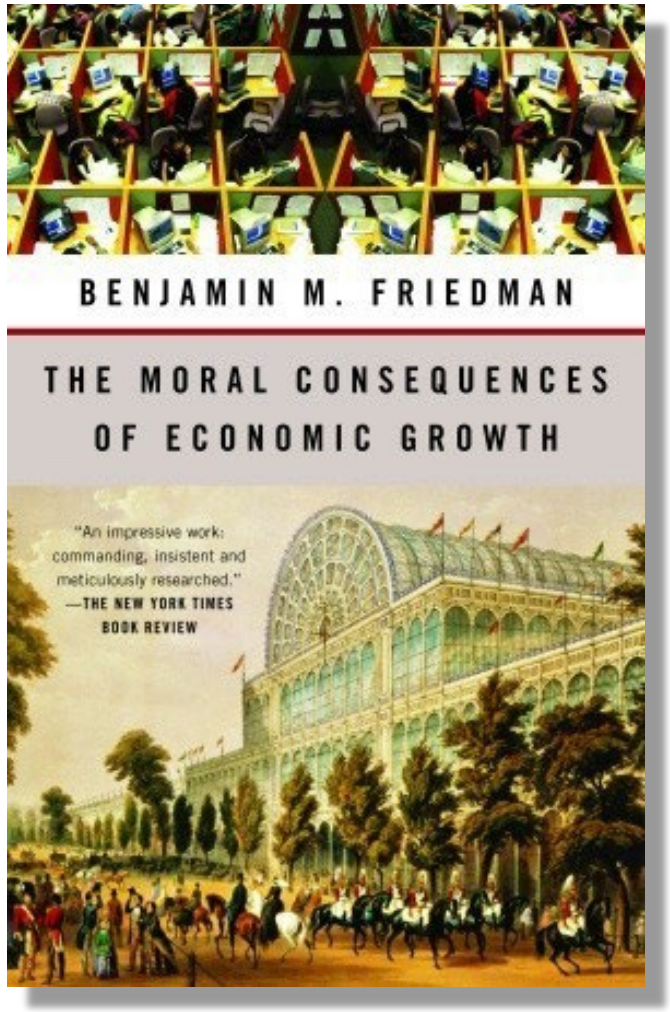
Progress in Economic Measurement at the U.S. Bureau of Economic Analysis

Vipin Arora

December 2025

Economic Statistics Centre of Excellence, Conference on Economic Measurement

Bureau of Economic Analysis
U.S. DEPARTMENT OF COMMERCE



What does progress in economic measurement lead to?

Background and Historical Context

We produce some of the world's most relied upon economic statistics

US GDP rose at a 2.8% rate in third quarter on strong consumer spending

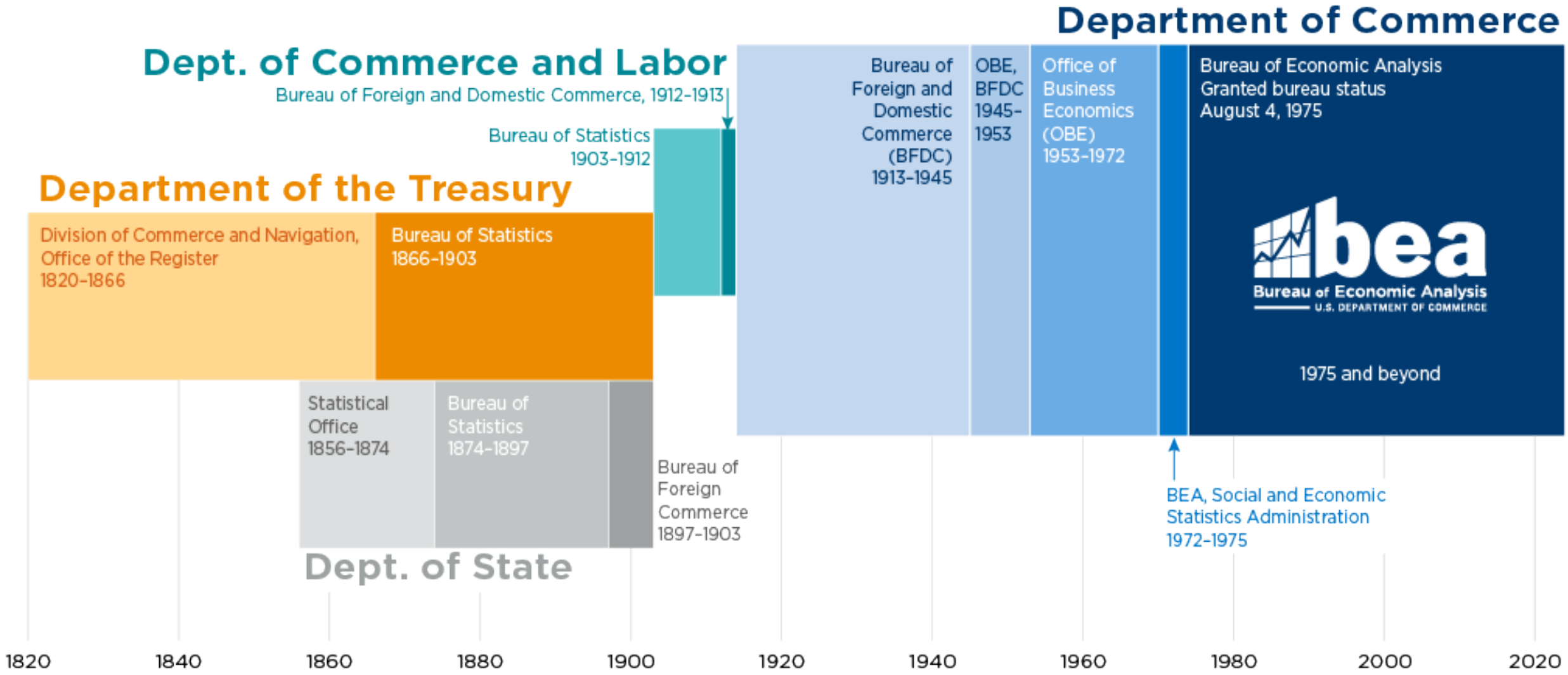
We've got your number

Stable U.S. Inflation Keeps Door Open For Moderate Fed Cuts

Fed's preferred inflation gauge, the PCE index, was up 2.5% in July from a year ago, meeting economists' expectations

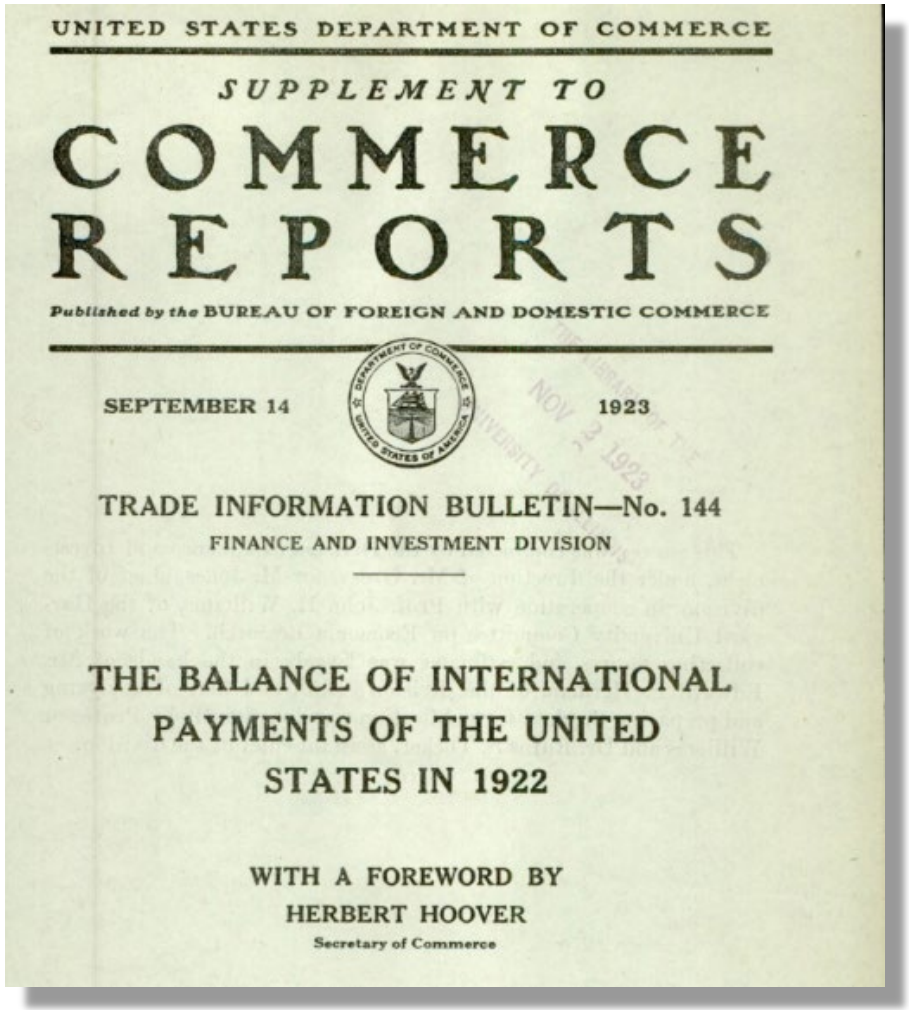
US trade deficit shrinks on decline in imports

