



Some Inflection Points in BEA's Pursuit of Its Mission

By Carol S. Carson

Months ago, when invited to help celebrate the 100th volume of the *Survey of Current Business*, my acceptance was quick and enthusiastic. Thinking about possible contributions, I came to recognize my own changing perspective over the *Survey's* lifespan. On the first half century, roughly up to 1971, my perspective was that of a researcher preparing a doctoral dissertation on the history of the National Income and Product Accounts (NIPAs)—interviewing many of the “fathers” in the field, combing through Department of Commerce archives, and, of course, reading the *Survey*. My perspective on the following quarter century, up through 1995, was that of an active participant—a Bureau of Economic Analysis (BEA) staff member in several different positions, including 14 years as editor-in-chief of the *Survey*. For the last quarter century, up to the present, my perspective was that of an interested observer with an eye for statistical practices sharpened by working in statistics for an international organization.

Eventually, I decided to focus my contribution on the middle time period—the quarter century up through 1995. Within that quarter century, I identify, by referencing *Survey* articles, what I believe are five inflection points in BEA's pursuit of timely, relevant, and accurate economic information. The five inflection points are as follows:

- About methodologies, breaking the logjam;
- About the separation of price and volume, taking substantial steps toward improved methods;
- About international comparability, renewing pursuit;
- About satellite accounts, opening the economic accountant's laboratory; and
- About review of BEA's economic accounts, BEA taking a proactive role.

For each inflection point, I draw on my researcher's perspective to provide some historical background. For each, I also cast forward in time, very selectively, to highlight some follow-through from my interested observer's perspective.

Narrating by reference to *Survey* articles is consistent with this contribution being part of a celebration of the *Survey* as the journal of record of BEA (and before that, of the Office of Business Economics (OBE) and of the Bureau of Foreign and Domestic Commerce). Also, referencing *Survey* articles shows off BEA's searchable online collection of the complete set of 1,200 or so issues of the *Survey*. Finally, referencing the *Survey* articles by digital links streamlines the presentation, among other things by minimizing the distraction of full citations.

(Other references are listed at the end.) Admittedly this streamlining brings with it some drawbacks. At a broad level, *Survey* articles are only the tip of the enormous iceberg of work that goes on within BEA; focusing on articles does not capture the full picture. More specifically, referencing the *Survey* as I did it does not directly acknowledge the contributions of individuals to the inflection points; I grant that is a loss but hope some fuller history of BEA or of the specific topics covered will serve that role. The few names of people that I mention are in the paragraphs setting the stage or about historical background.

As part of BEA's commemoration of the centennial of the Survey of Current Business, we are honored to present this article by former BEA director Carol S. Carson. Dr. Carson served as director from 1992 to 1995 and deputy director from 1985 to 1992. She joined the Bureau in 1972 as a senior economist and assistant to the director. She was chief of the Current Business Analysis Division from 1976 to 1982 and chief economist from 1982 to 1985. During her tenure at BEA, she served as editor-in-chief of the Survey for 14 years, overseeing the publication of 168 issues of the flagship journal. She received the Presidential Rank Award of Distinguished Executive in 1994.

Dr. Carson worked most recently as manager of the 2008 update of the System of National Accounts and at the International Monetary Fund, where she served as director of statistics. Prior to working at BEA, she held positions at the Federal Reserve Bank of New York and the National Planning Association.

She is a fellow of the National Association of Business Economists and has served as a member of the Executive Committee of the Conference on Research in Income and Wealth and as an elected member of the International Association for Research in Income and Wealth and of the International Statistical Institute.

Dr. Carson earned a B.A. in economics and political science from the College of Wooster, an M.A. in international economics from the Fletcher School of Law and Diplomacy at Tufts University, and a Ph.D. in economics from George Washington University, where she has taught economic accounting.

Methodologies

In celebrating the first 50 years of the *Survey*, in *The Economic Accounts of the United States: Retrospect and Prospect*, then OBE director George Jaszi wrote, "It is evident . . . that our users are dissatisfied because we have not furnished enough information on the statistical sources and methods we use in making our estimates." He apologized, saying that it takes a good deal of skill and effort to write good methodologies and that the agency had been unable to marshal the resources necessary to parallel the efforts of two decades earlier.

