Price Indexes and Inflation

"Inflation can kill wages"

Price Indexes and the Aggregate Price Level (I)

Market Basket

• A **market basket** is a hypothetical set of consumer purchases of goods and services. It's a consumption bundle, used to measure changes in the overall price level.

TABLE 1

Calculating the Cost of a Market Basket

	Pre-frost	Post-frost
Price of orange	$0.20	$0.40
Price of grapefruit	$0.60	$1.00
Price of lemon	$0.25	$0.45
Cost of market basket (200 oranges, 50 grapefruit, 100 lemons)	(200 × $0.20) + (50 × $0.60) + (100 × $0.25) = $95.00	(200 × $0.40) + (50 × $1.00) + (100 × $0.45) = $175.00

Price Indexes and the Aggregate Price Level (II)

Price Indexes (I)

• A **price index** measures the cost of purchasing a given market basket in a given year, where that cost is normalized so that it is equal to 100 in the selected base year.

TABLE 2

Calculating the Price Index before (base year) and after the frost

	Pre-frost	Post-frost
Cost of market basket (200 oranges, 50 grapefruit, 100 lemons)	(200 × $0.20) + (50 × $0.60) + (100 × $0.25) = $95.00	(200 × $0.40) + (50 × $1.00) + (100 × $0.45) = $175.00

$$\text{Price index in a given year} = \frac{\text{Cost of market basket in a given year}}{\text{Cost of market basket in base year}} \times 100$$

Price Indexes and the Aggregate Price Level (III)

Price Indexes (II)

- A price index formulae can be generalized as:

$$CPI_t = \frac{\sum_{i=1}^{n} P_{it} Q_{i0}}{\sum_{i=1}^{n} P_{i0} Q_{i0}} \cdot 100$$

where Q_{i0} is the quantity consumed of each good and service in the base year and P_{i0} and P_{it} prices in base year and year t, respectively.

- Alternatively, any price index can also be written as:

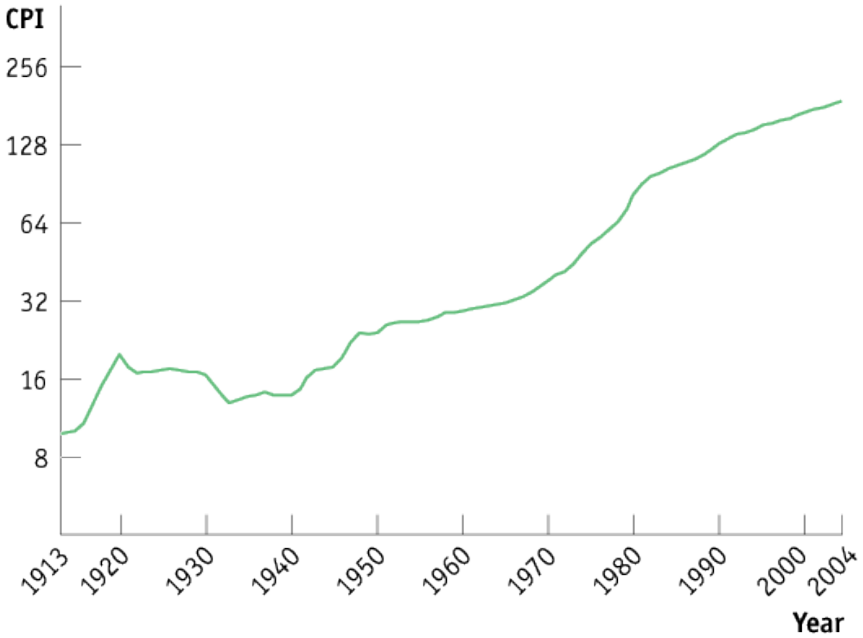
$$CPI_t = \left[\sum_{i=1}^{n} W_{i0} \left(\frac{P_{it}}{P_{i0}} \right) \right] \cdot 100 \; ; \quad W_{i0} = \frac{P_{i0} Q_{i0}}{\sum_{i=1}^{n} P_{i0} Q_{i0}}$$

Which is a **weighted sum** of the different products of the price index that make up the market basket. The weights are the proportion of the expense in the base year *0* and the good *i*.