BEA's roots go back over 200 years and started in international trade



The Balance of Payments is BEA's longest-running continuous product

- Balance of Payments (September 1923)
  - International Investment Position accounts were separated out in 1954
- Recast as the International Transactions Accounts in 1976
  - Restructured in June 2014 to bring into closer alignment with international standards



UNITED STATES DEPARTMENT OF COMMERCE

SUPPLEMENT TO

COMMERCE REPORTS

Published by the BUREAU OF FOREIGN AND DOMESTIC COMMERCE

SEPTEMBER 14 1923

TRADE INFORMATION BULLETIN—No. 144

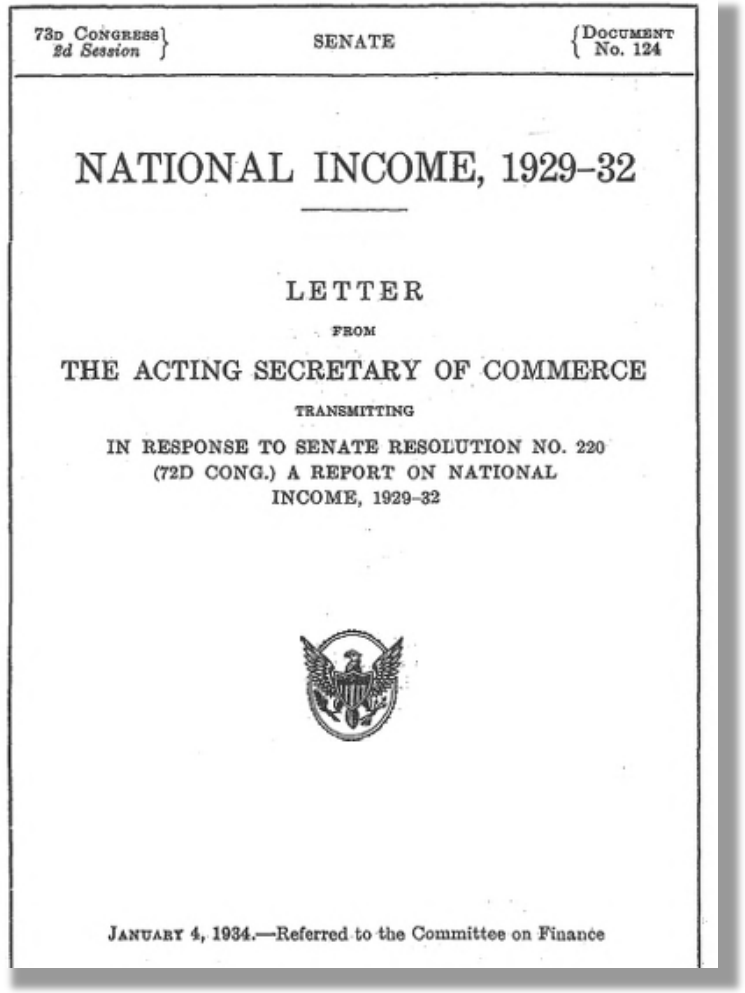
FINANCE AND INVESTMENT DIVISION

THE BALANCE OF INTERNATIONAL PAYMENTS OF THE UNITED STATES IN 1922

WITH A FOREWORD BY
HERBERT HOOVER
Secretary of Commerce

The first official estimates of U.S. National Income are almost 100 years old

- National Income, 1929-32 (January 1934)
  - Simon Kuznets led the first official estimates at the U.S. Department of Commerce
- Preliminary Estimates of Gross National Product, 1929-41 (May 1942)
  - Initial estimates of GNP to support war planning
- National Income and Product Statistics of the United States, 1929-1946 (July 1947)
  - The National Income statistics were recast into a comprehensive economic accounting framework
- GDP became BEA's featured measure in August 1991