Historical background. The efforts two decades earlier that Jaszi acknowledged as setting the standard had yielded two volumes in quick succession. The first was *National Income, 1951 Edition*, a supplement to the *Survey*. This volume fully explained the conceptual basis for the estimates; it strengthened the case for the accounting approach introduced in 1947, which had laid out six accounts as a summary of an interrelated and consistent body of national income statistics. Further, for the first time, it described the sources and estimating methods used to prepare the income and product estimates. The volume was well received; nearly 30,000 copies were sold. A word often used to characterize its descriptions of limitations on both concepts and methods was "frank," and that was seen as heightening confidence in the Agency's work. Three years later *National Income, 1954 Edition* largely reproduced the discussion of the conceptual basis of the estimates published earlier. Its significance was in the statistical revisions it incorporated along with an expanded discussion of the statistical methodology. The National

Accounts Review Committee (see “[Review of BEA’s Economic Accounts](#),” below) applauded it as “the most comprehensive statement published in any country on the conceptual and statistical foundation of the official national income and product estimates.”

For the next several comprehensive (or benchmark) revisions, the methodological discussions in volumes that presented the statistical results concentrated on explaining what was changed or new. In 1958, *U.S. Income and Output* pointed back to the *National Income, 1954 Edition* as the basic reference volume. It brought the 1954 description up to date on a summary basis, amending it when necessary (for example, to introduce a five-account summary system) and pointing out the aspects that bear particularly on the quality of the estimates. A section about the quarterly and monthly series contained methodological information not previously available. By 1981, the volume presenting the historical statistical results from the 1980 comprehensive revision showed the fragmented state of affairs with respect to methodological discussions. For an up-to-date summary explanation of the NIPAs, users of the estimates were referred to an article in the [February 1981 Survey](#). For information on the conceptual framework and methodology, users were directed to a 1970 volume that reprinted parts of four OBE/BEA publications from 1954 to 1976 (including the text of *National Income, 1954 Edition*). For discussions of selected components, eight *Survey* articles were suggested.

Breaking the logjam. It was not until the mid-1980s, almost 15 years after Jaszi’s apology, that the logjam was broken. The [March 1985 Survey](#) announced that a series of special papers documenting the concepts, sources, and methods of the NIPAs was being prepared in a project that had been underway for several years. The first in the series, “An Introduction to National Economic Accounting,” appeared in that issue. A second paper, on corporate profits, appeared 2 months later. Papers on foreign transactions, an overview of source data and estimating methods for gross national product (GNP), government transactions, and personal consumption expenditures appeared as part of the series over the next several years.

Work on methodologies was underway in other areas of BEA as well. A major step was the release in 1990 of *The Balance of Payments of the United States: Concepts, Data Sources, and Estimating Procedures*. Although the history of the balance of payments is long, this publication was the first complete and comprehensive statement of the sources and methods used to prepare them.

Casting forward. Work on methodologies is a slog, without doubt. Also, it often seems that the words are barely written before something—a data source, a method—changes and a revision of the methodology is needed. BEA has persisted in trying to respond to what must at times appear to be users’ unquenchable thirst. The [NIPA Handbook](#) is an exemplar. Over time it has been built up to be a comprehensive picture of the NIPAs: an introduction to the concepts, definitions, classifications, and accounting framework and, by major product and income component, sources and methods used to prepare the estimates. Throughout there are references to related *Survey* articles, pages on BEA’s website, and other sources of information. A glossary—the most comprehensive ever—tops it off. The “[Methodologies](#)” page on BEA’s website provides a wider view. Several contrasts with earlier times stand out. Rather than hard-copy publications to be ordered and then delivered, there are now links to online methodologies. These are updated from time to time, and the dates of the updates are shown. Options are available: for example, often a “primer” is available for those who prefer less-than-gory detail. In addition to comprehensive methodologies, such as those for the NIPAs and the international accounts

(balance of payments, international investment position, and activities of multinational enterprises), there are papers on more specific topics such as the satellite accounts and chain indexes.

Separating Price from Volume

An early landmark study of national income in the United States, predating the Department of Commerce efforts and published in 1921, described the substantial increase in the value of the key income aggregates during World War I as a “monetary illusion” and identified the next task as determining how much of the increase is left after reducing the estimates to “hypothetical dollars of constant purchasing power.” Wesley C. Mitchell and his coauthors warned that determining the “best method of ‘deflating’ . . . is a difficult problem.”

