income), mean income under the most comprehensive definition is lower than money income and the distribution of income is substantially more equal under the expanded definition (see Table 1). The Gini index, for example was .400 under definition 15, 11 percent lower

than the Gini index for money income.[11] The percentage of aggregate income received by the top 20 percent of the income distribution was also lower (45.6 percent for definition 15 vs. 49.6 percent for money income). Census Bureau figures have consistently shown that government transfers have a much greater impact on lowering income inequality than the tax system. In 2002, for example, subtracting taxes and including the Earned Income Tax Credit lowered the Gini index by about 4 percent, while including transfers lowered the Gini index by around 17 percent.

As would be expected, the use of alternative income measures also has a significant effect on poverty measures. Using the same poverty thresholds as the official measure, the poverty rate based on the most broadened definition of income (definition 15) was 8.6 percent in 2002, 3.5 percentage points lower than the official poverty rate of 12.1 percent. Poverty rates increased between 2001 and 2002 based on both definitions of income.

It is also instructive to look at the effect of the use of alternative income definitions on the relationship of incomes between population subgroups. For example, under the money income definition, the median income in 2002 of households with householders that reported the single race of Black ($29,026) was 62 percent of the median of non-Hispanic White households in which the householder reported no other race. The comparable percentage under the broadest definition of income was 67 percent. Similarly, the use of a broadened definition of income reduces the gap between the median incomes of married-couple family households with children and households with a female householder, no husband present, with children (from 39 percent to 48 percent). Comparisons such as these show that the use of a broadened definition of income not only results in a more equal distribution of income, as might be expected it also tends to narrow the income differences between groups of households with traditionally high incomes and groups with lower incomes.

The Census Bureau plans on continuing to highlight alternative definitions of income because they offer a more comprehensive picture of economic well-being and are more sensitive to the effect of government tax and transfer policies than a money income concept. It should be noted that expanded definitions of income bring many complications, as noncash/tax values are not directly collected in the CPS and are therefore calculated. Thus, they are more prone to methodological changes that could conceivably make time series comparisons more problematic. For example, the Census Bureau's goal is that the next release of after-tax income estimates (this fall) should incorporate a revised and improved tax model. But these improved estimates would be for calendar years 2002 and 2003 only. As the Census Bureau continues down the road of highlighting broadened income measures, the tradeoffs between the desire to continually improve methods and preserve the time series must be understood and factored into implementation decisions.

---

[11] The Gini index measures dispersion of income across an entire range and expresses it as a single statistic. At the extremes, 0 indicates perfect equality (everyone receives an equal share) and 1 indicates perfect inequality (one recipient or group receives all income).

Alternative measures of BEA income

As discussed previously, two important uses of BEA's estimates of personal income, particularly at the state and local level, are to track spending capacity and to measure the tax base. There are alternatives to BEA's data that can be used to address these needs. The IRS provides estimates of adjusted gross income and its major components at the state and county level, but these are available with a lag due in part to the need to wait for returns to be filed. The Census Bureau's estimates of money income, and the alternative income measures in produces, are more timely, but the limited sample size of the CPS means that the Census Bureau only publishes two year moving averages by state.[12] Thus, state and local users of income data often rely on BEA's estimates of personal income, which are the most timely and comprehensive income estimates available at a detailed level of geography.

Alternative BEA measures of income may better meet user needs than does personal income. Personal income differs from a measure of the tax base, since it includes some nontaxable forms of income (e.g., employer contributions for pensions and health insurance) but excludes others (e.g., pension distributions and realized capital gains). Disposable personal income does not fully measure the capacity to spend, since it does not reflect either all money income flows available for spending or the accumulation of wealth that might be drawn down to support consumption. The following discusses how alternative measures of personal income and disposable personal income might be constructed so as to better meet user needs. This discussion is preliminary and will benefit from the input of the FESAC committee.

One alternative approach recognizes that the present scope of personal income is broader than households, since it also includes non-profit institutions serving households (NPISH's). State and local area estimates of household income could be generated separately from NPISH's, paralleling estimates that have been generated at the national level as the result of the latest comprehensive revision of the National Income and Product Accounts (NIPAs).[13]. The rationales for excluding NPISH's are that their consumption patterns are different for those of households and that they are tax-exempt. Thus, state and local area estimates of BEA household income (and disposable household income) might better proxy for consumer spending capacity and the tax base.

