BEA’s Response to COVID-19: Enhanced Products and Early Research

Erich H. Strassner
Advisory Committee Meeting
November 13, 2020
Snapshot: What We’ll Cover

1. A look at the data
   o Economic statistics through the third quarter of 2020

2. The impact of pandemic response programs on the accounts
   o Government social benefit programs newly enacted as part of the CARES Act and other programs

3. Innovations in measurement during the pandemic
   o Novel measurement in program areas
   o Daily spending using payment card data and areas of future work

4. Next steps and questions for the committee
Real Gross Domestic Product

Seasonally adjusted at annual rates

Trillions

Percent change from preceding period

Real Gross Domestic Product

Recession
Real GDP, Percent Change
Real GDP, Chained Dollars

Year 2000 Q1 to 2020 Q4

12.5
13.5
14.5
15.5
16.5
17.5
18.5
19.5

-35
-25
-15
-5
5
15
25
35

Percent change at annual rates

Bea.gov
Change in Real GDP
(Billions of chained dollars)

Change from preceding quarter
- 2020Q1  - 2020Q2  - 2020Q3

<table>
<thead>
<tr>
<th>Category</th>
<th>2020Q1</th>
<th>2020Q2</th>
<th>2020Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>-1,708</td>
<td>1,282</td>
<td>1,172</td>
</tr>
<tr>
<td>Goods</td>
<td>-243</td>
<td>1</td>
<td>-136</td>
</tr>
<tr>
<td>Services</td>
<td>459</td>
<td>618</td>
<td>1,058</td>
</tr>
<tr>
<td>Nonres. Inv.</td>
<td>-1,058</td>
<td>-48</td>
<td>-208</td>
</tr>
<tr>
<td>Res. Inv.</td>
<td>119</td>
<td>27</td>
<td>-66</td>
</tr>
<tr>
<td>CIPI</td>
<td>286</td>
<td>71</td>
<td>-80</td>
</tr>
<tr>
<td>Exports</td>
<td>-63</td>
<td>-206</td>
<td>-568</td>
</tr>
<tr>
<td>Imports</td>
<td>-136</td>
<td>-581</td>
<td>(38)</td>
</tr>
<tr>
<td>Gov</td>
<td>10</td>
<td>21</td>
<td>(38)</td>
</tr>
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</table>

Cumulative change from 2019Q4

<table>
<thead>
<tr>
<th>Category</th>
<th>Change</th>
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</thead>
<tbody>
<tr>
<td>GDP</td>
<td>-670</td>
</tr>
<tr>
<td>Goods</td>
<td>(660)</td>
</tr>
<tr>
<td>Services</td>
<td>(137)</td>
</tr>
<tr>
<td>Nonres. Inv.</td>
<td>(391)</td>
</tr>
<tr>
<td>Res. Inv.</td>
<td>(242)</td>
</tr>
<tr>
<td>CIPI</td>
<td>(7)</td>
</tr>
</tbody>
</table>
In 2020Q2, real GDP decreased by -31.4 percent
Percent Change in Real GDP by State for Q2

Real (inflation-adjusted) estimates seasonally adjusted at annual rates
Current Dollar DPI, Personal Outlays, and Saving

Estimates are seasonally adjusted at monthly rates
Communications Strategy: bea.gov/recovery

Federal Recovery Programs and BEA Statistics

COVID-19 and Recovery

This Bureau of Economic Analysis webpage will consolidate information about the COVID-19 virus and federal stimulus programs as they relate to BEA’s economic data. Any technical information important to a particular news release will also be published with the news release.