Historical background. The language has changed some over the last 100 years, but the separation of price change from volume change to yield a “real” estimate has continued to be a challenge.

- 1930s. *National Income, 1929–32*, the initial Department of Commerce report in the field, established the precedent for the decade: it did not show price-adjusted estimates. The report, with Simon Kuznets as the principal author, concluded that measuring national income at constant prices could not be done in a satisfactory way with the data at hand. Rather, the Bureau of Labor Statistics cost-of-living and wholesale price indexes were included in the report along with the suggestion that for “some approximate notion” of the contraction in the price-adjusted incomes the declines in these price indexes could be compared, respectively, with the declines in the income paid out and income produced aggregates. A three-page summary in the [February 1934 Survey](#) included the price indexes in its opening table showing the two featured aggregates and devoted two sentences to the subject: “The extraordinary extent of the contraction in distributed income in the 3 years subsequent to 1929 can be only partially accounted for by money value fluctuations. When rough allowance is made for the price factor by correcting for the fall in purchasing power with the Bureau of Labor Statistics cost-of-living index, the decline to 1932 is found to have been fully a fourth.”
- 1940s. Expedient approaches to separating volume and price were used to meet the need to analyze the impact of the war program on the economy. For example, in the [August 1942 Survey](#), “with full recognition of all the inherent problems,” four major components of GNP—government war, government nonwar, private gross capital formation, and consumers’ goods and services—were presented in the preceding year’s prices. A footnote identified the price indexes used to deflate different components. By 1945 these expedients were abandoned; estimates were in current dollars only.
- [January 1951 Survey](#). With acknowledgement that constant-dollar estimates were especially needed given the looming questions about both production potential and inflation, annual estimates of GNP with summary product components for 1929–49 were presented in 1939 dollars. They were described as a first installment of an effort to build up product totals through deflation of the detailed components of the published current-dollar series. Promising a full explanation of the underlying conceptual and statistical bases in the future, the considerations most essential to use of the data were noted—among them that using prices of different years as the base can be expected to produce differing measures of change in real product.

- [December 1958 Survey](#). As top priority among recommendations from an external review (see “[Review of BEA’s Economic Accounts](#),” below), quarterly constant-dollar series for GNP and its broad components were introduced.
- [October 1962 Survey](#). In a major expansion, estimates of GNP by major industries were introduced. The estimates were built from the definition of industry gross product as the difference between total sales and purchases from other industries.

Over time an impressive array of constant-price estimates and of implicit price deflators (the ratio of current-dollar values to constant-dollar values, multiplied by 100) were introduced even while the problems of doing so were well recognized. For example, *National Income, 1954 Edition* noted the following about the problems that can be given the shorthand titles of “fixed weights” and “quality change.”

- With respect to the choice of a single base year, unless the various physical quantities or their relative prices all change in the same proportion, no unique measure of the change in real output is possible. Comprehensive comparisons would call for calculations in terms of prices of each year to which comparisons refer, but “the vast additional labor involved in constructing the full array of series did not seem warranted.” (Recall the mechanical calculators of the 1950s?) However, various tests had indicated that use of years other than the one selected (1949 at that time) would not, in general, have greatly affected the GNP and bare-bones detail then presented. (Estimates for government purchases were flagged as an exception.)
- The price indexes used to deflate the current-dollar estimates are sometimes adjusted to take account of quality and related changes in the products whose prices they measure. In practice, the price indexes and the constant-dollar GNP do not reflect part of the secular quality improvements and of the emergence of superior products—factors recognized as characteristic of the economy.

Substantial steps forward. Beginning in the 1970s, shifts in energy and food prices became much larger. The energy crises of 1973 and 1979 brought substantial petroleum shortages, real and perceived, and elevated prices, and worldwide grain crop shortfalls in the early 1970s set off spikes in food prices. In addition, rapid improvement in some technology products occurred even as their prices dropped. As a result, the problems caused by quality change and use of fixed weights took on enhanced importance.

Computers came to the fore in the discussion of quality change. A two-part presentation in the January 1986 *Survey* (p. 36 and p. 41) introduced a new price index for computers and peripheral equipment in the NIPAs. This index was seen as a substantial step in coping statistically with quality change, which is particularly pronounced for computer equipment because of technological change. In the new price index, developed in collaboration with IBM, hedonic methods had been used to supplement the conventional method, the so-called matched-model method, of controlling for price change. The first part introduced hedonic methods, an econometrically based approach to dealing with quality change. The second part, authored by IBM economists, described their research on price indexes for computers.

