

BEA BRIEFING

Future Directions for the Industry Accounts

By Brian C. Moyer

OVER the past decade, the Bureau of Economic Analysis (BEA) has improved its industry accounts in various ways to provide a more useful and accurate view of the economy. These improvements include providing more complete industry coverage, accelerating the release of the annual input-output (I-O) accounts and the gross domestic product (GDP) by industry accounts, and providing new supplemental, or “satellite,” accounts that offer detailed information on specific industries.

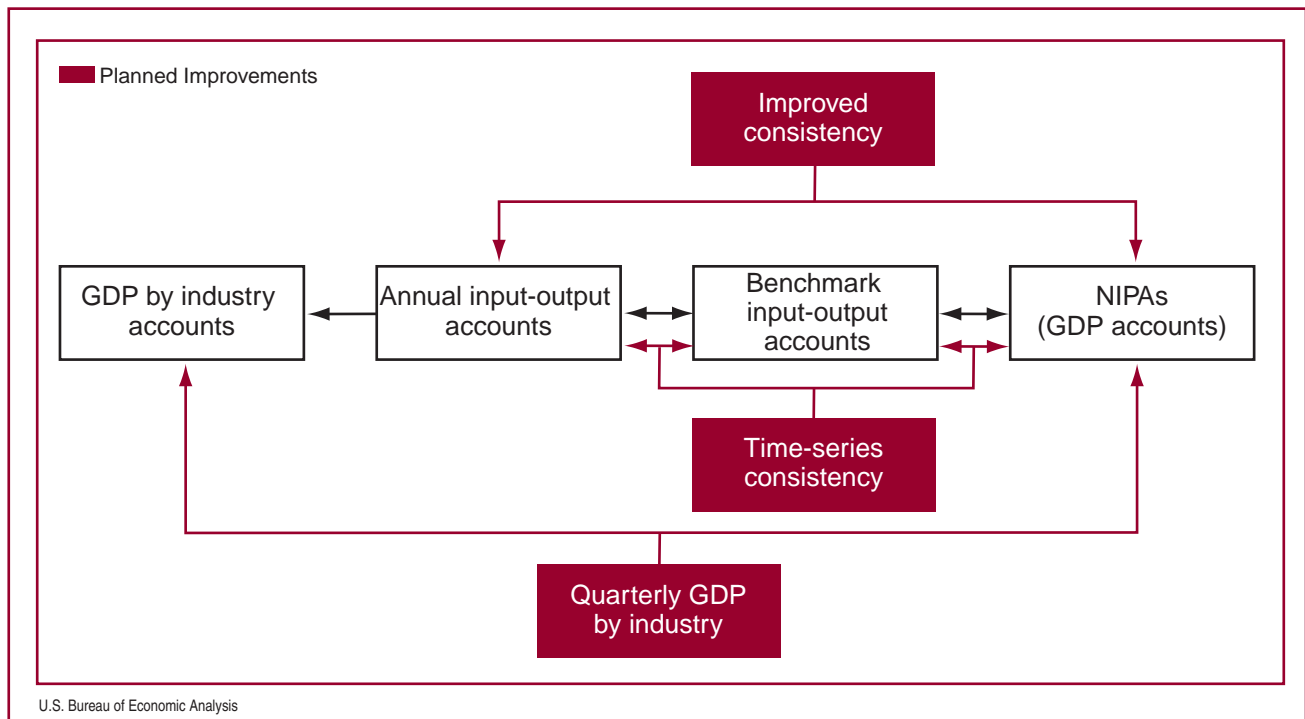
BEA is now formulating plans for additional improvements to the industry accounts. This *BEA Briefing* provides an overview of these improvements. These proposed changes will move the industry accounts in new directions and will substantially broaden their scope and uses. For example, BEA is considering preparing quarterly GDP by industry statistics that would be released shortly after the quarterly GDP estimates from the national income and product

accounts (NIPAs), also referred to as the GDP accounts. These new industry statistics would offer a by-industry breakout of quarterly GDP growth and would provide—for the first time—a means for gauging current-period industry performance.

