

Technical Note

Prototype Gross Domestic Product for Puerto Rico, 2012–2018

September 28, 2020

This technical note provides background information about the estimates presented in the Puerto Rico GDP news release. The complete set of estimates for 2012–2018 is available on BEA's Web site at www.bea.gov. A description of the data sources and estimating methods is available; see *Summary of Methodologies: Puerto Rico Gross Domestic Product*.

Effect of Natural Disasters and COVID-19 Pandemic on Data Availability for 2012–2018 GDP

In September 2017, Puerto Rico suffered catastrophic damage from two major hurricanes—Irma and Maria—that led to widespread loss of access to roads, electrical power, and cellular communication. Electrical power was not completely restored until August 2018. Starting on December 28, 2019 and progressing into 2020, Puerto Rico experienced a series of earthquakes and tremors that temporarily closed multiple government office buildings—some agencies were closed for several weeks. In March 2020, the Puerto Rico government instituted a lockdown due to the COVID-19 pandemic that again closed many government office buildings for two months.

These major events have affected the availability of various Puerto Rico government data sources that would otherwise have been used in BEA's estimates, including financial statements for the territorial government and its independent agencies. Audited financial statements for fiscal years 2018 and 2019 have not been published for the Commonwealth Government of Puerto Rico and many of its independent agencies.

As BEA continues its work to identify the best available data for its estimates of Puerto Rico GDP, it will evaluate updated and new Puerto Rico government data sources, when they become available.

Effect of Natural Disasters and Disease Outbreaks on GDP and Its Components

In general, the full economic effects of natural disasters and disease outbreaks on GDP cannot be quantified because the impacts are generally embedded in the various data sets used in the estimation processes and cannot be separately identified.

For example, Hurricanes Irma and Maria disrupted manufacturing production and exports of pharmaceutical products in Puerto Rico as companies had to repair damage to their facilities and shift to alternative sources of power until Puerto Rico's power grid could be repaired. Other types of production, like rebuilding activities, increased following the hurricanes as damaged infrastructure was restored. The hurricanes also affected consumer spending. Immediately after the hurricanes, households' ability to purchase goods and services was restricted as many businesses had temporarily

closed. After households began to receive disaster-related insurance payouts and government benefit payments, they began to replace cars, appliances, and other goods destroyed by the hurricanes.

These effects on production and consumption are reflected—but not separately identified—in the data that BEA uses to prepare the estimates of GDP for Puerto Rico; consequently, it is not possible to precisely determine the overall impact of Hurricanes Irma and Maria on 2017 or 2018 GDP.

Key Source Data Gaps in Prototype Estimates of GDP

Puerto Rico is not included in many of the federal data sources that cover the 50 states and the District of Columbia. Key data sources from which Puerto Rico is excluded are: (1) the Census Bureau’s annual and other higher frequency surveys covering the manufacturing, construction, retail, wholesale, services, and government sectors and (2) the Bureau of Labor Statistics’ consumer and producer price programs.^{1,2} BEA relies on these data sources to prepare national estimates of GDP and related measures.

For estimates of Puerto Rico GDP, BEA relies heavily on information provided by Puerto Rico government agencies to fill several of the gaps in Federal statistical agency data. For example, BEA uses the Puerto Rico Planning Board’s Construction Survey data to estimate the value of construction activity in each year. BEA uses data from the Planning Board and Puerto Rico Treasury (“Hacienda”) to estimate annual levels of inventory investment by manufacturers, retailers and wholesalers, and other businesses; BEA supplements these data with information collected from company financial statements publicly filed with Puerto Rico’s Department of State.

BEA also relies on indirect indicators of industry output, such as wages and employment, to extrapolate estimates of Puerto Rico GDP. For goods that are primarily exported or imported, BEA relies on Census Bureau data on trade in goods. For government, BEA collects data from hundreds of publicly available financial statements and budget documents from the central and municipal governments.

Price information specific to Puerto Rico is especially limited. The Puerto Rico Department of Labor and Human Resources produces consumer price indexes, which BEA uses within the estimates of consumer spending, but there are no producer price indexes for Puerto Rico, nor are there price indexes that cover trade in goods and services between the Commonwealth and the rest of the United States.