With respect to fixed weights, the [April 1989 Survey](#) reported on BEA’s work to develop alternative measures of the real product aggregate (at the time, GNP). These measures were being developed because, as more fully explained in the article, a single measure cannot be considered sufficient for all analytical purposes. A key takeoff point was that, in general, a measure of real GNP based on prices of a more recent year increases less than a measure based

on prices of an earlier year. Heretofore, the effect of using one set of prices rather than another had generally been considered small enough to be safely ignored. The simplicity of a single output measure in which the prices of a given year were used to value real GNP in all years was considered to outweigh any advantage provided by presenting alternative measures based on prices of other years or by using more complex approaches to weighting. Articles in the April 1992 *Survey* (p. 32 and p. 49) and the March 1993 *Survey* explained two alternatives to real measures not based on the price weights of a single year: a chain-type annual-weighted measure and a benchmark-years-weighted measure.

BEA's way forward on both the quality-change and fixed-weight issues was laid out in the April 1995 *Survey*, which presented its plan for the next several years and proposed actions following the Mid-Decade Review (see "Review of BEA's Economic Accounts," below). First, with respect to quality change, the plan called for extension of quality adjustment of prices used in real gross domestic product (GDP), including hedonic work on goods amenable to such measurement (such as high-tech goods and nonresidential structures). With respect to weights, BEA announced that it would replace its fixed-weighted measure of real GDP with one based on chain-type annual weights. This step was further spelled out in the preview of the upcoming comprehensive revision in the July 1995 *Survey*, which explained the change as recognizing the need in estimating real GDP and prices to use weights that are appropriate for the specific periods being measured.

Casting forward. In the years following, both issues continued to command BEA's attention. With respect to quality change, BEA has introduced quality-adjusted indexes for additional goods, including semiconductors and digital telephone equipment. One notable characteristic of these efforts from an observer's perspective was the extent to which it was done in cooperation with other federal agencies. An article in 2017, "How Government Statistics Adjust for Potential Biases from Quality Change and New Goods in an Age of Digital Technologies: A View from the Trenches," is symbolic because it was co-authored by senior staff of BEA and of the Bureau of Labor Statistics. With respect to weighting, one notable characteristic is the extent of the efforts made to assist users in the new world in which real components did not add to real GDP. An article in the November 2003 *Survey*, "Chained-Dollar Indexes: Issues, Tips on Their Use, and Upcoming Changes," is an example.

International Comparability

The opening sentence of the article "The United Nations System of National Accounts: An Introduction" in the June 1990 *Survey* was probably an understatement. It said that the System of National Accounts (SNA) "is not widely known in the United States." Soon that characterization would no longer be apt. With support from a recommendation of a working group on improving economic statistics led by the then chair of the Council of Economic Advisors, BEA had made a budget request to begin moving toward the SNA, the international guidelines in the field of economic accounting.

Historical background. The SNA and the U.S. national accounts trace their origins to some of the same theoretical developments (namely Keynesian economics) and economic considerations (namely depression and then war mobilization). Further, those who would become the leaders in the development of both were in touch, corresponding and exchanging papers. International collaboration was formalized in 1944; in September of that year, representatives from the United Kingdom (namely Richard Stone), Canada, and the United States (including Milton Gilbert,

Edward Denison, George Jaszi, and Charles Schwartz—the key figures from the National Income Unit of OBE) met in Washington with a view to bringing uniformity in terminology and in treatment of controversial aspects of the developmental work underway in the three countries. Partly by persuasion and partly by compromise, substantial agreement was reached on most matters. Each country's representatives had come with expectations of implementing these decisions (which they subsequently did). The rationale was that uniformity in definitions among these three major countries would greatly simplify the problems of users of national income statistics. It was hoped that other countries would follow suit.