73D CONGRESS 2d Session } SENATE { DOCUMENT No. 124

NATIONAL INCOME, 1929–32

LETTER

FROM

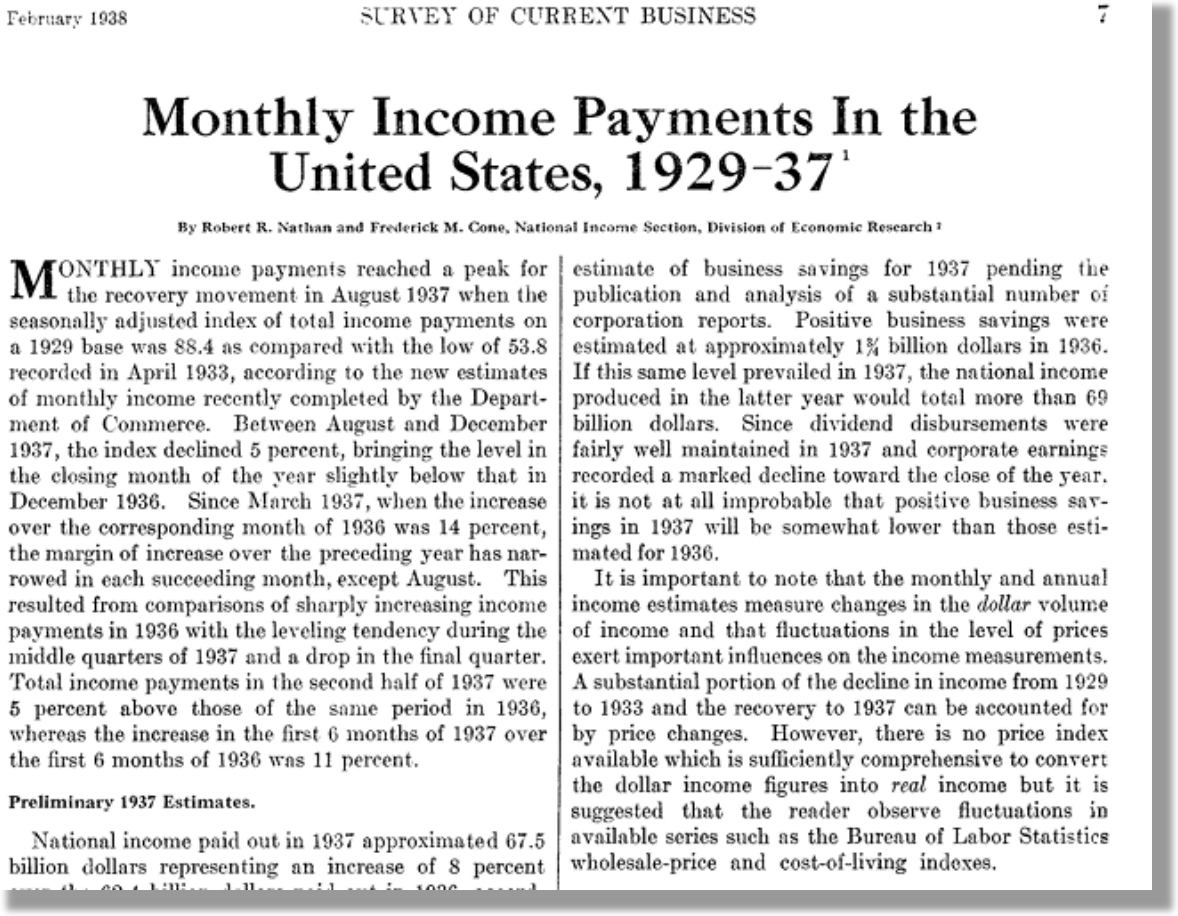
THE ACTING SECRETARY OF COMMERCE

TRANSMITTING

IN RESPONSE TO SENATE RESOLUTION NO. 220 (72D CONG.) A REPORT ON NATIONAL INCOME, 1929–32

JANUARY 4, 1934.—Referred to the Committee on Finance

BEA's Personal Income statistics are almost 90 years old



February 1938 SURVEY OF CURRENT BUSINESS 7

Monthly Income Payments In the United States, 1929–37[1]

By Robert R. Nathan and Frederick M. Cone, National Income Section, Division of Economic Research[2]

MONTHLY income payments reached a peak for the recovery movement in August 1937 when the seasonally adjusted index of total income payments on a 1929 base was 88.4 as compared with the low of 53.8 recorded in April 1933, according to the new estimates of monthly income recently completed by the Department of Commerce. Between August and December 1937, the index declined 5 percent, bringing the level in the closing month of the year slightly below that in December 1936. Since March 1937, when the increase over the corresponding month of 1936 was 14 percent, the margin of increase over the preceding year has narrowed in each succeeding month, except August. This resulted from comparisons of sharply increasing income payments in 1936 with the leveling tendency during the middle quarters of 1937 and a drop in the final quarter. Total income payments in the second half of 1937 were 5 percent above those of the same period in 1936, whereas the increase in the first 6 months of 1937 over the first 6 months of 1936 was 11 percent.

Preliminary 1937 Estimates.

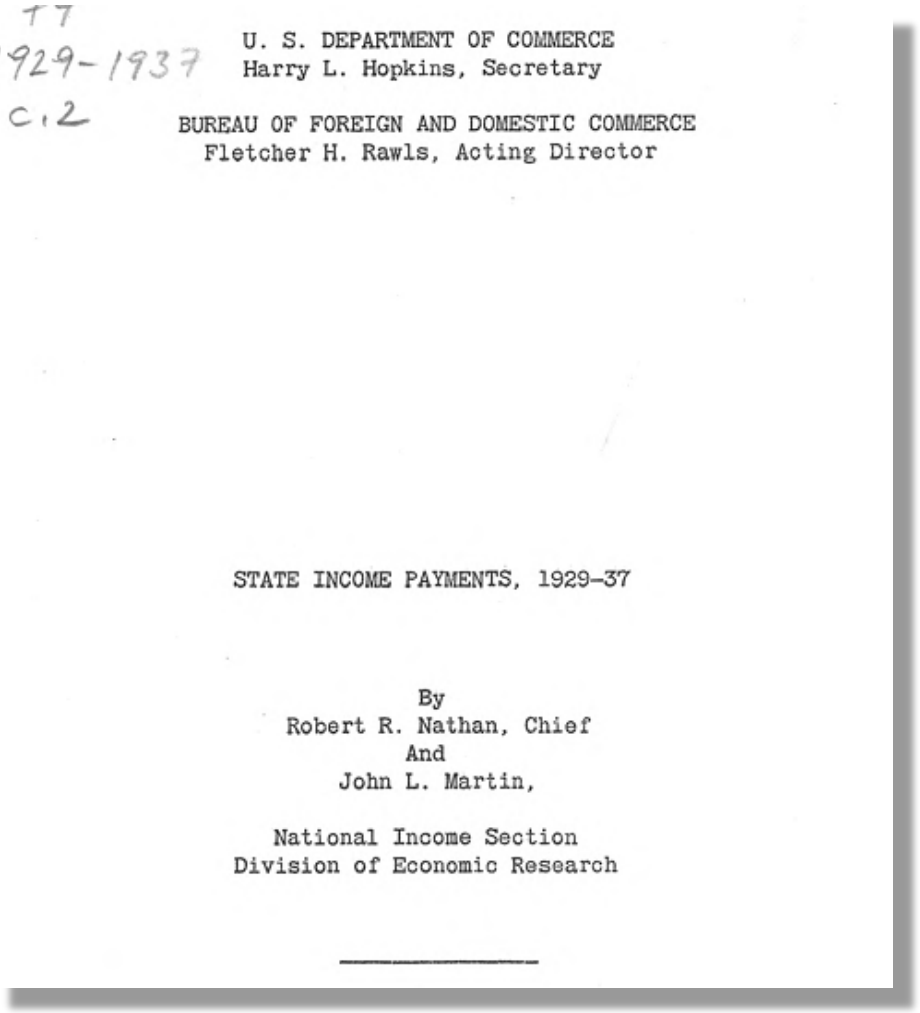
National income paid out in 1937 approximated 67.5 billion dollars representing an increase of 8 percent

estimate of business savings for 1937 pending the publication and analysis of a substantial number of corporation reports. Positive business savings were estimated at approximately 1¾ billion dollars in 1936. If this same level prevailed in 1937, the national income produced in the latter year would total more than 69 billion dollars. Since dividend disbursements were fairly well maintained in 1937 and corporate earnings recorded a marked decline toward the close of the year, it is not at all improbable that positive business savings in 1937 will be somewhat lower than those estimated for 1936.

It is important to note that the monthly and annual income estimates measure changes in the *dollar* volume of income and that fluctuations in the level of prices exert important influences on the income measurements. A substantial portion of the decline in income from 1929 to 1933 and the recovery to 1937 can be accounted for by price changes. However, there is no price index available which is sufficiently comprehensive to convert the dollar income figures into *real* income but it is suggested that the reader observe fluctuations in available series such as the Bureau of Labor Statistics wholesale-price and cost-of-living indexes.

- Initial estimates were released in February 1938 in response to a policy need for more timely information on the economy
- Monthly Disposable Personal Income was first published in 1942
- Our first national estimates of the Distribution of Personal Income came out in 1953

Our subnational statistics also have a long history



TT
1929-1937
c.2

U. S. DEPARTMENT OF COMMERCE
Harry L. Hopkins, Secretary

BUREAU OF FOREIGN AND DOMESTIC COMMERCE
Fletcher H. Rawls, Acting Director

STATE INCOME PAYMENTS, 1929–37

By
Robert R. Nathan, Chief
And
John L. Martin,

National Income Section
Division of Economic Research

- State Income Payments (May 1939)
  - Produced in response to calls for a state level equivalent to national Personal Income
  - Quarterly State Income Payments first published in December 1966
- Annual Gross State Product (May 1985)
  - Quarterly GDP by State first released in September 2015