In order to estimate household income at the state and local level, income and transfer payments from outside the personal sector would need to be split between households and NPISH's. Further, income would need to reflect transfers between the household and NPISH sectors. Currently, transfers that NPISH's receive from households – or make to them – are excluded from personal income because they are intrasector transfers in the

---

[12] The Census Bureau also produces annual estimates of median household income for states and counties, based on models using data from the ASEC, the decennial census, administrative records, and BEA's personal income. The estimate are available with greater lag than the state household income tabulations from the CPS.

[13] See Mead, McCully, and Reinsdorf (2003).

consolidated accounts of households and NPISH's. Estimates of household income would need to reflect transfers from NPISH's.[14]

How different are estimates of personal income and household income? Data at the national level suggest that they are quite similar: $8.685 trillion for US personal income and $8.647 trillion for US household income in 2001 or a difference of less than 0.5 percent (Mead, McCully, and Reinsdorf, 2003). The similarity of the estimates stems from the fact that personal income in the form of property income and transfers that is attributable to NPISH's is both relatively small and is largely offset by transfers from NPISH's to households in the calculation of household income. However, it is conceivable that differences between personal and household income could be greater at the state and local area level, to the extent that donors to and recipients from NPISH's are different individuals and live in different areas.

While the impact on estimates of income from excluding NPISH's may be small, the previous reconciliation between BEA personal income and the Census Bureau's money income indicates that there are other, more sizeable components of personal income that are not received directly by households. As previously noted, personal income includes employers' payments into employee pension plans, but does not measure pension disbursements. Another alternative measure of personal income would remove the contribution items associated with pension plans and add back pension disbursements. Here "pension plans" refer to both defined benefit and defined contribution plans.

Constructing personal income based on pension disbursements rather than contributions can be rationalized in a variety of ways. In their paper on alternative measures of personal savings, Perozek and Reinsdorf (2002) note that pension funds are assigned to the personal sector as opposed to the business sector. Contributions from business into retirement accounts is compensation across sectors that is included in personal income, while disbursements from these accounts are transfers wholly within the personal sector that don't increase personal income. Perozek and Reinsdorf argue that placing defined contribution plans in the personal sector is appropriate because they belong to employees. However, inclusion of defined benefit plans in the personal sector is more controversial, since employees are not entitled to all of the funds that accrue in defined benefit plans, but rather are entitled only to pensions based on a formula. If defined benefit plans were assigned to the business and government sectors, then personal income would be generated when pensions are disbursed, not when contributions are made into pension plans.

The Perozek and Reinsdorf argument applies only to defined benefit plans. A rationale for treating defined contribution plans in the same fashion must be sought elsewhere. There are two additional rationales that may apply to both defined benefit and defined contribution plans. First, if personal income (or, better, disposable personal income) is being used to measure current spending capacity and if there are liquidity constraints that limit borrowing against these plans, then pension plan disbursements measure increased

---

[14] Household transfer payments to non-profits are treated as household outlays in the NIPAs.

capacity to spend better than pension plan contributions.[15] Second, if personal income is being used to proxy for the tax base, then an income measure that includes taxable pension disbursements is preferred to a measure that includes non-taxed contributions.

BEA's regional economics staff estimated personal income on a pension disbursement basis for the mid-1990s. This involved removing from personal income several pension-related items and adding back an estimate of pension disbursements. The items that were removed from personal income included employee contributions to pension plans (such as 401(k) contributions) that are now included in wages and salaries, employer contributions that are now included in the category "employer contributions for employee pension and insurance funds," and investment earnings on pension accounts (dividends, interest, and rent) that are currently included in property income.

Using pension disbursements in place of pension contributions and earnings lowers the estimate of US personal income for 1997 by $154 billion or 2.2 percent. Adjusted personal income was lower for all states except Florida. The states that experienced the largest gain in personal income shares were Florida, Arizona, Delaware and Michigan. Relative losers were DC, Maryland, Virginia, Alaska and Hawaii. All of these losing states have a large federal government presence, with large federal government contributions to pensions. Of course, these estimates reflect the current relationship between the number of retirees and working people in the US and in the states, a relationship that is expected to change with the retirement of the baby-boom generation. The impact of replacing pension accruals with disbursements in any given year will also depend on the strength of the stock market, as required employer contributions into pension plans decline with the appreciation of pension plan assets.