As early as December 1945, when comparable measures of national income were needed as a basis for apportioning the expenses of international organizations, a subcommittee of the League of Nations discussed a paper by Stone on the definition and measurement of national income. Jaszi of OBE was among the experts participating. The subcommittee's 1947 report urged countries to apply the recommendations embedded in the report's appendix based on Stone's paper. Experience in national accounting accumulated rapidly in the postwar years. An expert group assembled by the United Nations in 1952, with Stone as chair and Jaszi among the members, prepared the first SNA, published in 1953. Through the 1950s and into the 1960s, the evolving SNA and U.S. systems of income and product accounts were similar. However, a major revision of the SNA in 1968, prepared by an expert group, again chaired by Stone and in which Jaszi initially participated, extended the United Nations system to include detailed input-output and flow of funds tables in an articulated system—an extension that the U.S. accounts did not follow.

Renewed pursuit. Fast forward more than a decade: beginning in 1982, a revision of the SNA was underway with a view to drawing on progress in economic accounting and changing needs for domestic and cross-country analysis and policy formulation. The process was planned and funded by five international organizations, which arranged a series of expert meetings. BEA contributed a core expert (the author), an expert on balance of payments, and, for the final years of the project, the management of the project (by the author and an assistant). In short, BEA was fully engaged in the project. The product of the decade-long process, the *SNA 1993*, featured a harmonization of the SNA and other international statistical standards (such as the International Monetary Fund's manual on balance of payments). The main features of the new SNA were summarized in the [February 1993 Survey](#).

A first step in what might be called a renewed pursuit by BEA of international comparability was announced in the [August 1991 Survey](#). BEA explained that, beginning with the upcoming comprehensive revision of the NIPAs, it would feature GDP, rather than GNP, as the primary measure of production. Why the change in emphasis? GDP refers to production taking place in the United States, making it the appropriate measure for much of the short-term monitoring and analysis of the U.S. economy. It is consistent in coverage with many other indicators such as employment. Further, use of GDP facilitates cross-country comparability because it is the featured measure in the SNA, which by then was followed by most other countries. (This change and several others below are explained in terms of the NIPAs. However, because BEA's regional accounts and industry accounts link to the NIPAs, they would adapt as appropriate in their respective revision cycles.)

Not too much later, in the Mid-Decade Review (see below), BEA announced additional steps toward enhanced international comparability. As already described, BEA planned to adopt chain-type indexes for measuring changes in real GDP and prices in the 1996 comprehensive revision

of the NIPAs. This brought the U.S. approach in line with the SNA. At that same time, BEA planned to begin treating government purchases of structures and equipment as investment rather than current expenses, providing a more comprehensive and consistent treatment of investment.

Casting forward. Over the 25 years since the Mid-Decade Review, the *Survey* has recorded other steps, taken at the time of comprehensive revisions, to move the NIPAs towards consistency with the SNA (when, of course, doing so was an improvement for other reasons). An article in the [June 2015 Survey](#) provided a comprehensive stocktaking. First, it catalogued the improvements that enhanced consistency with the SNA. These included changes in definition (for example, of the asset boundary to include intangibles such as research and development), classification (for example, of personal consumption expenditures), and presentation (for example, of the NIPA summary accounts). Second, it compared the NIPAs with the *SNA 2008*, which had updated the *SNA 1993*. The coverage of GDP in the NIPAs was at that point essentially consistent with the SNA. However, some important differences remained with respect to sectoring, certain definitions and accounting conventions, and the comprehensiveness of the framework. With respect to the last, it noted that the difference was addressed by the integrated macroeconomic accounts developed as part of an interagency effort to further harmonize the NIPAs and the Federal Reserve Board's flow of funds accounts and published jointly since 2007. It also flagged the availability of SNA-based estimates that BEA regularly submits to the Organisation for Economic Co-operation and Development, which allow comparisons of NIPA estimates with those of other countries. Third, it identified the research areas that BEA planned to pursue to move further toward the SNA guidelines in the coming years.

While the work on the NIPAs was underway, a series of steps brought BEA's international accounts closer to the international guidelines. Beginning in 2009, changes to modernize and enhance the accounts that could be introduced without changing their presentation were made, usually at the time of the June annual revisions. Then, in the [March 2014 Survey](#), BEA announced a restructuring of the international accounts—the most significant change since 1976. In BEA's words, the restructuring “is the result of a multiyear process to modernize the accounts by introducing changes that bring BEA's statistics into closer alignment with new international statistical guidelines,” including the International Monetary Fund's new manual.

