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The Sources and Methods for the Annual Estimates of County Personal Income, 1996-2002

This text, together with the text of the following sections, describes the sources of the data and the methods that were used to prepare the annual estimates of the components of personal income for counties for 1996-2002.[1]

The introduction describes the relationship between the national estimates of personal income and the state and county estimates, it defines the essential terms used, and it explains the major differences between the definitions and classifications used in the national estimates and those used in the state and county estimates. This introduction also includes general information about the sources of the data that are used to prepare the estimates and the place of measurement of the source data. Additionally, it includes information about the procedure used to integrate the national, the state, and the county estimates--the allocation procedure--and a brief description of the procedures used to prepare estimates for which direct source data for some years are not available--the interpolation and extrapolation procedures.

After this introduction, the sections of text provide specific information about the sources and methods used to prepare the county estimates of each component of personal income and of the residence adjustment.

Introduction

The state and county estimates of personal income are designed to be conceptually and statistically consistent with the national estimates of personal income; the county estimates sum

1. For information about the methodology used to prepare the estimates for earlier years, call (202) 606-5360, or e-mail reis.remd@bea.gov.

to state totals which, in turn, sum to the national estimates.[2] As a result, the definitions that are used for the components of personal income for the state and county estimates are essentially the same as those used for the national estimates.[3]

State and local area personal income is defined as the income received by, or on behalf of, all the residents of the area. It consists of the income received by persons from participation in production, from both government and business transfer payments, and from government interest (which is treated like a transfer payment). Personal income is the sum of wage and salary disbursements, supplements to wages and salaries, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and current personal transfer receipts to persons, less personal contributions for social insurance.

Persons consists of individuals, nonprofit institutions that serve individuals, private noninsured welfare funds, and private trust funds. In this text, the last three are referred to as "quasi-individuals." Some of the state-level and county-level source data used to estimate personal income received by individuals are not appropriate for estimating the income received by quasi-individuals.

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2. At the national level, personal income is part of the personal income and outlay account, which is one of five accounts that compose the national income and product accounts.
Of the aggregations in the personal income and outlay account, only personal income, disposable personal income, and personal tax and nontax payments are estimated for states, and only personal income is estimated for counties.

3. The national estimates may temporarily differ from the state estimates because of different estimating schedules. The state estimates of wages and salaries and farm proprietors' income incorporate source data that are not available when the national estimates are prepared; these data are later incorporated into the national estimates when they are revised.

State and local area per capita personal income is calculated as the personal income of the residents of the area divided by the population of the area as of July 1.

Differences in geographic scope and in classifications between the national and the state and local area estimates

The main differences between the national income and product accounts (NIPA=s) estimates of personal income and the state 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 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.

The measure of personal income in the NIPA=s is broader. It includes the earnings of Federal civilian and military personnel stationed abroad and of U.S. residents on foreign assignment for less than a year, and it includes the investment income that is received by Federal retirement plans of Federal workers stationed abroad. Earnings of foreign residents are included only if they live and work in the United States for a year or more.

The NIPA estimate of current personal transfer receipts, unlike the state estimates, also includes the unemployment benefits that are paid by state employment security agencies to individuals who live in outlying U.S. areas, mainly in Puerto Rico. The state estimates are adjusted to remove these payments.

Sources of the data

The state and county estimates of personal income are primarily based on administrative-records data and on data from censuses or from similar surveys.

The data from administrative records may originate either from the recipients of the income or from the source of the income. These data are a by-product of the administration of various Federal and state government programs. The most important sources of these data are as follows: The state unemployment insurance programs of the Employment and Training Administration, U.S. Department of Labor; the social insurance programs of the Health Care Financing Administration, U.S. Department of Health and Human Services, and of the Social Security Administration; the Federal income tax program of the Internal Revenue Service, U.S. Department of the Treasury; the veterans benefit programs of the U.S. Department of Veterans Affairs; and the military payroll systems of the U.S. Department of Defense.[4]

The data from censuses are mainly collected from the recipients of the income. The most important sources of census data for the state estimates 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 Bureau of the Census, U.S. Department of Commerce.

Some of the 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.

Using administrative-records data and Census data to measure income as defined in the national income and product accounts has both advantages and disadvantages. By using these

4. The data from the state unemployment insurance programs are collected by the various state employment security agencies and are assembled and supplied by the U.S. Bureau of Labor Statistics.

data, BEA can prepare detailed annual estimates of personal income for the Nation and for states and counties at a relatively low cost and without increasing the reporting burden on businesses and households. However, because the source data often do not precisely "match" the series that is being estimated, they must be adjusted to compensate for differences in definitions, in coverage, and in geographic detail.

Geographic characteristics of the source data

Personal income, by definition, is a measure of the income received by persons, and the estimates of state and local area personal income should reflect the area of the residence of the income recipients. However, most of the source data that are used to prepare the estimates of some of the components of personal income are reported and recorded by the recipient's place of work rather than by the recipient's place of residence. As a result, the estimates of the components that are derived from the place-of-work data are adjusted to a place-of-residence basis, and the estimates of these components are presented both by place of work and by place of residence.