There are several source data problems with estimating personal income on a pension disbursement basis. These problems are an issue at the national level and they are even more acute at the subnational level where less source data are available or where, owing to small sample issues, the source data might be less reliable. One problem is that the unemployment insurance data used to generate wage and salary estimates do not break out the portion that employees contribute to pension plans. BEA's preliminary research used data from the Office of Personnel Management (OPM) and the Census Bureau for the government sector and IRS Form 5500 data for the private sector to break out employee contributions at the national level. Wages and salaries were used to distribute the national estimates to the state level. The drawback of this approach at the national level is the timeliness of the IRS data from Form 5500. At the state level, employee contributions in different industries have different geographic coverage that the use of private wages will not capture. In addition, employees can contribute a variable amount up to a certain limit, and the state wages will not reflect that option.

Another important issue with regard to the source data available for estimating pension disbursements concerns pension rollovers. Lump sum distributions frequently occur for cash balance and defined contribution plans when employees leave their firms. Whether

---

[15] In fact, however, defined contribution plans frequently contain provisions that allow employees to borrow on these accounts, so that the liquidity constraint assumption is weak.

these distributions are rolled over into a new retirement plan or whether they are retained for spending or paying off debt is a crucial distinction for measuring personal income on a pension disbursement basis. According to data from the Survey of Income and Program Participation, Moore and Muller (2002) determined that, while "historically most distributions have not been rolled over, the majority of the dollar value of all distributions has been rolled over. For example, 73 percent of distributed dollars were rolled over in 1993, and 79 percent were rolled over in 1996" (page 33). Similarly, Sabelhaus and Weiner (1999) estimate from IRS microdata that 70 to 77 percent of distributions were rolled over in 1995 (pages 600-601).

BEA reviewed state and national information from IRS's Compliance Research Information System (CRIS), a sample of seven percent of all 1040 filers. BEA estimated that total rollovers in 1999 were approximately $227 billion. One of the problems with the CRIS database is that it has not been edited. The quality of the database must be reviewed over time. Large errors were noticed for some categories at the state level. In addition, the database excludes nonfilers of IRS Form 1040.

BEA has recently been working with the IRS Statistics of Income Division to provide BEA with state level sample data on information returns that will allow the Bureau to adjust for nonfilers and to determine type of distributions from the 1099R. Data on distributions from pension and IRA accounts, and their disposition (whether rolled-over or paid to the individual), may be gleaned from taxpayer information returns (Forms 1099R and 5498). Administrative records and Census Bureau survey data are available for lump sum payments, refunds, and transfers from government retirement plans, but these government payments constitute only a small portion of all lump sum retirement payments.

The foregoing discussion considers including pension disbursements in an alternative definition of personal income, where pensions are limited to defined benefit and defined contribution plans. However, there are other tax-preferred schemes, such as, IRAs and annuities that facilitate savings to provide income during retirement. BEA currently treats contributions to these other schemes as personal savings. One can envision an alternative definition of personal income that includes not only pension distributions, but also distributions from IRAs and other tax-preferred schemes, that is, that reflects total retirement payments.[16] Constructing this alternative measure would involve removing contributions to these other tax-preferred schemes, removing the property income earned on the schemes, and adding total retirement payments. As with pension rollovers, care would need to be taken to net out distributions that are rolled over into other similar tax preferred accounts.

The rationales for including disbursements from other tax-preferred retirement schemes parallel those given for including pension disbursements—an income measure capturing these disbursements may better measure current spending capacity and the tax base.

---

[16] It should be noted that while IRAs were created to provide retirement income, the funds may be withdrawn before retirement for a variety of purposes. Thus, it is not strictly true that an alternative measure of personal income that incorporates IRA disbursements is reflecting only retirement payments.

It is important to note that the alternative measures of personal income proposed above do not strictly fit the HSH concept of income. Specifically, when retirement assets are disbursed and used for consumption, they may lead to a decline in retirement asset balances. Thus, consumption may be supported by a decline in net worth, in contrast to the HSH concept of maintaining net worth.