Chart 1 shows how the proposed improvements discussed in this article will fit into BEA’s broader set of industry and national economic statistics. Also, see the box “Industry Accounts Overview.”

As part of its planning, BEA would like input from users. Do the improvements described in this article meet your needs? Are there modifications to these improvements that would make the accounts more useful? Are there other improvements that you would like to see? The answers to these questions—along with feedback from other stakeholders, such as source data providers—will help set the future direction and research agenda for the industry accounts. E-mail all comments to industryeconomicaccounts@bea.gov.

Chart 1. Improving the Industry Accounts



Further integration of the industry accounts

In the spring of 2004, BEA released its comprehensive revision of the annual industry accounts.¹ The centerpiece of this revision was the integration of the annual I-O accounts with the GDP by industry accounts. For the first time, these two sets of accounts provided consistent measures of gross output, intermediate inputs, and value added by industry. Integration was achieved by combining source data from both sets of accounts and weighting these data together based on relative

1. See Brian C. Moyer, Mark A. Planting, Paul V. Kern, and Abigail M. Kish, "Improved Annual Industry Accounts for 1998–2003: Integrated Annual Input-Output Accounts and Gross-Domestic-Product-by-Industry Accounts," *SURVEY OF CURRENT BUSINESS* 84 (June 2004): 21–57.

quality factors.² The result was a fully consistent and more accurate set of annual industry statistics.

BEA is now proposing to take the next step in integrating the industry accounts: the integration of the annual industry accounts with the benchmark I-O accounts.³

The benchmark I-O accounts are prepared at

2. See Brian C. Moyer, Mark A. Planting, Mahnaz Fahim-Nader, and Sherlene K. S. Lum, "Preview of the Comprehensive Revision of the Annual Industry Accounts: Integrating the Annual Input-Output Accounts and Gross-Domestic-Product-by-Industry Accounts," *SURVEY* 84 (March 2004): 38–51.

3. Initial work on reconciling gross operating surplus by industry is described in Dylan G. Rassier, Thomas F. Howells III, Edward T. Morgan, Nicholas R. Empey, and Conrad E. Roesch, "Integrating the 2002 Benchmark Input-Output Accounts and the 2002 Annual Industry Accounts," *SURVEY* 87 (December 2007): 14–22.

Industry Accounts Overview

The industry accounts provide information on the detailed industries that make up the U.S. economy. They consist of the annual industry accounts, the benchmark input-output accounts, and related satellite accounts.

Annual industry accounts

The annual industry accounts for the United States consist of the integrated gross domestic product (GDP) by industry accounts and the annual input-output (I-O) accounts. These accounts provide detailed, consistent information on the changing structure of the U.S. economy. By tracking the detailed flows of goods and services in the economy, these accounts show the contributions of private industries and government to GDP, the featured and most comprehensive measure of U.S. production.

GDP by industry accounts. These accounts provide annual measures of current-dollar and inflation-adjusted value added, an industry's contribution to GDP. Value added is measured as an industry's gross output (sales or receipts and other operating income, commodity taxes, and inventory change) minus the intermediate inputs that are used in the production process (energy, raw materials, semifinished goods, and purchased services). BEA prepares statistics on each industry's gross output and intermediate inputs and on the composition of the income earned in producing that output (for example, employee compensation, business taxes, and corporate profits). This information provides the basis for comparing the performance of industries and for identifying each industry's contribution to U.S. economic growth.

Annual I-O accounts. The annual I-O accounts provide detailed information on the flows of goods and services that make up the production processes of industries. They show how industries interact as they

provide inputs to, and use outputs from, each other to produce GDP. The annual I-O accounts show detail statistics for approximately 65 industries and commodities.

Benchmark I-O accounts

The benchmark I-O accounts provide the most comprehensive information available on the flows of goods and services to industries for use in production and to final consumers in the economy. These accounts are prepared at roughly 5-year intervals and are based on detailed data from the economic censuses. Detailed statistics are published for nearly 500 industries. At the heart of these accounts are two basic national accounting tables. The "make" table shows the detailed commodities that are produced by industries. The "use" table shows the detailed commodities that are used by industries (for example, steel) and those that are purchased by final consumers (for example, automobiles).