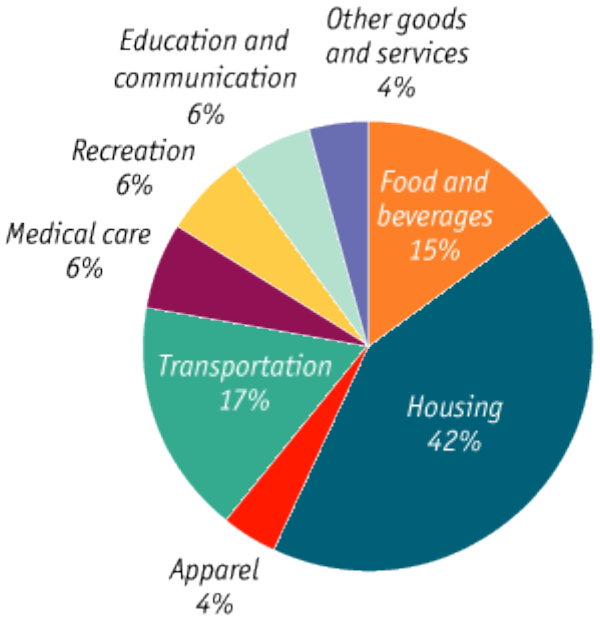
Consumer Price Index and other Price Measures (I)

The CPI, the PPI and the GDP deflator (I)

• The **Consumer Price Index**, **CPI**, measures the cost of the market basket of a typical urban family.



American CPI 1913-2004



Makeup of the American CPI in 2004

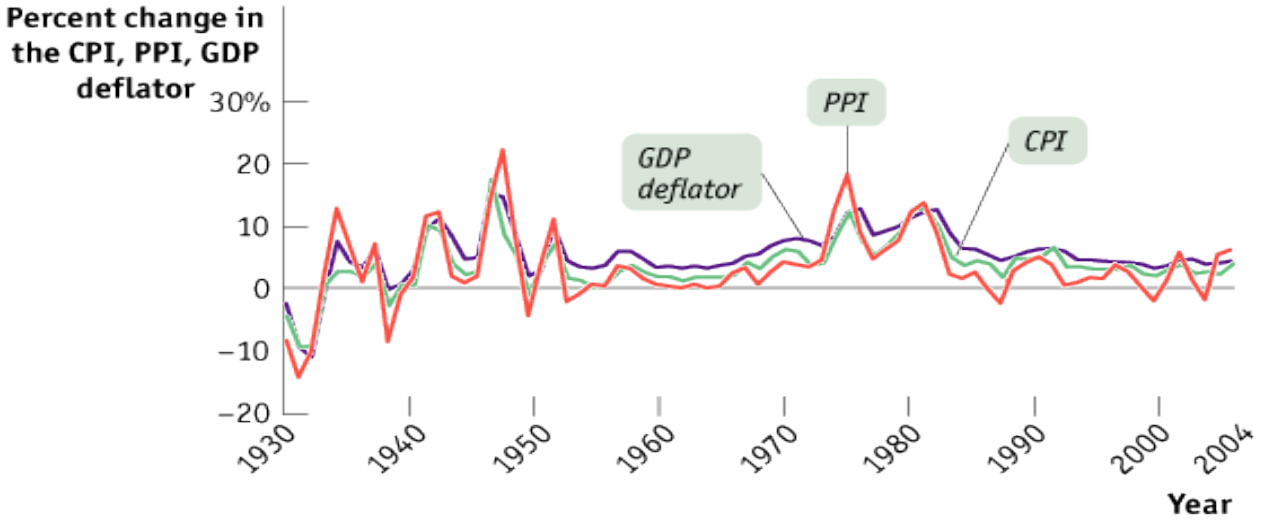
Consumer Price Index and other Price Measures (II)

The CPI, the PPI and the GDP deflator (II)

• There are two other price measures that are also widely used to track economy-wide price changes: the **producer price index**, **PPI**, and the **DGP deflator**.

• The **PPI** measures changes in the prices of goods purchased by producers.

• The **GDP deflator** for a given year is the ratio of **nominal GDP** to **real GDP** in a specific year (multiplied by 100).



The Inflation Rate

Changes in a Price Index

• The **inflation rate** is the percent change per year in a price index, typically (but not only!) the consumer price index.

• The inflation rate from year 1 to year 2 is calculated using the following formulae:

$$\text{Inflation rate} = \frac{\text{Price index in year 2} - \text{Price index in year 1}}{\text{Price index in year 1}} \times 100$$

• So, when the corresponding price level rises, the economy is experiencing **inflation**. When it falls, the economy is experience **deflation**.

KEY TERMS

Market basket
Price index
Weighted sum
Consumer price index (CPI)
Producer price index (PPI)
GDP deflator
Inflation rate
Inflation
Deflation