Data

The Effects of Selected Federal Pandemic Response Programs on:

- Personal Income
  - Frequency: Monthly
    - August 2020 [PDF]
    - XLSX Format
  - Frequency: Quarterly
    - 3rd Quarter 2020 [PDF]
    - XLSX Format

- State Personal Income
  - Frequency: Quarterly
    - 2nd Quarter 2020 [PDF]
    - XLSX Format

- Federal Government Receipts, Expenditures, and Saving
  - Frequency: Quarterly
    - 3rd Quarter 2020 [PDF]
    - XLSX Format

- Paycheck Protection Program Subsidies by Industry in the National Accounts
  - Frequency: Quarterly
    - 2nd Quarter 2020 [PDF]
    - XLSX Format

Paper, Blogs, Articles

COVID-19 Pandemic: Federal Recovery Legislation and the NIPAs


Measuring the Effects of the COVID-19 Pandemic on Consumer Spending Using Card Transaction Data

Author: [Bea Authors]

Date: April 2020

FAQs

- How did BEA adjust March 2020 wages and salaries to account for the effects of COVID-19?
- How does the Paycheck Protection Program of 2020 impact the national income and product accounts (NIPAs)?
- How does BEA measure public education services during the closure of schools and colleges in response to the COVID-19 pandemic?
- How are the 2020 CARES Act effects to BEA’s estimates of personal interest payments?
- What is the impact of COVID-19 on the State Personal Income statistics for 2020 Q1?
- What is the impact of COVID-19 on statistics on trade in services?

Notes & Technical Information

Technical Note

Gross Domestic Product, Third Quarter of 2020 (Advance Estimate)

October 23, 2020

This technical note provides background information about the sources and estimating methods.
## Federal Recovery Tables: Personal Income

**Effects of Selected Federal Pandemic Response Programs on Personal Income, 2020Q3 Advance**

(Numbers of dollars, seasonally adjusted at annual rates)

<table>
<thead>
<tr>
<th>Effects of Program</th>
<th>2020Q3</th>
<th>2020Q4</th>
<th>2021Q1</th>
<th>2021Q2</th>
<th>Change from preceding quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal Income</strong></td>
<td>18,480.3</td>
<td>18,572.6</td>
<td>18,756.0</td>
<td>18,951.9</td>
<td>19,166.6</td>
</tr>
<tr>
<td>Change in number of employees</td>
<td>11,294.4</td>
<td>11,242.0</td>
<td>11,714.4</td>
<td>11,674.4</td>
<td>11,660.9</td>
</tr>
<tr>
<td>Unemployment benefits</td>
<td>9,274.0</td>
<td>9,259.5</td>
<td>9,324.8</td>
<td>9,344.0</td>
<td>9,334.0</td>
</tr>
<tr>
<td>Print media</td>
<td>9,012.2</td>
<td>9,157.0</td>
<td>9,490.9</td>
<td>9,644.4</td>
<td>9,624.4</td>
</tr>
<tr>
<td>Government</td>
<td>14,642.3</td>
<td>14,745.0</td>
<td>15,263.1</td>
<td>15,596.9</td>
<td>15,157.7</td>
</tr>
<tr>
<td>Dependent on wages and salaries</td>
<td>2,718.0</td>
<td>2,759.9</td>
<td>2,802.7</td>
<td>2,850.0</td>
<td>2,866.6</td>
</tr>
<tr>
<td>Private nonfarm income with IVA and OASA</td>
<td>1,920.0</td>
<td>1,990.6</td>
<td>1,986.0</td>
<td>1,979.0</td>
<td>1,981.0</td>
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<tr>
<td>Farm</td>
<td>36.9</td>
<td>38.9</td>
<td>39.1</td>
<td>39.4</td>
<td>38.9</td>
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<tr>
<td>OASAA</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>Consumer Food Stamps Program</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>Pandemic Unemployment Program</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Medicaid</td>
<td>1,591.9</td>
<td>1,618.6</td>
<td>1,629.8</td>
<td>1,649.6</td>
<td>1,672.0</td>
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<tr>
<td>OASAA</td>
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<tr>
<td>Total</td>
<td>18,480.3</td>
<td>18,572.6</td>
<td>18,756.0</td>
<td>18,951.9</td>
<td>19,166.6</td>
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</tbody>
</table>