Satellite accounts

These accounts are supplemental accounts that provide detailed statistics about specific industries. The travel and tourism satellite accounts offers detailed information about output and employment for the travel and tourism industries and related industries. The research and development (R&D) satellite account provides detailed information about R&D in selected industries. It also shows how GDP would be affected if spending on R&D were treated as investment. BEA is currently exploring other satellite accounts, notably a more inclusive "innovation" account that would focus on investment in intangible activity, a health care account, and an energy account.

For more information about the industry accounts, please visit www.bea.gov/industry/index.htm.

roughly 5-year intervals using detailed data from the economic censuses. These accounts are used to benchmark the NIPAs and the annual industry accounts.⁴ Traditionally, the benchmark I-O accounts have been released before NIPA comprehensive revisions and have not been fully consistent with the NIPAs or with the annual industry accounts. The proposed integration would eliminate this inconsistency.

- The benchmark I-O accounts would continue to be used to benchmark the NIPAs and the annual industry accounts.
- The benchmark I-O accounts, beginning with the release of the 2007 accounts, would be made consistent with the NIPAs and with the annual industry accounts. Consistency would be achieved through better coordination and timing and through a careful evaluation of the source data used to prepare each set of accounts.
- The benchmark I-O accounts going forward would be revised to reflect revisions to the NIPAs and to the annual industry accounts. They would also be revised to reflect the release of subsequent years' benchmark I-O accounts. In this way, the benchmark I-O accounts would take on a time-series dimension.

The enhanced integration will allow users of BEA's accounts to seamlessly walk across the benchmark I-O accounts, the NIPAs, and the annual industry accounts. For example, a user interested in a particular component of consumer spending in the NIPAs could easily access more detailed information on that component in the benchmark I-O accounts. In addition, this improvement would allow users to compare different sets of benchmark I-O accounts over time. A cost of implementing this change would be a slight delay in the release of the benchmark I-O accounts; rather than being released shortly before NIPA comprehensive revisions, the benchmark I-O accounts would be released shortly after NIPA comprehensive revisions.

Quarterly GDP by industry

The GDP by industry accounts provide a by-industry breakout of inflation-adjusted GDP growth and growth in GDP prices. They offer a valuable tool for gauging industry performance and for identifying industry sources of growth. These accounts are often used to show the impact of a particular sector—for ex-

ample, the finance sector—on overall economic growth and inflation.

In 2003, BEA developed a method for accelerating the release of its annual GDP by industry statistics.⁵ The “advance” GDP by industry statistics are now released each April and provide annual data for the previous year. Previously, the statistics were released in November.

The logical next step, which BEA has proposed, would be to develop quarterly measures of GDP by industry that would be released shortly after the quarterly GDP estimates from the NIPAs. For the first time, users of BEA's accounts would have both a traditional breakout of GDP growth (consumer spending, investment, government spending, and net exports) and industry-by-industry contributions to economic growth.⁶ Such statistics would provide a new tool for analysts and policymakers who need to gauge current-period industry performance.

The methodology used to prepare the new quarterly GDP by industry statistics can be described in three broad steps.

- Quarterly statistics would be benchmarked to the most recent set of annual industry accounts. By-industry extrapolations would be based on a variety of source data, including income by industry data from the NIPAs; receipts, shipments, and sales data from the Census Bureau; and wage and salary data from the Bureau of Labor Statistics.
- The extrapolated data would then be balanced in an I-O framework. Balancing ensures that industry output, inputs, value added, and final uses are all brought into alignment. This step is particularly important because it imposes interindustry relationships that improve the accuracy of the statistics.⁷
- Inflation-adjusted measures of quarterly GDP by industry would be estimated using the “double-deflation” procedure.⁸

BEA has proposed releasing the new quarterly GDP by industry statistics beginning in 2011. In anticipation of this release, BEA intends to publish a series of papers describing the new statistics and explaining the methodology. The first of these papers is tentatively scheduled to appear in the fall of 2009.

