AMERICAN ECONOMIC ASSOCIATION

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Principles of Economic Measurement

Economic statistics collected and generated by federal, state and local governments provide essential information for businesses, families, and policymakers.

Principal Federal Economic Indicators provide Americans with information on output and incomes, job gains and losses, the unemployment rate, inflation, housing starts, imports and exports, and much more. The federal government also provides statistics on such things as poverty, gas prices, innovation and technological progress, and industrial production.

These economic statistics inform family and business decisions, help guide public policy decisions, and affect countless other aspects of American life. For example:

- The Federal Reserve relies on economic statistics to set interest rates, which affect businesses and families;
- Businesses use economic data in deciding where and when to expand and innovate;
- Investors use them to see which sectors of the economy are growing the fastest;
- State and local governments rely on them in setting economic development strategies; and
- They provide evidence that allows researchers to evaluate the effectiveness of economic and financial, trade, workforce, and other policy decisions.

Getting these measures right is essential. Economic statistics are national resources.

To fulfill their valuable role in our economy, economic measures must be:

1. **Reliable.** Principal Economic Indicators and other economic statistics developed by statistical agencies must be trustworthy and free from bias or manipulation.
2. **Accurate.** Measures must be based on sound science and reflect the best practices in survey and statistical methodology.
3. **Relevant.** An economic measure must be suited to its use. There can be multiple measures of a single phenomenon, with context determining which measure is relevant.
4. **Transparent.** The way in which an economic measure is calculated must be clear. The data and information used, steps taken, and algorithms employed in its calculation must be available so that the measure can be reproduced by others. The degree of uncertainty associated with a measure should be made available.
5. **Consistent in a Changing World.** Economic statistics must accommodate changes in technology and the types and quality of goods and services Americans buy and sell. At the same time, statistics must be comparably constructed over time to permit analyses of economic trends.
6. **Timely and Accessible.** Data must be available to policy makers and the public in a useable format and within a useful time frame.

Economic measurement is complicated and consequential. Statistical agencies require adequate resources to ensure the quality of economic statistics; to invest in new ways to measure our changing economy; and to protect the privacy and confidentiality of households and businesses, whose answers to government surveys and provision of administrative information are the basis of economic statistics.

See three examples of the importance and challenges of economic measurement on the flip side of this page.

EXAMPLES OF THE IMPORTANCE AND CHALLENGES OF MEASUREMENT OF ECONOMIC STATISTICS

Correctly Measuring Inflation When the Products Purchased Change Over Time Accurate data on consumer price inflation is vital for banks and lenders in making decisions about interest rates, businesses and workers in determining cost of living adjustments for wages, and retirees since Social Security benefits are adjusted for inflation. The Bureau of Labor Statistics (BLS) constructs the Consumer Price Index, a commonly-used measure of inflation, by tracking the prices of the goods and services in a typical "basket" purchased by consumers. Yet, the products in the basket change over time. Something bought today may have a higher price than a similar item bought last year, but if the current item has more features or otherwise is of higher quality, the price adjusted for quality may have actually fallen. Quality changes can be especially large for technology products and items that use technology. For example, automobiles bought this year typically have more features such as high-tech safety systems than those bought a few years ago. BLS uses statistical methods to adjust prices for changes in quality but developing and implementing these methods is costly and complex. Accurately measuring consumer price inflation is a growing challenge in the face of rapid quality change from technological improvements.

Accurately Measuring Trade Balances in a World with Global Supply Chains Sound international trade policy depends in part on understanding the amount of trade between the United States and other nations. But the global nature of production chains, in which items designed in one country are assembled in another using components from many locations, makes it difficult to distinguish the value added in each country. As an example, final assembly of the Apple iPhone is done in China, but iPhone parts are made in many countries including Germany, Japan, and the United States, with the design for each new model done in the United States. The imported value of iPhones thus reflects the contribution of countries other than China. If other countries' contributions are not taken into account, the U.S. bilateral trade deficit with China will be overstated. Ideally, the calculation of trade flows would be on a value-added basis, separating a good's total value into the amounts added in each country at each stage of production. Developing accurate measures of trade-in-value-added requires more detailed data than is commonly collected by governments and is an ongoing challenge.

Measuring GDP Accurately in Real Time Changes in Gross Domestic Product (GDP) tell us when and how the economy is expanding or contracting. Businesses use GDP data to make hiring and investment decisions, Congress to make federal tax and spending policy, and the Federal Reserve in setting interest rates. Users of GDP would like to have measures available as close to real time as possible. But GDP estimates make use of data from various agencies that can have different production timeframes. The initial estimate of quarterly GDP is made to be timely, but without complete data. GDP is then revised and improved over subsequent months as better information becomes available. At key turning points of the economy, initial estimates of GDP may miss changes that turn out to be important for policymakers and are revealed only later as GDP is revised. The decline in GDP in the fourth quarter of 2008, for example, was initially underestimated; later revisions showed a steeper plunge. Had preliminary GDP estimates more accurately reflected the severity of the economic downturn, it might have affected the countercyclical measures taken by policymakers. Since 2008, the Census Bureau has sped up its provision of critical data for GDP estimation. Yet the tradeoff between timeliness and accuracy remains a challenge for statistical agencies.