Satellite Accounts

One feature of the *SNA 1993*—its introduction of satellite accounts—was not mentioned in the section above. That section was about international comparability in the sense of common concepts, definitions, and classifications for a system of economic accounts that facilitate cross-country comparisons (and that, as a side benefit, hone the expertise of national accountants engaged in the give and take needed to arrive at the common elements). Satellite accounts did not readily fit in that section. However, they do fit into a broad set of international recommendations on economic accounts because they acknowledge a need for flexibility—an important need, in the author's view—in order to expand analytical usefulness. The introduction of satellite accounts in the *SNA 1993* gave legitimacy to the exercise of flexibility after decades of concentration on the delineation of a set of economic accounts that could be approvingly described with words such as “a consistent system,” “integrated information,” and “a coherent body.”

Historical background. In the early 1990s, BEA had good reason to think it needed to pose and then answer the question “Satellite Accounts: What Are They?” It did so in a text box in the [April 1994 Survey](#). The opening sentence captured the essence: “Satellite accounts are frameworks designed to expand the analytical capacity of the national accounts without overburdening them or interfering with their general-purpose orientation.” They can present information in ways that differ from the main accounts; the definitions, classifications, and accounting conventions can differ from those in the main accounts to provide the most useful information for a field. The *SNA 1993* included a chapter about them, drawing on other countries’ experience building them in fields such as housing, agriculture, education, and research and development (R&D).

Opening an economic accountant’s laboratory. The first satellite account BEA prepared was introduced in two articles in the [April 1994 Survey](#) ([p. 33](#) and [p. 50](#)). They presented work on an accounting framework that covers interactions of the economy and the environment by providing new breakdowns relevant to the analysis of these interactions and by expanding the definition of capital to include natural and environmental resources. The article “Integrated Economic and Environmental Satellite Accounts” presented background for the new work, including increasing worldwide attention to issues related to the environment; an overview of the satellite accounting framework; and a long-term plan to implement the framework. The second article, “Accounting for Mineral Resources: Issues and BEA’s Initial Estimates,” was more technically oriented; it discussed the conceptual and methodological issues in mineral resource accounting and estimates of mineral stocks.

The second satellite account was for R&D. Its evolution can be taken as a case study of how a satellite account can serve as an economic accountant’s laboratory. At the time R&D was chosen for development in part because, given the active interest in the role of technological change in explaining economic growth, some of the theoretical challenges had been pioneered by academic and federal government researchers. Also, the data to support it were already largely available. The satellite account in the [November 1994 Survey](#) presented basic information about R&D—the value of its production by performer, by funder, and by type in current dollars and by performer in constant dollars—and treated the expenditures that measure that production as investment, rather than as current expenditures as in the NIPAs, to obtain a stock of R&D fixed intangible capital.

BEA recognized that this exploration was a first step and that followup could go in several directions. Subsequently there were reviews and discussions (including about the role of satellite accounts in general), sharing in international meetings with other countries working on R&D satellite accounts, and research on specific issues such as cross-border R&D spillover effects. Active pursuit of the topic was resumed with funding by the National Science Foundation. The [December 2006 Survey](#) presented a new account designed to gain a better understanding of R&D activity and its effect on economic growth. Specifically, the satellite account modified the accounting conventions used in the NIPAs in order to explore the impact of “capitalizing” R&D—that is, treating R&D spending as investment rather than current expenditure. Updates followed as BEA expanded and strengthened the estimates. The [October 2007 Survey](#) provided for the first time R&D statistics for R&D-intensive industries, regional accounts, and international accounts. The [December 2010 Survey](#) extended the series and made refinements. It summarized the significant effects on the estimates of treating R&D spending as investment. For example, the level of current-dollar GDP for 2007 would increase \$396.3 billion, or about 2.8 percent, and the contribution to real GDP growth of treating R&D as investment would have been approximately 0.20 percentage point of the average 2.9 percent growth from 2002 to 2007. The article placed the work on R&D in the context of BEA’s long-term effort to better measure the effects of

innovation and intangible assets on the economy. It signaled BEA's intention to incorporate R&D spending as investment into the core accounts around 2013 as part of the 2007 input-output accounts and as part of the comprehensive revision of the NIPAs.