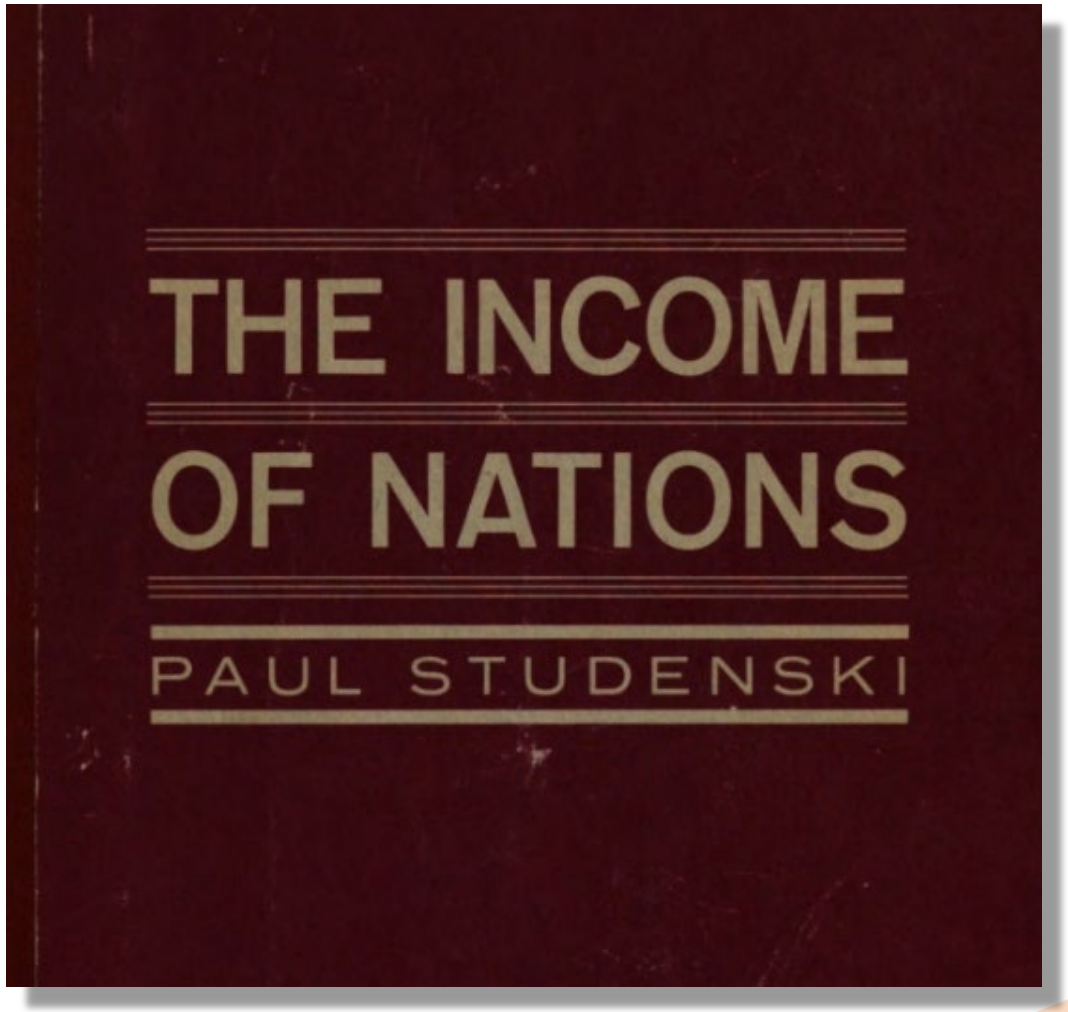
Assessing Progress in Economic Measurement

We've done a good job over time assessing progress in economic measurement—in some areas

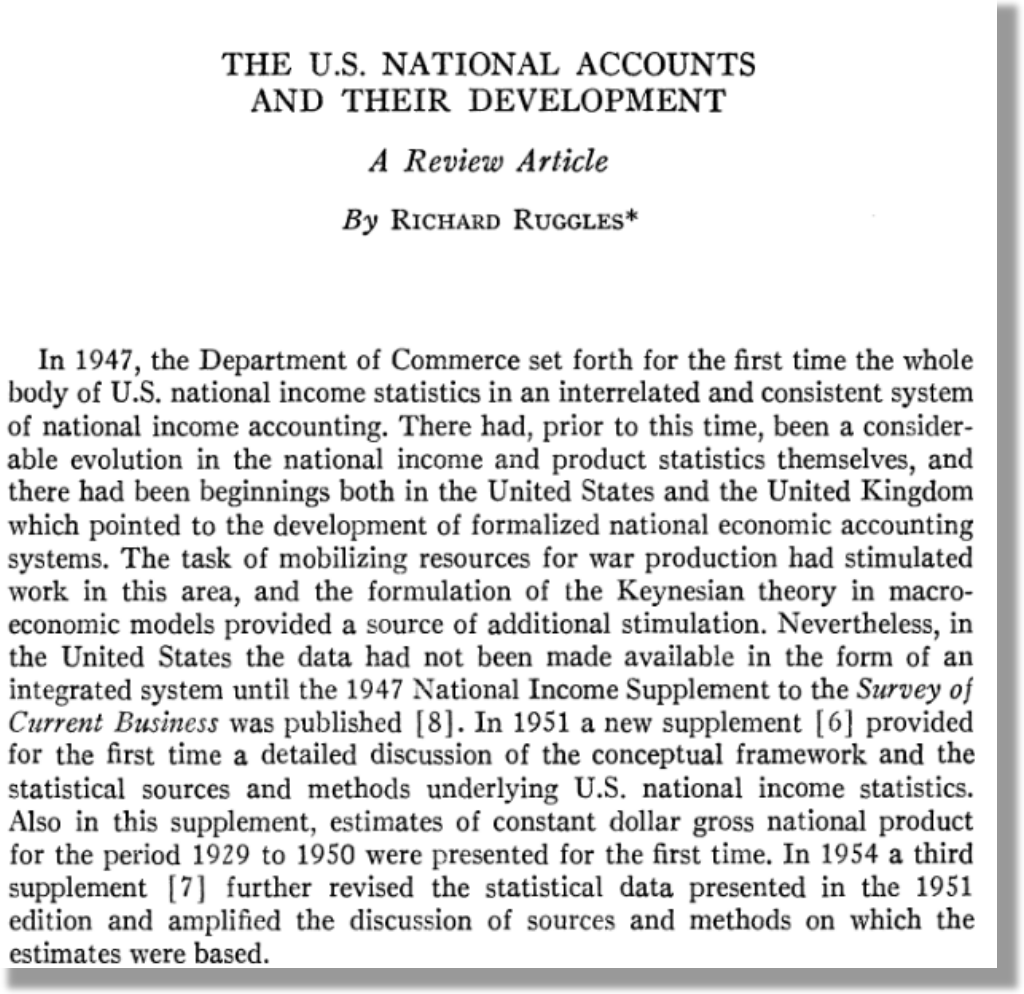
- International guidelines and manuals are great sources of information

- GDP and related concepts have received the most attention
  - Multiple books review their history and development
  - Many papers review ongoing research and developments

- Much less has been written in recent years on the Balance of Payments—even less on subnational statistics



