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Measuring Price Inflation

Figure 1.

US CONSUMER PRICE INDEX (yearly percent change)


Figure 2.

US CONSUMER PRICE INDEX EX FOOD & ENERGY (yearly percent change)


**Figure 3.**

CONSUMER PRICES (yearly percent change)

Core Inflation*
- CPI
- PCED**

* Excluding food and energy.
** Personal consumption expenditures deflator.

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**Figure 4.**

GDP DEFLATOR (yearly percent change)

Source: Bureau of Economic Analysis.
**Tolstoy Model of Inflation**

**Figure 5.**

**US CONSUMER PRICE INDEX*: 1800-1947**

- War of 1812 (1812-1815)
- Civil War (1861-1865)
- World War I (1914-1918)
- World War II (1939-1945)

*C Annual data. Base index from 1800 to 1947 is 1967 = 100.

** 1982-84=100.

Source: Census Bureau, Historical Statistics of the United States.

**Figure 6.**

**CONSUMER PRICE INDEX EX FOOD ENERGY**

- Volcker Rate Shock
- Reagan Fires PATCO
- End Of Cold War
- Amazon Goes Public
- China Joins WTO
- Widespread Fracking
- Oldest Baby Boomers Turn 65
- Amazon Web Services
- Walmart Goes Public
- Dec

Figure 7.

RETAIL SALES: GENERAL MERCHANDISE STORES (GMS) & ONLINE SHOPPING
(as percent of total In-Store + Online GAFO*)

Percent of Total GAFO*

Online**
GMS: Warehouse Clubs & Super Stores
GMS: Department Stores & Others

* GAFO (general merchandise, apparel and accessories, furniture, and other sales) includes retailers that specialize in department-store types of merchandise such as furniture & home furnishings, electronics & appliances, clothing & accessories, sporting goods, hobby, book, and music, general merchandise, office supply, stationery, and gift stores.
** Electronic shopping and mail order houses.
Source: Census Bureau and Haver Analytics.

Figure 8.

US CRUDE OIL FIELD PRODUCTION
(million barrels per day, weekly, sa)

Source: US Department of Energy and Haver Analytics.
The Great Inflation of the 1970s

Figure 9.

US CONSUMER PRICE INDEX
(yearly percent change)


Figure 10.

WEST TEXAS INTERMEDIATE CRUDE OIL PRICE
1967-1984
(dollars per barrel, monthly, ratio scale)

* Shaded areas denote recessions according to the National Bureau of Economic Research. Monthly from 1946 to 1984, daily thereafter.
Source: Haver Analytics.
The Great Inflation of the 1970s

**Figure 11.**

US CONSUMER PRICE INDEX & AVERAGE HOURLY EARNINGS: 1967-1984 (yearly percent change)

- **Inflation**
- **Average Hourly Earnings**
- **CPI**

* Production & nonsupervisory workers.

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.


**Figure 12.**

UNION MEMBERS (as a percent of private wage & salary employment)

Private Sector Union Membership

Figure 13.

WAGE INFLATION & UNEMPLOYMENT RATE
(using average hourly earnings)

Unemployment Rate
(percent)

Average Hourly Earnings*
(yearly percent change)

* Production & nonsupervisory workers.
Note: Shaded areas denote recessions according to the National Bureau of Economic Research.

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Figure 14.

NFIB SMALL BUSINESS SURVEY: JOB OPENINGS & UNEMPLOYMENT RATE

NFIB: Small Business with Job Openings*
(percent, 3-month average)

Unemployment Rate
(percent)

* First month of every quarter from 1974 to 1986, then monthly.
Note: Shaded areas denote recessions according to the National Bureau of Economic Research.
Phillips Curve Model of Wage Inflation

Figure 15.

WAGE INFLATION & SMALL BUSINESS JOB OPENINGS

**Average Hourly Earnings**

(yearly percent change)

NFIB: Small Business with Job Openings**

(percent, 3-month average, 12 months ahead)

* Production & nonsupervisory workers

** First month of every quarter from 1974 to 1986, then monthly.

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.

Source: Bureau of Economic Analysis and National Federation of Independent Business.