Casting forward. As of 2020, BEA has introduced several more satellite accounts. Both the similarities and the diversity among them are striking. The similarities are with respect to the extensive research underlying them, often over several years; active critique by outside experts, occasionally including “blue-ribbon” panels; and interagency collaboration, often including funding support. The diversity is with respect to their relationship to BEA's core accounts. One kind of satellite account went beyond the NIPA boundary of market production to follow up on the longstanding interest in nonmarket production. BEA developed a satellite account that estimates the value of production by households. This account was first presented in the [May 2012 Survey](#) and since then has been updated several times. Another account used a different definition of a commodity to facilitate a greater understanding of the producing sector—a sector that accounts for about one-fifth of GDP. This satellite account, the Health Care Satellite Account, defines the commodity produced by the health sector as the treatment of disease (for example, cancer or diabetes) rather than the specific types of medical care that individuals purchase (such as a visit to a doctor's office or purchase of a drug) now in the NIPAs. This alternative definition is generally agreed to allow for a better understanding of the health care sector and better assessment of the returns to health care spending. Several other satellite accounts complement the core accounts with detailed data on industries. For example, the Arts and Cultural Production Satellite Account, introduced in the [January 2015 Survey](#), was built from the bottom up with data from a benchmark input-output account, essentially rearranging the account to feature arts and cultural activity. The satellite accounts for travel and tourism and for outdoor recreation take a similar approach.

BEA's development of satellite accounts has taken place within a broader initiative expansively named “GDP and Beyond.” The most recent update on this initiative was in the [June 2020 Survey](#). The comprehensive article mentions, among a number of projects, expanding information on the digital economy and cooperating with the National Oceanic and Atmospheric Administration to develop tools for understanding the importance of ocean-related activities to the U.S. economy.

Review of BEA's Economic Accounts

According to the dictionary, review is a formal assessment of something with the intention of instituting change if necessary. Within the general definition, reviews can be internal or external, with the latter drawing on, for example, views of independent experts in the field or the experiences of customers or users. Reviews can be undertaken continuously or periodically, as a best practice, or on an as-needed basis, such as when conditions change or when possible problems are suspected or identified. Particularly for public goods, review is often seen as especially important as a guide to planning and resource allocation. In the specific case of federal statistics, *Principles and Practices for a Federal Statistical Agency* (now in its sixth edition) identifies the practice of having a strong internal and external evaluation program as one of the practices that operationalize the fundamental principles of an effective agency. The reviews of BEA's economic accounts over the years, especially reviews of the NIPAs, have variously reflected these different approaches and motivations.

Historical background. Two reviews took place in the mid-1950s, when the income and product accounts stood largely as they had been conceptualized in 1947. One, at the 1955 Conference on Research in Income and Wealth, resulted in the volume *A Critique of the United States Income and Product Accounts*. The volume contained a major paper by George Jaszi, then chief of the National Income Division, as well as papers by academic economists and business users, in an attempt to cover both practical and theoretical problems of the income and product accounts. The second, in 1957, was organized by the National Bureau of Economic Research at the request of the Bureau of the Budget (predecessor of the Office of Management and Budget). This review, in contrast to the first, looked at the income and product accounts in the context of the wide concept of economic accounts. In its report, *The National Economic Accounts of the United States: Review, Appraisal, and Recommendations*, and discussion before the Subcommittee on Economic Statistics of the Joint Economic Committee, the Review Committee attempted to provide a roadmap for the next 5 to 10 years. One of the main recommendations was that the five segments of economic accounting (income and product, balance of payments, flow of funds, input-output, and balance sheets), which had lived rather independent lives, be integrated into a single system. Other recommendations specifically related to the NIPAs included those calling for a five-account summary system and, as a very high priority, more constant-price estimates, especially quarterly estimates.

The celebration of 50 years of the *Survey* was in effect a review across the full range of the economic accounts and related work. *Retrospect and Prospect* contained invited comments—far more than just congratulations—from 43 academic economists and users of the economic intelligence published in the *Survey*. George Jaszi, then director of OBE, catalogued these wide-ranging comments—including not only methodological issues but also some as wide as the role of the environment in output measurement and some as specific as the organization of the *Survey*—and responded to them.