The estimates of the components of personal income can be grouped according to the geographic characteristics of the source data.

The estimates of wages and salaries, supplements to wages and salaries, and personal contributions for social insurance by employees are mainly derived from source data that are reported and recorded by place of work. These data are reported by industry in the state and county in which the employing establishment is located.

The estimates of nonfarm proprietors' income and of personal contributions for social insurance by the self-employed are derived from source data that are reported by the tax-filing address of the recipient. This address is usually that of the proprietor's residence; therefore, these data are assumed to be recorded by place of residence. Nevertheless, the estimates of these components--as part of the estimates of earnings--are presented both by place of residence and by place of work. Assuming that nonfarm proprietors who commute to work between counties usually file their tax returns from their residence, the estimates of earnings by place of work are more likely to be misstated than the estimates of earnings by place of residence.

The estimates of farm proprietors' income are derived from source data that are reported and recorded by the principal place of production, which is usually the county in which the farm has most of its land and in which most of the work is performed. Because most farm proprietors live on, or near, their land, the place of residence is assumed to be the same as the place of work.

The estimates of rental income of persons, personal dividend income, personal interest income, current personal transfer receipts, and personal contributions for supplementary medical insurance and for veterans life insurance are derived from source data that are reported and recorded by the place of residence of the income recipient.

Allocation procedures

Using allocation procedures imparts to the state and county estimates the characteristics of the national estimates that are not reflected in the available source data for states and counties; for most components of personal income, the state and county source data are less comprehensive and less reliable than the data that are available for the national estimates.[5] In addition, using

5. However, the national estimates of most components of wages and salaries and current personal transfer receipts, which together account for about 70 percent of personal income, are based mainly on the sum of source data that are available by state. Therefore, the use of the allocation procedures to prepare the state estimates of these components results in estimates

these procedures allows the use of state and county data that are available in source data that are related to, but that do not precisely match, the component being estimated. For the preparation of the county estimates, the use of the allocation procedure allows the use of the best available source data for the counties of each state. For unemployment compensation, for example, the control totals for some states are allocated to counties in proportion to direct payments data provided the employment security agency of each state. For the states not providing such data, the control totals are allocated in proportion to estimates of the number of unemployed persons prepared by the Bureau of Labor Statistics.

Before using allocation procedures, the national estimates of some components of personal income are adjusted for the differences in definitions and classifications between the national estimates and the state estimates. The adjusted national estimates of these components and the national estimates of the other components are used as the "control totals" for the state estimates. The state estimates are then used as control totals for the county estimates.

In the allocation procedures, the state control total for each component is allocated to counties in proportion to each county's share of a related series of source data. In many cases the source data are modified or augmented before the allocation by preliminary estimation--for example, by the summation of several items (for example, wages, tips, and pay-in-kind), by the multiplication of two items (for example, average wages and the number of employees) or by interpolation or extrapolation.

Because the allocation procedures use the national control totals for the state estimates and the state control totals for the county estimates, their use yields an additive system in which

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that do not differ greatly from the source data.

the state estimates sum to the national estimate and the estimates for the counties in a state sum to the state estimate.

The allocation procedure used to estimate a component of state personal income is

$$Y_s = (Y_n)\left(\frac{X_s}{X_n}\right)$$

where Y_s is the estimator (that is, the statistical procedure used to derive an estimate) of the component of personal income for state s, where Y_n is the national estimate of the component (which is used as the control total for the state estimates of the component), where X_s is the datum for state s from the series of source data related to the component, and where X_n is the national sum of the state data from the series of source data related to the component ($X_n =$ X_s).

In the cases in which the national estimate is calculated as the sum of the state data plus an amount A_n for which state data are unavailable, the allocation procedure may be represented by two equations (which together are mathematically identical to the preceding equation):

$$A_s = (A_n)\left(\frac{X_s}{X_n}\right)$$

$$Y_s = X_s + A_s$$

where A_s is the state estimator of the portion of Y for which state data are unavailable. In effect, Y_s is the composite estimator consisting of X_s, the best possible direct estimator (100 percent sample) of the portion of Y for which state data are available, plus A_s, the indirect estimator of the portion of Y for which state data are unavailable.

For example, the national estimates of wages and salaries for many industries consist of the sum of state data plus a few small adjustments, which taken together (A_n) are allocated to the states in proportion to the state data. The small allocated amount for each state (A_s) is added to the state datum (X_s) to yield the state estimate (Y_s). On the other hand, the adjustments for dividends, interest, and rent are large because the source data do not include all tax returns for the particular year and because the tax return data do not fully cover the income received by individuals.

Interpolation and extrapolation procedures

Some of the data that are used to estimate components of state and county personal income are available or adequate only in certain years, which are called benchmark years. In order to derive the estimates of these components for other years, interpolation and extrapolation procedures are used to extend the distribution of the data for the benchmark year or years.

Interpolation procedures are used in the derivation of the estimates for the years between two benchmark years. Extrapolation procedures are used in the derivation of the estimates for the years after the most recent benchmark year.

For the details of these procedures, see the "Technical Notes."