Figure 16.

AVERAGE HOURLY EARNINGS & QUITS RATE

Quits Rate* (2.5)

Average Hourly Earnings* (yearly percent change) (3.2)

* Private industry.


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* Production & nonsupervisory workers

** First month of every quarter from 1974 to 1986, then monthly.

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.

Source: Bureau of Economic Analysis and National Federation of Independent Business.
**Phillips Curve Model of Price Inflation**

**Figure 17.**

CONSUMER PRICE INDEX & UNEMPLOYMENT RATE

- **Unemployment Rate (percent)**
- **Core CPI* (yearly percent change)**

* Excluding food and energy.

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.


**Figure 18.**

CONSUMER PRICE INDEXES: DURABLE GOODS

<table>
<thead>
<tr>
<th>percent change</th>
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<tbody>
<tr>
<td>0</td>
</tr>
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</tr>
<tr>
<td>-20</td>
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<tr>
<td>-80</td>
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<tr>
<td>-90</td>
</tr>
<tr>
<td>-100</td>
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</tbody>
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- **US**
- **Eurozone**
- **Japan**
- **Sweden**
- **Switzerland**
- **Taiwan**
- **UK**

Figure 19.

**Phillips Curve Model of Price Inflation**

- **WAGES & PRICES**
  - (yearly percent change)
  - Average Hourly Earnings* (3.3)
  - Core PCED (1.9)

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.

* Production & nonsupervisory workers

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Figure 20.

**CONSUMER PRICE INDEX & UNEMPLOYMENT RATE**

- Unemployment Rate (percent) (3.9)
- CPI Durable Commodities (yearly percent change) (0.1)

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.
CONSUMER PRICE INDEX & UNEMPLOYMENT RATE

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.
OUTPUT GAP: ACTUAL DIVIDED BY POTENTIAL REAL GDP (percent)

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.
Source: Congressional Budget Office and Bureau of Economic Analysis.

RESOURCE UTILIZATION RATE & OUTPUT GAP (percent)

* Average of all industries’ capacity utilization rate and employment rate, i.e., percentage of labor force that is employed.
** Actual divided by potential real GDP in percent.
Output Gap Model of Inflation & NAIRU

Figure 24.
UNEMPLOYMENT RATE vs NAIRU
(NON-ACCELERATING INFLATION RATE OF UNEMPLOYMENT*)
(percent)

* Estimated and projected.
Source: Congressional Budget Office and Bureau of Labor Statistics.

Figure 25.
NAIRU* MINUS UNEMPLOYMENT RATE
(percent)

* Non-accelerating inflation rate of unemployment.
Source: Congressional Budget Office.
Figure 26.

US MONEY MULTIPLIER
(M2 as a ratio of Monetary Base)

Source: Federal Reserve Board.

Figure 27.

M2 VELOCITY
(Nominal GDP as a ratio of M2)

Source: Federal Reserve Board.
Figure 28.

PERSONAL CONSUMPTION EXPENDITURES DEFLATORS
(Yearly percent change)

Fed's Inflation Target

* Excluding food and energy prices
Source: Bureau of Economic Analysis.

Figure 29.

CONSUMER PRICE INDEX: JAPAN
(Yearly percent change)

* Excluding energy, food, alcohol.
Source: Ministry of Internal Affairs and Communications.
Monetarist Model of Inflation

CONSUMER PRICE INDEX: EUROZONE
(yearly percent change)

CPI Inflation
- Headline
- Core*

ECB’s Inflation Target

* Excluding energy and unprocessed food.
Source: Haver Analytics.
Figure 31.  
AGE WAVE & INFLATION

Age Wave*  
Inflation Trend**

* Percent of labor force 16-34 years old.  
** Five-year percent change in CPI at annual rate.  

Figure 32.  
WORLD: YOUNGER CHILDREN & OLDER ADULTS  
(percent of country or regional population*)  

* Estimates through 2015, then projections through 2050.  
Figure 33.

PRODUCTIVITY: NONFARM BUSINESS
(20-quarter percent change, annual rate)

Note: Shaded areas denote recessions according to the National Bureau of Economic Research.
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