Later in the 1970s and then into the 1980s there were several reviews of the NIPAs:

- 1977. An advisory committee under the auspices of the Office of Management and Budget undertook a review because of concern over the relatively large revisions in the quarterly GNP in the early 1970s. The preface of the report, the *Gross National Product Data Improvement Project Report*, described the review as the first comprehensive evaluation of the data underlying the NIPAs. The report made 155 recommendations about source data to 24 federal agencies.
- 1979. The Conference on Research in Income and Wealth addressed several topics, including concepts and structure of the accounts, issues involved in deflation and treatment of quality change in price indexes, and source data. The introduction to the resulting volume, *The U.S. Income and Product Accounts: Selected Topics*, noted that, because the national account statistics—much increased in scope and richness of detail, in frequency of publication, and in usage—had come to serve many different purposes, it was increasingly a challenge to hear from all the different user constituencies.
- 1982. The General Accounting Office's report, *The Bureau of Economic Analysis Should Lead Efforts To Improve GNP Estimates*, was undertaken because of concern about the size of NIPA revisions. It focused on statistical issues and, as the title indicates, urged BEA to take a more active role in obtaining source data needed to improve the accounts.

BEA takes on a proactive role. In the early 1990s, aware of the length of time since the last review, BEA launched a review of the economic accounts as one of three initiatives (the other two were a benchmarking of its information technology system and a customer survey) to guide it over the

coming decade. The review was to encompass not only the national accounts but also the international and regional accounts. The review was to be carried out somewhat differently than those earlier. Rather than being conducted by a “blue-ribbon” panel, the essential outside perspective was incorporated in a different way and at a different step in the process. Also, the review was tied directly to BEA’s work plan. The [February 1995 Survey](#) outlined three steps:

- Evaluation: BEA prepared and made available a series of papers that evaluated the state of the economic accounts. These papers identified needs and a menu of recommendations for addressing these needs.
- Draft plan: BEA transformed the menu of recommendations into a strategic plan to maintain and improve the accounts over the coming decade. The *Survey* article presented the plan to users and others interested in the accounts and it invited comment.
- Refined plan: BEA refined the draft plan after receiving public comment, obtaining comment from federal agencies, and hearing comment during a meeting of users. The refined plan was presented in the [April 1995 Survey](#) as “Mid-Decade Strategic Review of BEA’s Economic Accounts: An Update” along with first steps in implementing the plan.

Casting forward. Subsequently, BEA can be seen as taking more ownership of the process of review and regularizing it. A hallmark step, following recommendations made during the Mid-Decade Review, was the establishment of the BEA Advisory Committee in 1999. This Committee, comprised of 15 people chosen to represent the perspectives of the economics profession, business, and government, meets approximately twice a year. As well, BEA has continued to prepare periodic plans and reports on progress under them. The most recent, dated 2016, is available on its website; work is underway on an update, announced for summer of 2020.

Conclusion

Five inflection points were identified as taking place during the quarter century up to 1995. Identifying these five is not meant to suggest that there were no inflection points before or after that period or even that these five were the only ones during that time period. These five were identified because the change in direction for a specific topic seemed sharp enough that, given the topic’s significance with respect to BEA’s pursuit of timely, accurate, and relevant economic account data, they merited narrating for the record. Of the five, the significant steps taken to improve the statistical methods used to separate price and volume clearly relate to BEA’s pursuit of accuracy. Three of the five involve different aspects of BEA’s efforts to identify and prepare data that are relevant to understanding the economy. The essence of the introduction of satellite accounts was pursuit of this relevance: satellite accounts are a laboratory in which to explore beyond the core accounts for additional or alternative information to help answer questions that the core accounts cannot. The renewed interest in making BEA’s economic accounts data more comparable with data of other countries recognizes the increasing extent to which policy and decisions are made in cross-country or multicountry contexts and so call for data that suit those contexts. Although less technical and more administrative than the other inflection points, BEA’s taking a more proactive role in review of its programs was partly in order to find out what data users thought they needed for analytical and policy purposes. The case for considering the breaking of the logjam in the preparation of methodologies as significant with respect to BEA’s pursuit of its mission is less direct. As a point of history, it was noted with respect to the statements of concepts, sources, and methods in the 1950s that they helped give users a sense of confidence in the estimates. More recently, the sixth edition of *Principles and Practices for a*

Federal Statistical Agency, in identifying practices that support the creditability of an agency and its data, lists openness about sources and limitations of the data. Perhaps it is not overly grand to say that confidence in and the creditability of an agency's work undergird the pursuit of the accuracy, timeliness, and relevance dimensions of BEA's mission. I hope my narrative of these inflection points enhances the appreciation of the long and broad road BEA has traveled over the *Survey's* 100 years in pursuit of timely, accurate, and relevant economic information.

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