We've assessed progress in economic measurement at BEA over the years as well



THE U.S. NATIONAL ACCOUNTS
AND THEIR DEVELOPMENT

A Review Article

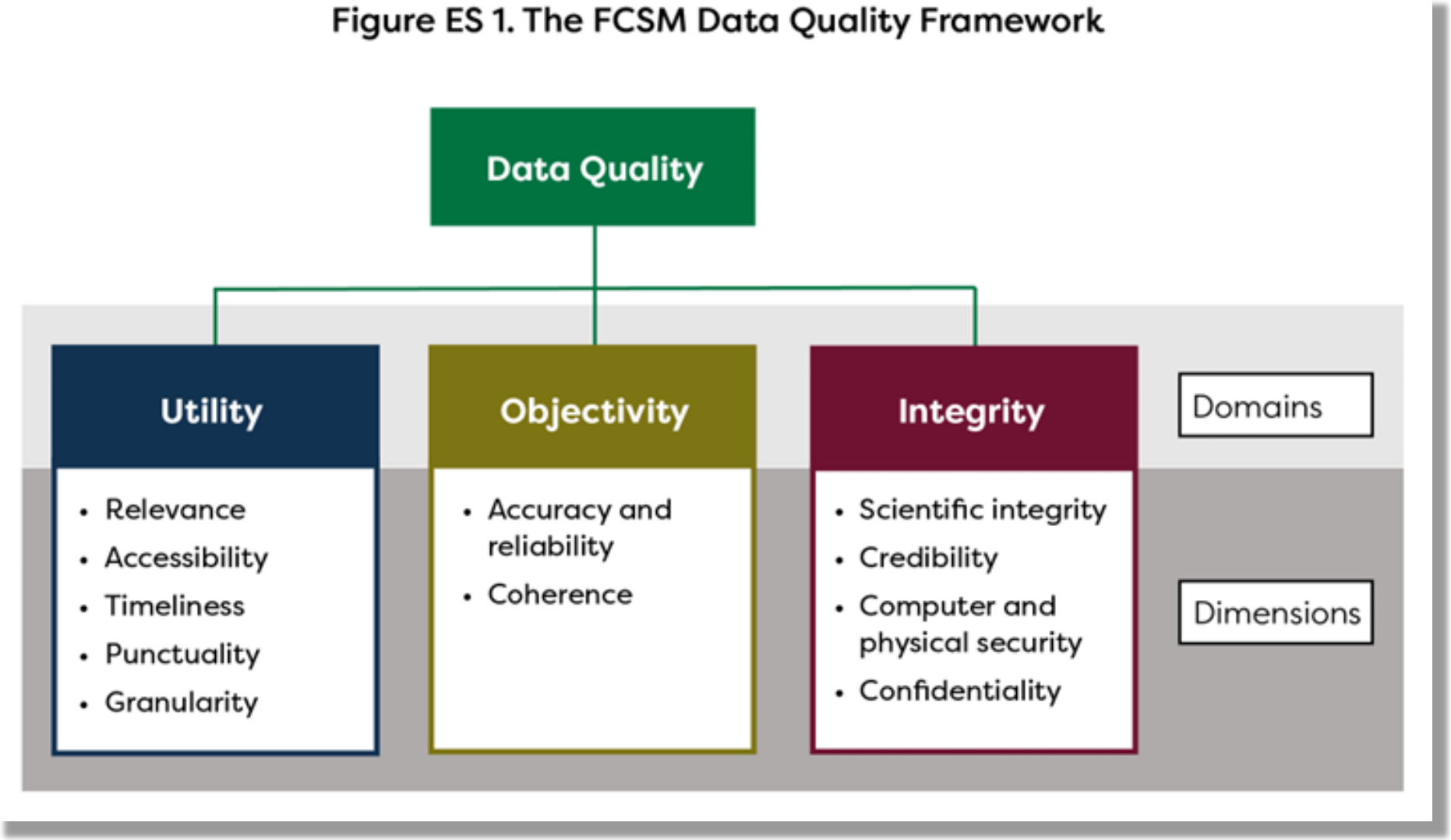
By RICHARD RUGGLES*

In 1947, the Department of Commerce set forth for the first time the whole body of U.S. national income statistics in an interrelated and consistent system of national income accounting. There had, prior to this time, been a considerable evolution in the national income and product statistics themselves, and there had been beginnings both in the United States and the United Kingdom which pointed to the development of formalized national economic accounting systems. The task of mobilizing resources for war production had stimulated work in this area, and the formulation of the Keynesian theory in macroeconomic models provided a source of additional stimulation. Nevertheless, in the United States the data had not been made available in the form of an integrated system until the 1947 National Income Supplement to the *Survey of Current Business* was published [8]. In 1951 a new supplement [6] provided for the first time a detailed discussion of the conceptual framework and the statistical sources and methods underlying U.S. national income statistics. Also in this supplement, estimates of constant dollar gross national product for the period 1929 to 1950 were presented for the first time. In 1954 a third supplement [7] further revised the statistical data presented in the 1951 edition and amplified the discussion of sources and methods on which the estimates were based.

- Formal review committees
  - A Critique of the United States Income and Product Accounts (1955)
  - Review Committee for Balance of Payments Statistics (1965)
  - 1958, 1976, 1977, 1979, 1982, …
- Intermittent review articles in the *Survey of Current Business* and other journals by BEA staff
  - George Jaszi, Carol Carson, Steve Landefeld, …
- Articles from external researchers
  - Simon Kuznets, the Ruggles, Dale Jorgensen, …

Our assessments have focused more on methods and comprehensiveness and less on other aspects of data quality

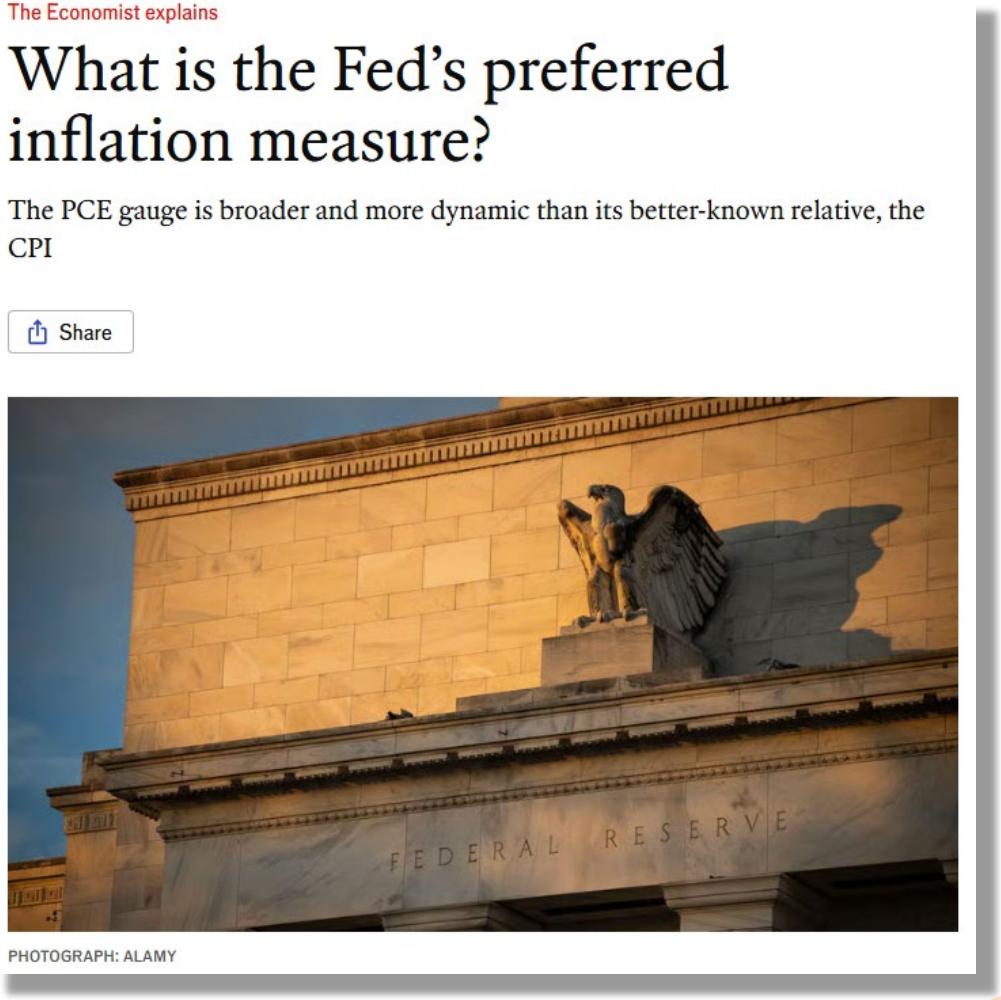
Figure ES 1. The FCSM Data Quality Framework



Recent Economic Measurement Progress at BEA

Timeliness—2026 is going to be a year of acceleration at BEA

- Personal Income and Outlays (February 2026)
- International Investment Position (March 2026)
- GDP and Personal Income by State (March 2026)



The Economist explains

What is the Fed's preferred inflation measure?

