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BEA's Regional Program Challenges and Milestones

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In 1940, the U.S. Department of Commerce published its first set of state economic estimates. The Bureau of Foreign and Domestic Commerce, predecessor to the Bureau of Economic Analysis (BEA), developed the data within the National Income Division.

Over the past 80 years, the Regional program within BEA has worked toward the production of a comprehensive set of economic statistics at the state and local levels. This is the only set of regional economic data that are fully integrated within BEA's National Income and Product Accounts (NIPAs).

As part of the commemoration of the 100th anniversary of the *Survey of Current Business*, we are highlighting two articles that represent key moments in the Regional program: “Income Payments to Individuals, by States, 1929–38,” from April 1940, and “Gross State Product by Industry, 1963–86,” from May 1988.

This article will review some of the history of the Regional program as well as discuss some of the challenges unique to the development of regional statistics.



First pages of the *Income Payments to Individuals, by States, 1929–38* article, and the *Gross State Product by Industry, 1963–86* article.

Personal Income by State: Adjustment for Residence, Price Parity, and Source Data

One of the major challenges discussed in the 1940 *Survey* article is the development of per capita estimates. BEA has very limited access to Internal Revenue Service records, so most of the source data for wages and salaries comes from employers and is therefore identified by place of work. Many data users, however, are interested in place-of-residence estimates, and per capita personal income is ideally measured by place of residence. The 1940 article highlights this issue with reference to Washington, DC.

The Regional program's solution is to publish earnings on both a place-of-residence and a place-of-work basis. The difference between the two is published as a separate entry called the "adjustment for residence." The earliest adjustments for residence were applied to 1948 data for the District of Columbia, Maryland, Virginia, New Jersey, and New York. BEA later expanded the adjustments to all states, based on journey-to-work data from the long form of the decennial Census. With the discontinuation of the long form, BEA now relies on a special tabulation of the American Community Survey (ACS) prepared by the Census Bureau.

At the national level, the adjustment for residence between the United States, Canada, and Mexico has little impact on U.S. earnings, less than .1 percent in 2019. For regional estimates, the adjustment between states can be significant. In 2019, the adjustment constituted -50.6 percent of earnings for the District of Columbia, 9.8 percent for Maryland, and 5.7 percent for Virginia.

BEA's definition of residence refers to the location where the income to be measured is received. This differs from the definition used by the Census Bureau, which refers to the location of permanent residence. BEA considers the residence of military personnel to be the location where they live while they are on military assignment. The income of military personnel on foreign assignment is excluded from the state and local area personal income estimates because their residence is outside the territorial limits of the United States. This is one of the few cases in which BEA's estimates of all states plus the District of Columbia do not sum to BEA's national totals in the NIPAs.

Another consideration exclusive to regional analysis is the difference in costs between areas. With this in mind, BEA sought to develop regional price parities (RPPs), which allow real comparisons between regions. In 2014, under data-sharing agreements with the Bureau of Labor Statistics (BLS) and the Census Bureau, BEA released RPPs for states, state portions, and metropolitan areas. Detailed microdata from the Consumer Price Index program are adjusted to obtain average price levels for BLS-defined areas. These are allocated to counties in combination with direct price and expenditure data on housing rents from the ACS. County data are then aggregated to states and used to estimate RPPs, which measure price level differences across regions for one time period. The state RPPs are used in conjunction with the U.S. personal consumption expenditures (PCE) price index for each year to estimate real personal income by state. Currently, BEA produces the estimates as a standard annual release.

The most important data source for state personal income is the Quarterly Census of Employment and Wages (QCEW), collected by BLS. The QCEW data includes all wages and salaries for employees covered by state unemployment insurance (UI) laws and the UI program for federal civilian employees. This accounts for more than 90 percent of wages and salaries,

which in turn are the largest component of personal income. The QCEW program has its origins in the Social Security Act of 1935 and subsequent legislation, which together, established a federal/state cooperative program for unemployment insurance. In order to monitor compliance with the law, the legislation required employers to report their covered monthly employment and quarterly wages and salaries each quarter. Data from the QCEW program is often referred to as UI data or ES-202 data (from the name of the quarterly form).

QCEW data is collected from the workforce agencies of the fifty states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands by BLS, which provides the series to BEA. Within BEA, QCEW data is reviewed and maintained by the Regional program and distributed throughout the Bureau in compliance with the Confidential Information Protection and Statistical Efficiency Act (CIPSEA) and other federal regulations. Policies implemented during the 1980s focused on improved cooperation between all parties, as well as procedural improvements, among which was the development and maintenance of firm name and address information. With the emergence of interest in “big data,” BEA has been increasing its focus on establishment-level QCEW data. Among its uses, the data has been valuable in developing new accounts for Puerto Rico and the U.S. Virgin Islands and in making improvements to the state-level employment statistics for newly foreign-owned U.S. businesses. BEA currently receives establishment-level data for nearly every state.

