Quarterly Growth in real GDP at annual rates, Percent

Scan101, August 26, 2003.max

- 3rd qtr 2003
- Are we in a recession?
- Definition of recession
- Measurement
For this series: Numerical Data | GIF Chart
Transform this series | Display series in COPY/PASTE format

Real Gross Domestic Product; Billions of Fixed 1996 Dollars, SAAR

Click on chart to get and save; or shift-click to save. See more information below.
This chart is perishable, so please do not link to it. If you wish to be able to link this chart, please email us at Helper@Economagic.com
Instead you can link to the page
http://www.economagic.com/em/cgi/chartex.exe/fedsil/gdp96+1967+2003+0+1+0+290+545+10

If you wish, you can change the options for this chart

This series starts in 1967 and ends in 2003

exercise: • produce this graph on your computer • print it

8/28/2003 10:18 AM
Scan105, August 27, 2003.max
The Circular Flow of Expenditure and Income, Figure 4.1

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\[ Y = C + I + G + (X - M) \]

Income = Expenditure
Market Equilibrium

\[ p \times Q = OBCD \]

"GDP" = Expenditure = Revenue = \( Y \)

\[ C + I + G + (X-M) = OACD + ABC \]

= \text{profits} + \text{TVC}

= \text{factor income}

= \text{value added}
Focus of this course:

1. The Commodity Market

![Graph showing the relationship between price (P), RGDP, AD, and RGDP growth.]

Monitor the market:

<table>
<thead>
<tr>
<th>P</th>
<th>ΔP</th>
<th>ΔP/ΔP</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGDP</td>
<td>ΔRGDP</td>
<td>ΔRGDP/ΔRGDP</td>
</tr>
<tr>
<td>P*RGDP</td>
<td>ΔP*RGDP</td>
<td>ΔP*RGDP/ΔRGDP</td>
</tr>
</tbody>
</table>

etc.
Gross Domestic Product

- definition
  - value of final goods and services at market prices
  - produced within the country
  - within a given period

Questions:

- "final"
- "market prices"
- "within" clarify
- "period"
"p"

market price

factor cost

GDP/

market price

factor cost

adjusted for indirect taxes
<table>
<thead>
<tr>
<th>Commodity</th>
<th>Intermediate Use</th>
<th>Final Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>loaf of bread</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>flour</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>wheat</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>fertilizer</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>new house</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>lumber</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>logs</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Most commodities have

1. **Intermediate use**
   
   > netting out problem.

2. **final use**

\[ \text{GDP} = C + I + G + X \]

Are logs exported: yes
Are logs used for lumber: yes
GDP: (i) market value (ii) of currently produced (iii) final goods and services (iv) within the USA (v) within a year

Gross Domestic Product

• Expenditures Not in GDP

1) Intermediate goods and services (not final)

2) Used goods (not currently produced)

3) Financial assets (not "goods," but income streams)
• Valuing the Output of Industries

Value added is the value of a firm's production minus the value of the intermediate goods that the firm buys from other firms.

<table>
<thead>
<tr>
<th></th>
<th>Agr</th>
<th>IND</th>
<th>C</th>
<th>I</th>
<th>G</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agr</td>
<td>( x_{11} )</td>
<td>( x_{12} )</td>
<td>( c_i )</td>
<td>( i_1 )</td>
<td>( g_a )</td>
<td>( X_1 )</td>
</tr>
<tr>
<td>IND</td>
<td>( x_{21} )</td>
<td>( x_{22} )</td>
<td>( c_a )</td>
<td>( i_2 )</td>
<td>( g_a )</td>
<td>( X_2 )</td>
</tr>
<tr>
<td>VA</td>
<td>( VA_1 )</td>
<td>( VA_2 )</td>
<td>( \sum (VA) = \sum (C + IG + X) )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\text{Income} = \text{expenditure}
\]

\[
\text{Value added} = \text{factor income}
\]
\[ x + c + i + g + x' = \text{VA} \]

\[ \text{ carga: } \text{VA}_2 + \text{KA}_2 + \text{KU} \equiv \text{VA} + \text{KA}_2 + \text{KU} + \text{KA} + \text{G} + x' \]

\[ \text{ carga: } \text{VA} + \text{KA} + \text{KU} \equiv \text{VA} + \text{KA}_2 + \text{KA} + \text{G} + x' \]

\[ \text{ carga: } \text{VA} + \text{KA}_2 + \text{KA} + \text{G} + x' \]

\[ \text{ carga: } \text{VA} \equiv 430 \]
Learning Objectives

- Explain how **GDP** is measured (CN909)
- Explain how **real GDP** is measured (CR909)

Nominal
### Calculating NGDP, P, AGDP

#### Calculate Nominal Gross Domestic Product

<table>
<thead>
<tr>
<th>Year</th>
<th>( \text{Price} )</th>
<th>( \text{Quantity} )</th>
<th>( \text{NGDP} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>( $100 )</td>
<td>1.25</td>
<td>125.00</td>
</tr>
<tr>
<td>2000</td>
<td>( $125 )</td>
<td>1.50</td>
<td>187.50</td>
</tr>
</tbody>
</table>

#### Calculate Real Gross Domestic Product (1990 prices)

<table>
<thead>
<tr>
<th>Year</th>
<th>( \text{Price} )</th>
<th>( \text{Quantity} )</th>
<th>( \text{RGDP} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>( $100 )</td>
<td>1.25</td>
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<tr>
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<td>1.50</td>
<td>187.50</td>
</tr>
</tbody>
</table>

\[ P = \text{GDP price deflator} = \frac{\text{GDP in current prices (i.e. NGDP)}}{\text{GDP in fixed 1990 prices (i.e. AGDP)}} \times 100 \]
The GDP Deflator

- Measures the average level of prices of all the goods and services that are included in GDP

\[
\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100
\]
\( i = 1 \ldots n \) commodities in the basket

<table>
<thead>
<tr>
<th>( \Phi_i )</th>
<th>( \pi_i )</th>
</tr>
</thead>
<tbody>
<tr>
<td>base year ( \Phi_{i0} )</td>
<td>current year ( \Phi_{it} )</td>
</tr>
</tbody>
</table>

- \( \Sigma \Phi_{i0} \pi_{i0} \) \( \rightarrow N_{40P0} \) \( \rightarrow R_{40P0} \) \( \rightarrow N_{40P} \) \( \rightarrow N_{40P_t} \)  
- \( \Sigma \Phi_{it} \pi_{i0} \) \( \rightarrow E \) 

Output indices:  
\[
\frac{B}{A} \quad \frac{E}{D}
\]

Ideal (chain weighted) output index:
\[
= \sqrt{\frac{B}{A} \times \frac{E}{D}}
\]