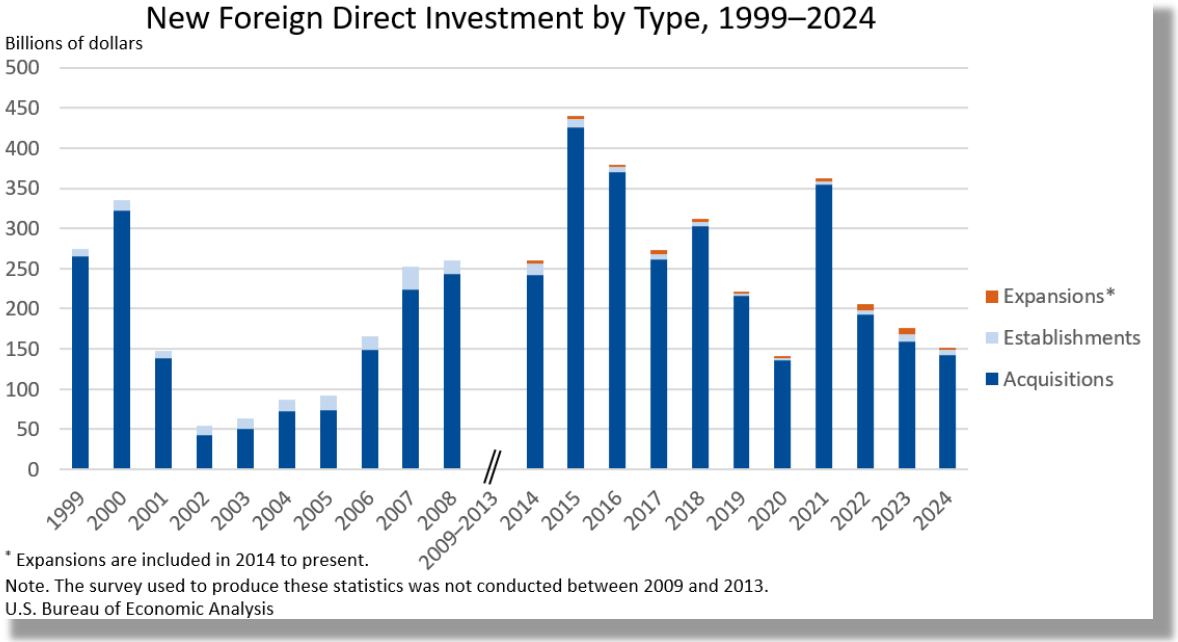
The PCE gauge is broader and more dynamic than its better-known relative, the CPI

Share

PHOTOGRAPH: ALAMY

Timeliness, cont.—2026 is going to be a year of acceleration at BEA

- Survey releases (June and July 2026)
- Trade in Value Added statistics (April and December 2026)
- Monthly Private Fixed Investment (Aspirational)
- Gross Output to 2nd estimate (Aspirational)



Granularity—users always want more detail

- Adding 147 countries to annual Trade in Services statistics (July 2025)
- Quarterly Consumer Spending by State (May 2025)
- Trade in Services by State (early 2026)
- Private Fixed Investment by State (early 2026)

Statistics on Services Trade Expanded to 147 More Countries and Areas

September 8, 2025

International Trade & Investment | Special Topics

For the first time, export and import statistics are available for U.S. trade in services with 237 countries and areas, up from 90 previously. Ecuador, Ethiopia, Lebanon, Pakistan, and Ukraine are among the countries newly broken out from BEA's overall services trade statistics.

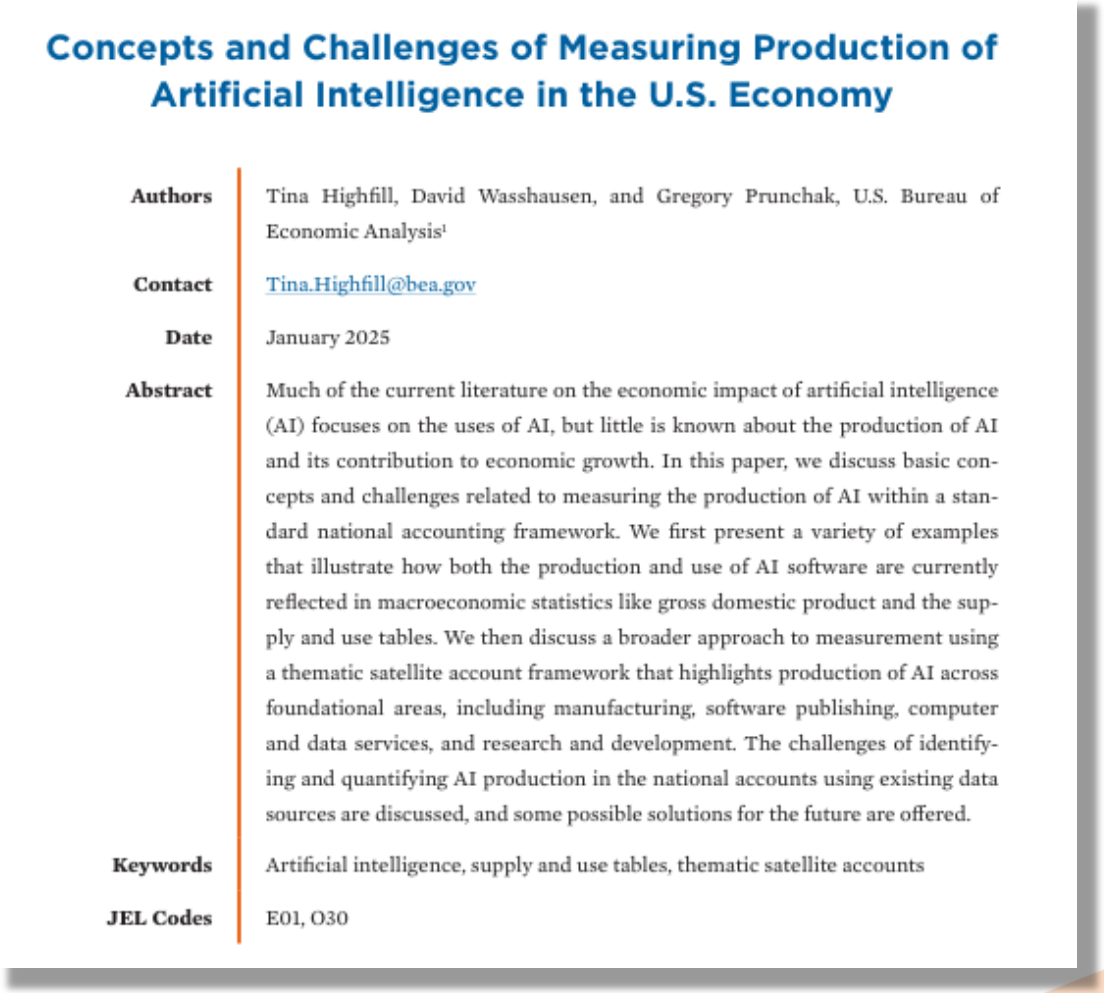
This is part of an ongoing effort at the U.S. Bureau of Economic Analysis to provide more information about services trade, a wide array that includes financial services, travel, information services, and intellectual property rights.

The statistics on services exports, imports, and trade balance by country and area are in a new annual table, "Table 2.4. U.S. Trade in Services, Expanded Geographic Detail." These statistics can provide new insight into the impact of trade on the United States and partner economies, support U.S. trade policy initiatives and negotiations, and deepen the understanding of global supply chains. The new information also allows for more comparisons between countries and could lead to improved measurement of services trade, which contributes to other BEA statistics, including gross domestic product, or GDP.

Publishing geographic detail for services statistics is more challenging than for goods. Cross-border shipments of goods, such as cars and food, are monitored by U.S. Customs and Border Protection. But services transactions, by their nature, are more difficult to identify and to attribute to exporting and importing countries. BEA's services statistics rely heavily on information collected on BEA surveys of businesses, whose company-reported data are protected from disclosure, limiting the amount of detail BEA can publish.