The foregoing has discussed the inclusion of distributions of pensions and other retirement schemes into alternative measures of personal income. All of these schemes have the attribute that they are tax-preferred and were designed to provide income in retirement. But, private savings more generally may be viewed as generating assets that provide income during retirement or more generally that provide income for consumption smoothing over the life cycle. A more expansive definition of income might include the money flows from realized capital gains or the increase in wealth associated with unrealized capital gains. These more expansive personal income definitions come closer to measuring changes in net wealth and hence closer to the HSH concept of income.

Data on changes in the net worth of households and nonprofit organizations are published quarterly by the Federal Reserve Board in the Flow of Funds (see Table R 100). An examination of this table makes clear some drawbacks of a very broad measure of income that includes unrealized capital gains. Specifically, such a measure would be extremely volatile and would not be predictive of spending patterns. For example, the net worth of households and nonprofit organizations increased by over $4.9 trillion, or 63 percent of US personal income, in 1999, largely through holding gains on assets. In contrast, net worth declined by about $1.4 trillion in the second quarter of 2002 and it declined by $1.6 trillion in the third quarter of 2002. Such increases and decreases were not accompanied by corresponding changes in consumption. Thus, a very broad measure of income defined as the change in net worth does not seem useful for measuring spending capacity. Further, since unrealized capital gains are not taxed, such a broad measure does not serve as a good proxy for the tax base. A more useful expanded definition of income might include only realized capital gains.

Conclusion

This paper has compared two of the more widely used measures of household income— BEA's personal income and the Census Bureau's CPS money income. It has also presented alternative estimates of money income developed by the Census Bureau to better measure economic well-being and it has discussed how alternative BEA measures of personal income might be developed that better measure the capacity to spend or the tax base. It is clear that there is not one single definition of household income that can serve all purposes. Instead the BEA and the Census Bureau have and will continue to provide an array of measures that address different user needs.

Questions for the FESAC Committee

After adjusting BEA personal income to the same scope as CPS money income, the BEA estimate remains $806 billion higher. The paper surmises that at least half of this might be due to CPS underreporting. Is this a reasonable surmise or could the BEA estimate be too high? Does possible underreporting in the CPS have any implications for income distribution measures?

Should BEA pursue generating alternative income estimates along the lines discussed in the paper? That is, should BEA generate alternative income measures that include retirement income disbursements and possibly realized capital gains? How well would these alternative measures address user needs to better measure the capacity to spend or the tax base?

Are there other user needs not discussed in the paper that could be met by alternative BEA measures of income? If so, what alternative definition of income might be proposed to meet these needs?

The Census Bureau has been producing estimates of income and poverty based on alternative definitions of income for a long time and, within the latest income report release, has begun to highlight some of these measures much more than previously. Are the measures that the Census Bureau has begun to highlight appropriate? Are there others they should highlight as well?

For future Census Bureau income reports, are there other components of well-being that should be added to Census Bureau research into broadened income measures? For example, alternative measures now examine the effect of one type of mandatory expense (taxes) on income. Should future research include the effect of other "mandatory" expenses, such as work-related or health-related expenses?

Should the Census Bureau consider using model-based techniques based on the relationships between administrative and survey data to produce improved experimental estimates of household income?

Is the reconciliation of BEA's personal income and the Census Bureau's money income of sufficient value that it should be updated and published on a regular basis? Is there value in extending the reconciliation to the state level?

References

The Canberra Group, *Expert Group on Household Income Statistics: Final Report and Recommendations*, Ottawa: 2001.

Carson, Carol S., "The Underground Economy: An Introduction," *Survey of Current Business* 64 (May 1984): 21-37.

Carson, Carol S., "The Underground Economy: An Introduction," *Survey of Current Business* 64 (July 1984): 106-117.

Eisner, Robert, "Divergences of Measurement and Theory and Some Implications for Economic Policy," *American Economic Review* 79 (March 1989): 1-13.

Harrison, Anne, "Linking micro and macro income distribution," in Canberra Group, *Papers and Final Report of the Third Meeting on Household Income Statistics*, Ottawa, 1999.

Landefeld, J. Steven and Barbara Fraumeni, "Measuring the New Economy," *Survey of Current Business* 81 (March 2001): 23-40.

Ledbetter, Mark A., "Comparison of BEA Estimates of Personal Income and IRS Estimates of Adjusted Gross Income," *Survey of Current Business* 84 (April 2004): 8-22.