**Change from preceding quarter**

- 11,223.9
- 11,274.6
- 11,756.0
- 11,951.9
- 12,166.6
- 12,261.2
- 12,928.2
- 12,928.2
- 12,928.2

- 11,294.4
- 11,242.0
- 11,714.4
- 11,674.4
- 11,660.9
- 11,680.6
- 11,730.5
- 11,714.4
- 11,782.9

- 9,274.0
- 9,259.5
- 9,324.8
- 9,344.0
- 9,334.0
- 9,304.0
- 9,374.9
- 9,334.0
- 9,284.4

- 9,012.2
- 9,157.0
- 9,490.9
- 9,644.4
- 9,624.4
- 9,704.4
- 9,425.5
- 9,592.4
- 9,284.4

- 14,642.3
- 14,745.0
- 15,263.1
- 15,596.9
- 15,157.7
- 15,198.0
- 15,614.1
- 15,644.9
- 15,644.9

- 2,718.0
- 2,759.9
- 2,802.7
- 2,850.0
- 2,866.6
- 2,890.0
- 2,942.0
- 3,052.0
- 3,052.0

- 1,920.0
- 1,990.6
- 1,986.0
- 1,979.0
- 1,981.0
- 1,995.0
- 2,025.0
- 1,989.0
- 1,989.0

- 36.9
- 38.9
- 39.1
- 39.4
- 38.9
- 40.2
- 41.0
- 39.9
- 39.9

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- 1,591.9
- 1,618.6
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- 18,951.9
- 19,166.6
- 19,261.2
- 19,928.2
- 19,928.2
- 19,928.2

**Notes:**

1. Adjusted for seasonal variations.
2. Seasonally adjusted at annual rates.
3. Percent change from preceding quarter.
4. chained 2009 dollars.

**Source:** U.S. Bureau of Economic Analysis

**Date:** October 30, 2020
Federal Recovery Impacts: U.S. Personal Income
(Changes in level, trillions of dollars)

Seasonally adjusted at annual rates

<table>
<thead>
<tr>
<th>2020Q1</th>
<th>2020Q2</th>
<th>2020Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Income</td>
<td>Government Social Benefits</td>
<td></td>
</tr>
<tr>
<td>0.19</td>
<td>0.08</td>
<td>-0.54</td>
</tr>
<tr>
<td>1.45</td>
<td>2.44</td>
<td>-1.27</td>
</tr>
</tbody>
</table>

2020Q1: Pandemic Unemployment Compensation Payments
2020Q2: Pandemic Unemployment Assistance
2020Q3: Pandemic Emergency Unemployment Compensation

Lost wages supplemental payments

Economic Impact Payments
Pandemic Unemployment Compensation Payments
Pandemic Unemployment Assistance
Pandemic Emergency Unemployment Compensation
Lost wages supplemental payments
Federal Recovery Impacts: Combined Unemployment Insurance Benefits for Q2
(Current dollar per capita at an annual rate)
Measurement Challenges and Innovations

• Partnered with Census and BLS to understand quality and coverage of routine source data

• Identified and vetted alternative data sources and methods, including expanded use of payment card and volume data

• Monitored and evaluated government responses to ensure accurate treatment in the accounts

• Assessed trade association and other reports on business reopenings
• Standard estimates of consumer spending on services:
  o Based on the Census Bureau’s Quarterly Services Survey
  o Full details not available until after 2\textsuperscript{nd} GDP estimate
  o Initial quarterly and monthly estimates are based on less complete information

• Novel approaches to alternative indicators, including:
  o Health care: private volume measures of service utilization, real-time payment card transactions
  o Communication services: revenue/financial data for phone service providers
  o Mass transit: private internet-based sources
  o Air travel: Transportation Safety Administration (TSA) data
  o Numerous other indicators
Regional Personal Income During COVID-19