Granularity, cont.—users always want more detail

- Government Expenditures by State (early 2026)
- Noise infusion techniques to replace data suppression (June 2026)
- AI—experimental statistics (Aspirational)
- Crypto—experimental statistics (Aspirational)



Concepts and Challenges of Measuring Production of Artificial Intelligence in the U.S. Economy

Authors Tina Highfill, David Wasshausen, and Gregory Prunchak, U.S. Bureau of Economic Analysis[1]

Contact Tina.Highfill@bea.gov

Date January 2025

Abstract Much of the current literature on the economic impact of artificial intelligence (AI) focuses on the uses of AI, but little is known about the production of AI and its contribution to economic growth. In this paper, we discuss basic concepts and challenges related to measuring the production of AI within a standard national accounting framework. We first present a variety of examples that illustrate how both the production and use of AI software are currently reflected in macroeconomic statistics like gross domestic product and the supply and use tables. We then discuss a broader approach to measurement using a thematic satellite account framework that highlights production of AI across foundational areas, including manufacturing, software publishing, computer and data services, and research and development. The challenges of identifying and quantifying AI production in the national accounts using existing data sources are discussed, and some possible solutions for the future are offered.

Keywords Artificial intelligence, supply and use tables, thematic satellite accounts

JEL Codes E01, O30

Accuracy and reliability—we need to continually improve

SCB SURVEY OF CURRENT BUSINESS

The Journal of the U.S. Bureau of Economic Analysis

Reliability of the International Accounts

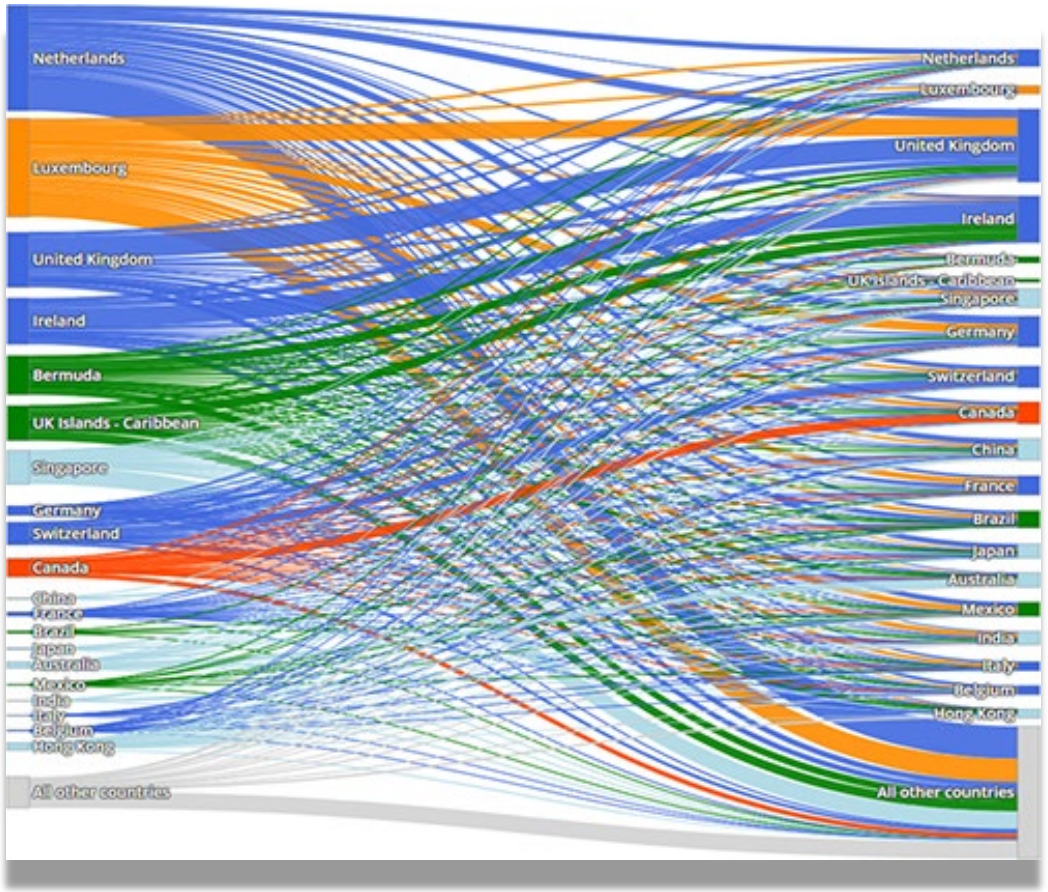
By Thomas Anderson | December 17, 2024

This article analyzes the reliability of two of the core accounts in the U.S. Bureau of Economic Analysis' (BEA's) International Economic Accounts: the International Transactions Accounts (ITAs) and the International Investment Position (IIP) Accounts. The ITA and IIP statistics are updated on a regular cycle that involves the release of a preliminary or "first" quarterly or annual estimate, followed by revisions to the preliminary estimate in subsequent quarters or years. The revised estimates are based on newly available source data that had not been previously available, or more complete or detailed information than previously available in the source data. The revised estimates may also reflect the incorporation of improved estimation methodologies.

- Revisions to Gross Domestic Product, Gross Domestic Income, and Their Major Components (August 2024)
- Reliability of the International Accounts (December 2024)
- Reliability of the Regional Accounts (mid-2026)