Mead, Charles Ian, Clinton P. McCully, and Marshall B. Reinsdorf, "Income and Outlays of Household and of Nonprofit Institutions Serving Households," *Survey of Current Business* 30 (April 2003): 13-17.

Moore, James H. Jr. and Leslie A. Muller, "An Analysis of Lump-Sum Pension Distribution Recipients," *Monthly Labor Review* 125 (May 2002): 29-46.

Parker, Robert P., "Improved Adjustment for Misreporting of Tax Return Information Used to Estimate the National Estimate the National Income and Product Accounts, 1977," *Survey of Current Business* 64 (June 1984): 17-25.

Perozek, Maria G. and Marshall B. Reinsdorf, "Alternative Measures of Personal Saving," *Survey of Current Business*, 82 (April 2002): 13-24.

Roemer, Marc, "Assessing the Quality of the March Current Population Survey and the Survey of Income and Program Participation Income Estimates, 1990-1996," Mimeo, U.S. Bureau of the Census, June 16, 2000.

Roemer, Marc, "Using Administrative Earnings Records to Assess Wage Data Quality in the March Current Population Survey and the Survey of Income and Program Participation," Mimeo, U.S. Bureau of the Census, November 19, 2002.

Sabelhaus, John and David Weiner, "Disposition of Lump-Sum Pension Distributions: Evidence from Tax Returns," *National Tax Journal* 52 (September 1999): 593-613.

U.S. Bureau of the Census, Current Population Reports, Series P60, No. 221, *Income in the United States: 2002*, U.S. Government Printing Office, Washington, DC 2003.

U.S. Internal Revenue Service, "IRS Moves to Ensure Fairness of the Tax System; Research Program Works to Increase Compliance Program Effectiveness, Reduce Burdens on Taxpayers," news release IR-2002-05, January 16, 2002. [www.irs.gov])

U.S. Internal Revenue Service, "Individual Income Tax Returns, Preliminary Data, 2001," SOI Bulletin, (Winter 2002-2003

TABLE 1: BEA State Personal Income (SPI) to Money Income (MI) Reconciliation Matrix, 2001 (millions of dollars)

Line	Item	Total	Personal Income												Not in SPI	Residual
			Wgs. & Sal.	Proprietors' Income	Dividends	Interest	Rent & Royalties	ECEPIF	Soc.Sec.	Wrkrs' Comp	Oth. Ret.& Dis.	Inc. Maint.	Unemp. Ins.	Other		
1	Aggregate State Personal Income:	8,678,255	4,951,022	729,092	409,193	1,090,166	137,854	562,628	425,167	11,159	13,573	110,901	32,408	205,092		
2	Less: portion of SPI not in MI	2,241,495	4,871	98,598	123,642	779,260	79,109	562,628	209	3,496	4	48,762	0	540,916		
3	Pay-in-kind	4,713	4,713													
4	Non-farm proprietors' income adjustments	94,992		94,992												
5	Imputed net rental income of owner-occupied farm dwellings	5,189		5,189												
6	Other farm proprietors' income adjustments	-1,584		-1,584												
7	Property income retained by fiduciaries	22,667			9,204	10,391	3,072									
8	Property income received by nonprofit institutions	77,485			16,289	59,513	1,683									
9	Property income received by pension plans	345,432			98,149	245,984	1,299									
10	Imputed interest	460,815				460,815										
11	Monetary rents capital consumption adjustment	-11,174					-11,174									
12	Imputed net rental income of owner-occupied non-farm dwellings	86,786				2,557	84,229									
13	Employer contributions for employee pension and insurance funds	562,628						562,628								
14	Federal and state prisoner compensation	158	158													
15	Transfer payments not included in money income	593,388							209	3,496	4	48,762		540,916		
16	Plus: Portion of MI not included in SPI	812,974	0	0	0	0	0	0	0	23,666	346,413	0	1,842	395,841	45,212	
17	Personal contributions to social insurance	371,690												371,690		
18	Co. or union pension benefits (including profit sharing)	117,587									117,587					
19	Federal government retirement benefits	49,112									49,112					
20	U.S. military retirement benefits	34,609									34,609					
21	State or local government employee pensions benefits	105,453									105,453					
22	Reg. pay. from annuities and paid-up life insurance policies	30,691									30,691					
23	IRA, Keogh, or 401(K)	6,985									6,985					
24	Private workers' compensation benefits	23,666								23,666						
25	Private supplemental unemployment benefits	1,842											1,842			
26	Private accident insurance disability benefits	1,977									1,977					
27	School scholarships & grants and other educ. assistance	24,151												24,151		
28	Child support	24,766													24,766	
29	Alimony	6,559													6,559	
30	Assistance from friends and relatives	13,887													13,887	
31	Plus: Reallocation by type of SPI Inc	0	188,846	0	(137,346)	(51,500)	0	0	0	0	0	(6,103)	0	6,103	0	0
32	S corporation profit distributions	0	188,846		(188,846)											
33	Interest distributed by regulated investment companies	0			51,500	(51,500)										
34	Foster care and adoption assistance, excluding insts.	0										(6,479)		6,479		
35	Assistance from Bureau of Indian Affairs	0										376		(376)		
36	Equals: SPI- derived money income	7,249,734	5,134,997	630,494	148,205	259,406	58,745	0	424,958	31,329	359,982	56,036	34,250	66,119	45,212	0
37	Census money income (as reported)	6,445,929	4,976,880	328,784	87,728	188,243	58,495	0	375,672	11,516	253,496	32,500	24,327	64,485	43,644	160
38	Money income gap (line 36 - line 37)	803,805	158,117	301,710	60,477	71,163	250	0	49,286	19,813	106,486	23,536	9,923	1,635	1,568	(160)
39	Percent distribution of money income gap	100.0%	19.7%	37.5%	7.5%	8.9%	0.0%	0.0%	6.1%	2.5%	13.2%	2.9%	1.2%	0.2%	0.2%	0.0%
40	Relative money income gap (line 38/line37)	12.5%	3.2%	91.8%	68.9%	37.8%	0.4%	0.0%	13.1%	172.0%	42.0%	72.4%	40.8%	2.5%	3.6%	
41	Addendum: Misreporting adjustments included in SPI	104,296		308,025		-17,235	1,796									