The lack of annual information on research and development (R&D) activity also presents a measurement challenge for Puerto Rico GDP. Although BEA is able to estimate R&D performed by computer services providers and by businesses classified as scientific R&D service providers, R&D performed by other sectors in Puerto Rico, such as pharmaceutical and medical equipment manufacturing, are not well covered in the data sources. BEA is not aware of any systematic, comprehensive data on the value and other characteristics of private-sector R&D taking place in Puerto Rico.

¹ The Census Bureau does publish annual building permit data for Puerto Rico; the most recent year available is 2016.

² Puerto Rico is included in the international price program as part of the United States but cannot be separately identified from the rest of the nation.

Sources of Revision to Previously Published Prototype Estimates of Consumer Spending, Private Fixed Investment, and Exports and Imports of Goods

Prototype estimates of nominal consumer spending, private fixed investment (PFI), and trade in goods for 2012 to 2017 that were released on October 15, 2019 have been updated in order to incorporate improvements to source data and estimating methods, including:

- special tabulations of data from the 2012 Economic Census of Island Areas,³
- refinements to annual indicator series for consumer spending and PFI, based on more precise classification of imported commodities between household and business use,
- development of new estimates of business investment on R&D by computer service providers, and
- reclassification of National Science Foundation data on business R&D expenditures from PFI to exports of services.

Revisions to the inflation-adjusted estimates reflect the incorporation of new or updated price information, including data from BEA's National Income and Product Accounts and the U.S. Department of Energy. Revisions also reflect changes in the price indexes used to deflate trade in goods manufactured in Puerto Rico, in order to ensure consistency with price indexes used to deflate related components within the newly released estimates of business inventory investment.

Comparisons to Existing Macroeconomic Statistics for Puerto Rico

BEA has introduced a number of methodological advances into the measurement of Puerto Rico GDP and its components. These enhancements include adopting modern techniques to calculate aggregate output, such as:

- using chain-type indexes,
- benchmarking components of consumer spending, private fixed investment, and private inventory investment to information from the Census Bureau's 2012 Economic Census of Island Areas,
- treating intellectual property products as investment, and
- adjusting for inflation at a higher level of detail to ensure that the selected price indexes better reflect the mix of goods and services produced by the Puerto Rico economy.

These advances result in new data that are comparable with other data that BEA produces—for the nation, for states, and for the other U.S. territories. However, this means that BEA's methodology is substantially different from that used in published statistics about Puerto Rico's economy, such as those produced by the Puerto Rico Planning Board. BEA's estimates are also presented on a calendar-year basis. Thus, direct comparisons with fiscal-year statistics that use older national accounting methodology may be misleading.

³ The Census Bureau reviewed the special tabulations for unauthorized release of confidential information and approved the disclosure avoidance practices applied (Approval ID: CBDRB-FY20-090). However, it notes that caution should be exercised in the use and interpretation of these data, which are suppressed or otherwise not included in the public release on the Census Bureau website. BEA reviewed and incorporated these data in order to replace judgmental estimates.

Comentario técnico

Prototipo del producto interior bruto para Puerto Rico, 2012–2018

28 de septiembre de 2020

Summary of Methodologies: Puerto Rico Gross Domestic Product

Efectos de los desastres naturales y de la pandemia del COVID-19 en la disponibilidad de los datos del PIB para los años 2012–2018

Efecto de desastres naturales y de brotes de enfermedades en el PIB y sus componentes

Dificultades en las fuentes de datos para los estimados del prototipo del PIB

Fuentes de revisión de los estimados prototipos publicados anteriormente de gastos del consumidor, inversión privada en capital fijo y exportaciones e importaciones de bienes

-
-
-
-

Comparaciones con las estadísticas macroeconómicas actuales de Puerto Rico

³ El Negociado del Censo revisó las tabulaciones especiales para evitar la divulgación no autorizada de información confidencial y aprobó las prácticas aplicadas para evitar dicha divulgación (Número de identificación de la aprobación: CBDRB-FY20-090). Sin embargo, el Censo señala que se debe tener precaución en el uso e interpretación de estos datos, que están suprimidos o no incluidos en la publicación en el sitio web del Negociado del Censo. El BEA revisó e incorporó estos datos para reemplazar los estimados valorativos.

•
•

•
•