The establishment-level data is handled with particular care because it contains respondent identifiable information. Records within any BEA-published statistics that are based on QCEW data may be suppressed to prevent disclosure of confidential information. BEA follows BLS nondisclosure rules where applicable, but because BEA publishes some data at greater detail than BLS, we apply additional nondisclosures as appropriate. We will additionally suppress other detail data to prevent indirect disclosure of information from aggregated totals.

An advantage of using QCEW as a basis for wage and salary estimates is that the ES-202 form also includes employment data. This has aided the Regional program in building estimates of employment at the same level of detail as the wage and salary estimates. In addition, the employment estimates provide a secondary means of reviewing the wage and salary estimates. Note that the monthly employment level matches the week including the 12th of the month, rather than measuring average employment across the month. The impact of such distortions is diminished at the quarterly and annual levels and does not require adjustment.

GDP by State: Methodology and PCE

With the creation of state personal income estimates, the next logical step was the development of gross state product estimates, which are discussed in the 1988 *Survey* article. But here the Regional program encountered a problem with data availability. To understand the problem and its solution, we need to look more closely at the structure of the NIPAs.

There are three ways to derive gross domestic product (GDP), the broadest measurement of the economy. The expenditure approach measures the value of all final goods and services produced in a country or region in a given period. GDP equals the sum of consumption, investment, government spending, and exports minus imports. The value-added approach measures the sum of all value added by each industry in each step of the creation of final goods and services. Gross value added equals total sales less the value of intermediate inputs. Finally, the income approach measures the value of all sources of income earned in production, or gross domestic income

(GDI). In theory, all three measures should be equal; however, each is calculated using different data sources, and differences may result. Any such differences are offset with an accounting entry called the “statistical discrepancy.”

At the national level, data is available for the estimation of all three measures. However, state and local data is more limited. As a solution, the Regional program currently prepares a full set of GDI estimates at the state level, then allocates the statistical discrepancy across states in order to build state estimates of GDP.

In the methodology described in the 1988 *Survey* article, the GDP by state estimates were composed of four components: (1) compensation of employees, (2) proprietors’ income, (3) indirect business tax and nontax liability, and (4) other mainly capital-related charges. With the incorporation of more state-level data and improvements in methodology, the current GDP by state estimates are broken down slightly differently: (1) compensation of employees, (2) gross operating surplus, which includes proprietors’ income, corporate profits, and rental income of persons, (3) taxes on production and imports, and (4) subsidies.

In the expenditure approach to measuring GDP, the largest component is PCE, which is defined as the value of all goods and services purchased by or on behalf of persons, including purchases by nonprofit institutions serving households. PCE is often referred to as consumer spending.

BEA has developed state-level estimates of PCE by type of product. Several of the component series are benchmarked to the Economic Census, which includes state-level expenditure and receipt data. Additional data sources such as the ACS are used for products and services that aren’t covered in the Economic Census. For years when these data are not available, wage and salary data for the industries that provide the goods and services are used for interpolation and extrapolation. The series are adjusted for residence in a similar way as earnings. These adjustments are sizable in expenditure categories such as food services and accommodation, especially in tourism-heavy states like Hawaii and Nevada.

The largest category of PCE by product is housing including utilities. For renters, housing consumption is measured by rental payments; for owners, housing consumption is calculated as the imputed value of expenditures that homeowners would have made if they had rented their home instead of owning it. Ongoing research seeks to incorporate ACS data from the public-use microdata sample files into the estimates.

The Regional program released its prototype estimates of PCE by state in 2014, extended back to 1997, and currently produces the estimates as a standard annual release. BEA anticipates the initial release of estimates of real PCE by state in 2021.

Conclusion

The focus of the Regional program at BEA has been the expansion of our statistical products, providing the most accurate data in a timely manner. This article has focused on the increasing range of BEA’s regional estimates. Some mention should be made of the improvements in estimate detail, as well as the recent efforts to coordinate data releases across programs. BEA has also made regular improvements in the accuracy of the estimates, but a discussion of methodological changes would be beyond the scope of this article.

With regard to detail, the 1940 and 1988 articles present the initial annual estimates at the state level, either summed across all industries or with limited industry detail. BEA has increased industry detail when the quality of underlying data supports it, subject to the disclosure issues discussed above. BEA has also sought to develop local areas estimates, first for metropolitan statistical areas (MSAs), then at the county level. Personal income by state estimates extend back to 1929, while personal income by county estimates extend back to 1969. GDP by MSA was introduced in the [November 2007 Survey](#), and in March 2019, BEA released its first official GDP by county statistics with industry detail. The methodology for these county-level estimates is discussed in a *Survey* article in [March 2020](#).

BEA's quarterly estimates of state personal income and GDP by state provide good examples of improvements in timeliness. The [first quarterly personal income by state estimates](#) were released in December 1966, 5-½ months after the reference period. BEA has accelerated the release of these estimates by 3 months. The series is available back to the first quarter of 1948. The first quarterly GDP by state estimates were released in September 2015, 8-½ months after the reference period. BEA now releases the series 3 months after the reference period, nearly simultaneously with the third release of U.S. GDP and first release of GDP by industry. The series is available back to the first quarter of 2005.



Survey of Current Business
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