Coherence—ensuring everything fits together

Ultimate Host Economy Reallocations Between Countries, 2019

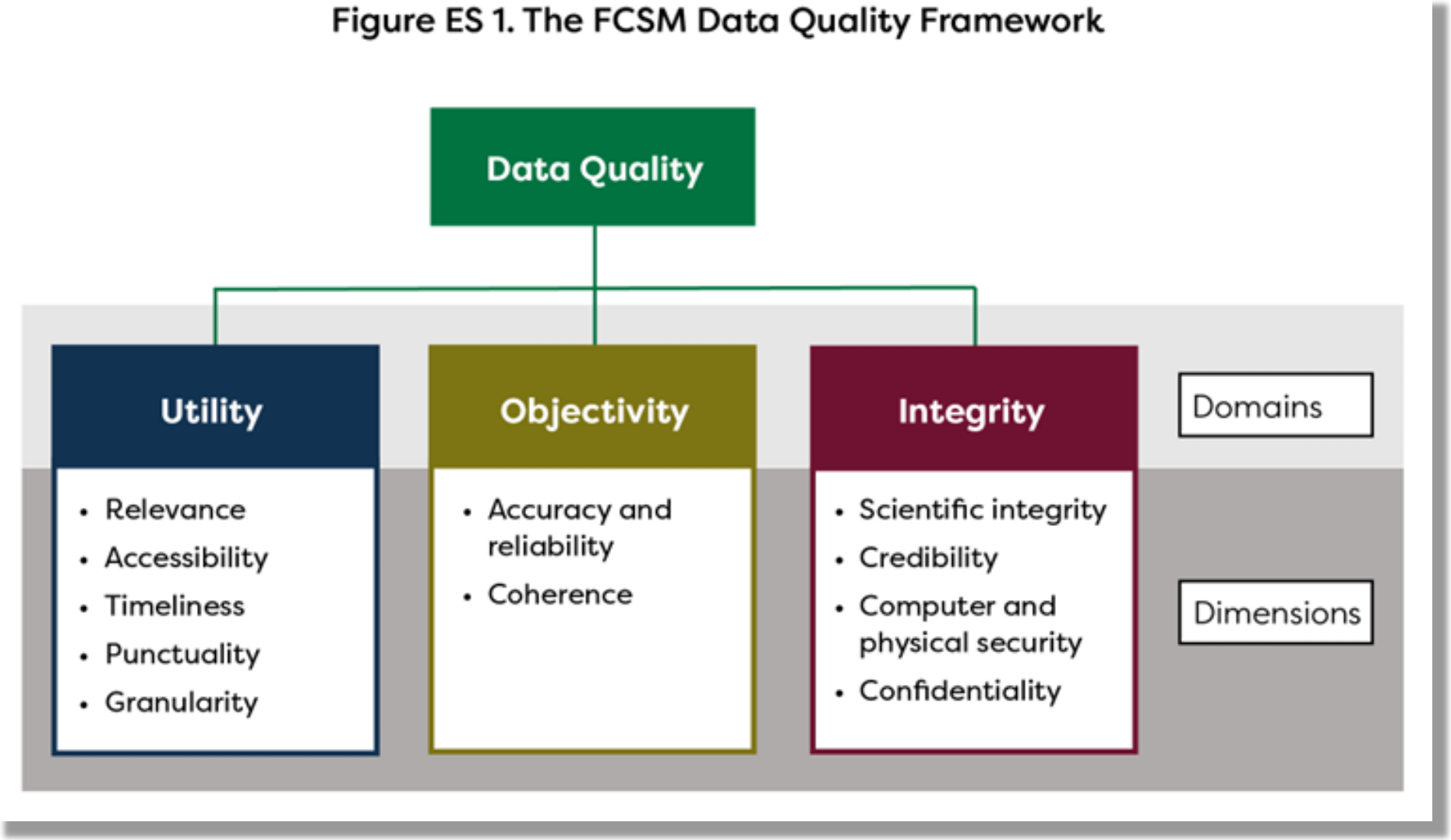


- Release National, State, and Industry GDP together (March 2026)
- Integrate International Investment Position with International Transactions Accounts (March 2026)
- U.S. Direct Investment Abroad by Ultimate Host Economy (September 2025)
- Human Capital—experimental statistics (early 2026)
- Household Production—experimental statistics (mid 2026)

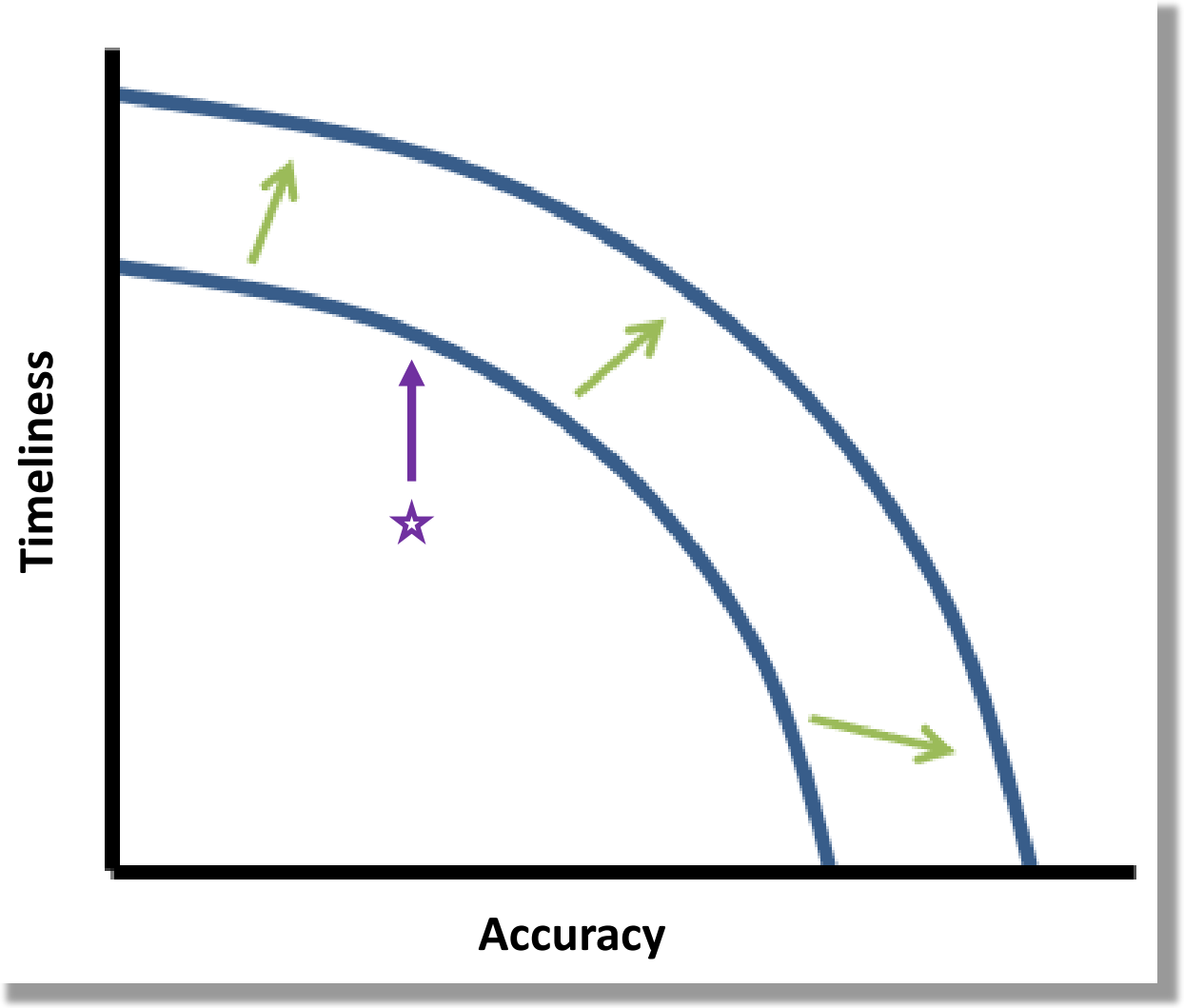
Concluding Thoughts

We should focus more on timeliness when assessing progress in economic measurement

Figure ES 1. The FCSM Data Quality Framework

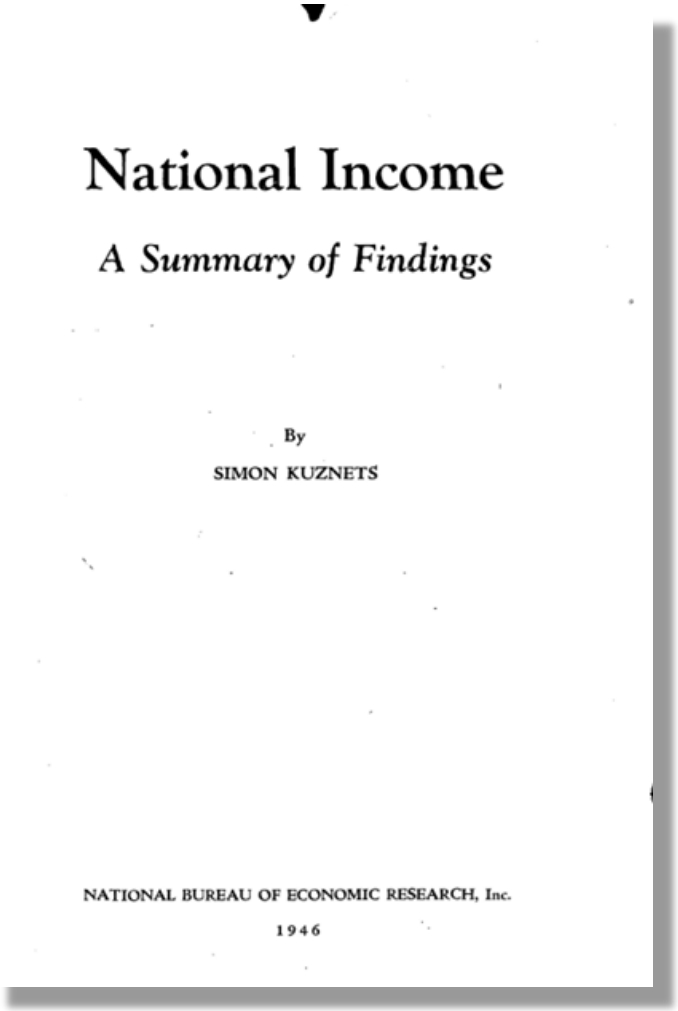


We can (and do) achieve improvements in timeliness without sacrificing accuracy



And that brings me to what I believe progress in economic measurement leads to…

"It is not unreasonably sanguine to hope that continuation, extension, and refinement of these estimates will assure an even greater contribution to a better understanding of economic life and to a more intelligent handling of the various problems that find their roots in the workings of the economy."


National Income

A Summary of Findings

By

SIMON KUZNETS

NATIONAL BUREAU OF ECONOMIC RESEARCH, Inc.

1946