• Standard estimates:
  o Quarterly state data from the Centers for Medicare & Medicaid Services
  o Monthly state unemployment data from the Department of Labor
  o Trend distribution and extrapolation of annual state estimates

• Incorporated additional state level data, including:
  o Paycheck Protection Program data from Small Business Administration
  o Economic Impact Payments data from the Internal Revenue Service
  o Provider Relief Funds data from the Department of Health and Human Services
  o Pandemic Unemployment Assistance Program data from the Employment and Training Administration
  o Coronavirus Food Assistance Program data from the Farm Service Agency
A large share of the value of U.S. international trade in services is estimated based on BEA survey data.

- Survey data are not available for first quarterly estimates.
- Indicator-based and trend-based estimates generally used instead.
- Trend-based approach not reasonable under COVID-19.

Trend-based estimates for the most recent quarter in select categories were adjusted using patterns in company-level sales data:

- Licenses for the use of outcomes of R&D
- Franchises and trademarks licensing fees
- Professional and management consulting services

Underlying idea: These categories of intercompany services are often billed based on the level of sales of goods and services by the purchasing affiliate.
International Trade
(Billions of current dollars)

**Goods**

- **Exports**
- **Imports**

**Services**

- **Exports**
- **Imports**

*Seasonally adjusted at monthly rates*
Surveys: Services Trade & Direct Investment During COVID-19

• Disruptions to normal processes
  o Survey mailings delayed or canceled
  o Survey respondents adversely affected

• BEA response
  o Expanded use of email contact
  o Redirected resources to phone contact with key respondents
  o Requested estimates by phone for key variables for respondents that could not report

• Response rates within normal range

• Early use of services survey data
  o Typically available with one quarter lag
  o Early look at data for key companies allowed for more accurate preliminary estimates than using historical trends
• The COVID-19 pandemic caused rapid shifts in economic conditions (days or weeks vs. months or quarters)

• Card data provide timely, frequent measures of spending
  o Fiserv is a card transaction intermediary with over $2 trillion in annual worldwide transactions
  o Daily frequency from all types of payment cards (e.g., credit, debit, gift cards)
  o Key NAICS categories correlate with national estimates

• BEA estimates of card spending
  o Categories are selected based on quality and availability
  o A simple linear model is applied to remove noise and seasonal variation
  o Estimates are updated frequently (now approximately once per week)
  o The data published cover the period up to a week before publication
  o https://www.bea.gov/recovery/estimates-from-payment-card-transactions
Daily Spending Estimates from Card Transactions

Spending on Retail and Food Service (Excluding Nonstore Retailers)

An Event Study Based on Payment Card Transactions

Note: Chart shows the difference from the typical level of spending, with COVID-related changes in the economy. The typical level corresponds to a value of 0. The shaded area represents 95 percent confidence interval bands.
U.S. Bureau of Economic Analysis

Spending on Food Services and Drinking Places

An Event Study Based on Payment Card Transactions

Note: Chart shows the difference from the typical level of spending, with COVID-related changes in the economy. The typical level corresponds to a value of 0. The shaded area represents 95 percent confidence interval bands.
U.S. Bureau of Economic Analysis
Other Research Initiatives During COVID-19

• Investigated price measurement during COVID-19 with implications for inflation when products are unavailable
  o To be discussed at the next Federal Economic Statistics Advisory Committee (FESAC) meeting: bea.gov/fesac/

• Formed a Research and Impact Analysis Working Group to apply lessons learned about measurement during pandemic to leverage and improve BEA’s core accounts and underlying data
  o A goal is to model economic impacts across industry and geography to understand the eventual recovery
BEA will continue to leverage its expertise and add value during and after the COVID-19 pandemic. We welcome your feedback and suggestions on areas for further work:

- What are your ideas for other supplemental materials BEA can provide?
- Do you have suggestions for research and longer-run initiatives in light of COVID-19 developments?
- What other innovations do you think BEA can support, especially looking toward economic recovery?