Income Definitions-
ECEPIF: *SPI* - Employer Contributions for Employee Pension and Insurance Funds
Income Maintenance: *SPI* - Income Maintenance   *CPS* - SSI and Public Assistance
Other: *SPI* - Remaining Transfer Payments and Residence Adjustment   *CPS* - Veterans' Benefits, Educational Assistance, Other

Table 2: Selected Census Bureau Income and Poverty Measures by Definition of Income: 2002

Income Definition	Median Household Income	Mean Household Income	Gini Index, All Households	Poverty Rate, All Persons
1. Money income excluding capital gains (losses)	$42,409	$57,852	0.448	12.1
1b. Definition 1 plus realized capital gains (losses) less taxes	$37,066	$48,159	0.426	11.6
2. Definition 1 less government cash transfers	$39,102	$53,351	0.504	20.0
3. Definition 2 plus realized capital gains (losses)	$39,268	$55,986	0.512	20.0
4. Definition 3 plus health insurance supplements to wage or salary income	$41,294	$58,469	0.508	19.3
5. Definition 4 less social security payroll taxes	$38,602	$55,279	0.514	20.3
6. Definition 5 less federal income taxes (excluding the EIC)	$36,278	$48,047	0.495	20.4
7. Definition 6 plus the earned income credit (EIC)	$36,453	$48,283	0.491	18.9
8. Definition 7 less state income taxes	$35,280	$46,140	0.487	19.1
9. Definition 8 plus nonmeans-tested government cash transfers	$39,099	$50,332	0.431	11.9
10. Definition 9 plus the value of medicare	$41,169	$51,822	0.419	11.6
11. Definition 10 plus the value of regular-price school lunches	$41,183	$51,835	0.419	11.6
12. Definition 11 plus means-tested government cash transfers	$41,363	$52,143	0.414	10.9
13. Definition 12 plus the value of Medicaid	$41,928	$52,556	0.411	10.4
14a. Definition 13 plus the value of other means-tested government noncash transfers less medicare and medicaid	$39,426	$50,914	0.421	9.9
14. Definition 14a plus the value of medicare and medicaid	$42,061	$52,815	0.405	9.4
15. Definition 14 plus imputed return on home equity	$43,760	$54,610	0.400	8.6

Source: U.S. Census Bureau, Current Population Survey, 2003 Annual Social and Economic Supplement.