4. In particular, the benchmark I-O accounts provide information on the amount of a commodity that is consumed by businesses (included in intermediate inputs) versus the amount consumed by final users (included in GDP). The benchmark I-O accounts are also used to fully or partially benchmark other accounts within BEA—for example, the travel and tourism satellite accounts and the regional input-output modeling system.

5. See Robert E. Yuskavage and Erich H. Strassner, “Gross Domestic Product by Industry for 2002,” *SURVEY* 83 (May 2003): 7–14.

6. The all-industries inflation-adjusted growth rate would differ from the inflation-adjusted GDP growth rate by a “not allocated by industry” component.

7. Currently, the advance GDP by industry statistics are not prepared in a balanced I-O framework.

8. Under the double-deflation procedure, which is recommended by I-O standards organizations, separate estimates of inflation-adjusted output and inflation-adjusted inputs are used to estimate inflation-adjusted value added.

Improved consistency, annual I-O accounts and the NIPAs

As a result of the 2004 integration of the annual industry accounts, BEA is now able to compare detailed statistics from the annual I-O accounts with corresponding statistics from the NIPAs. This has led to a variety of research opportunities. BEA has proposed a long-term initiative within its industry and national accounts programs to research the source data and methodologies used to prepare major portions of the annual I-O accounts and the NIPAs. This initiative would improve the consistency between the two sets of accounts and would improve the quality of both sets of accounts.

While the annual I-O accounts and the NIPAs are fully consistent at the publication level, in many cases, the underlying estimation processes are significantly different. Consider consumer spending; while the measures in the annual I-O accounts and NIPAs are conceptually equivalent, each uses its own data sources and methodology. The industry accounts' "commodity flow method" uses data on the domestic supply of goods and services, while the NIPAs' "retail control method" uses data on the merchandise sales of various retail trade establishments. Both methods have their strengths and weaknesses. Consistency at the publication level is achieved by adjusting the commodity flow statistics in the annual I-O accounts to match NIPA retail control statistics. Part of BEA's proposed research initiative would involve a detailed analysis of the commodity flow and retail control methods to determine the highest value information in each and how this information could be used to improve both the annual I-O accounts and the NIPAs.

Other improvements

BEA has proposed to work closely with outside groups and other federal agencies to improve its industry accounts.

- **Energy satellite account.** BEA has proposed an I-O-based energy satellite account that would provide

information on the supply, consumption, and prices of energy-related products in the U.S. economy. This satellite account would draw heavily on the detailed data available from the Energy Information Administration. It would provide users with a set of metrics for discussing energy trends and for developing forecast models to study energy supply and consumption dynamics.

- **Industry-level production account.** BEA would work closely with the Bureau of Labor Statistics (BLS) to develop the methods and integrated data sources needed to prepare an industry-level production account.⁹ This would involve an update of KLEMS statistics and further work to reconcile the measures of industry output between the BEA industry accounts and BLS productivity accounts.¹⁰ The development of an industry-level production account would represent a major step toward a full set of integrated U.S. economic accounts.

- **Improved measures of the knowledge economy.** BEA would work with the National Science Foundation, the Census Bureau, and other groups to develop improved source data and concepts for measuring intangibles and innovation in the core set of industry accounts and in supplemental satellite accounts.¹¹

The improvements outlined above will improve the industry accounts, providing better tools to gauge U.S. industry performance. As BEA develops more detailed plans and a more detailed research agenda, it will provide more information.

9. Initial work by BEA and BLS on developing an integrated production account is discussed in Michael J. Harper, Brent R. Moulton, Steven Rosenthal, and David B. Wasshausen, "Integrated GDP-Productivity Accounts" (paper presented at the 2009 American Economic Association Annual Meeting in San Francisco, California, January 4, 2009).

10. For information on the BEA KLEMS statistics, see Erich H. Strassner, Gabriel W. Medeiros, and George M. Smith, "Annual Industry Accounts: Introducing KLEMS Input Estimates for 1997–2003," *SURVEY* 85 (September 2005): 31–65.

11. See Ana M. Aizcorbe, Carol E. Moylan, and Carol A. Robbins, "BEA Briefing: Toward Better Measurement of Innovation and Intangibles," *SURVEY* 89 (January 2009): 10–23.