

CHAPTER 24

Measuring the Cost of Living

Worried about inflation?

The Consumer Price Index (CPI)

- measures the typical consumer's cost of living
- the basis of cost of living adjustments (COLAs) in many contracts and in Social Security

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How the CPI Is Calculated

1. Fix the "basket."

The Bureau of Labor Statistics (BLS) surveys consumers to determine what's in the typical consumer's "shopping basket."

2. Find the prices.

The BLS collects data on the prices of all the goods in the basket.

3. Compute the basket's cost.

Use the prices to compute the total cost of the basket.

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How the CPI Is Calculated

4. Choose a base year and compute the index.

The CPI in any year equals

$$100 \times \frac{\text{cost of basket in current year}}{\text{cost of basket in base year}}$$

5. Compute the inflation rate.

The percentage change in the CPI from the preceding period.

$$\text{Inflation rate} = \frac{\text{CPI this year} - \text{CPI last year}}{\text{CPI last year}} \times 100\%$$

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EXAMPLE basket: {4 pizzas, 10 lattes}

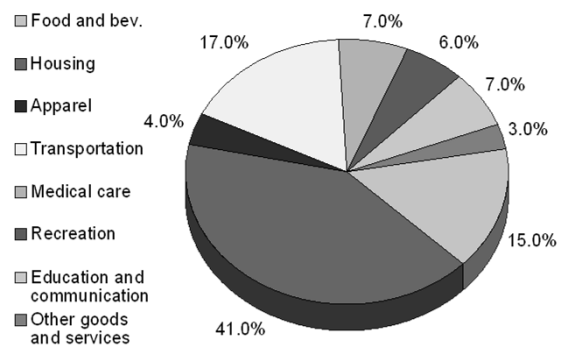
year	price of pizza	price of latte	cost of basket
2010	\$10	\$2.00	$\$10 \times 4 + \$2 \times 10 = \$60$
2011	\$11	\$2.50	$\$11 \times 4 + \$2.5 \times 10 = \$69$
2012	\$12	\$3.00	$\$12 \times 4 + \$3 \times 10 = \$78$

Compute CPI in each year using 2010 as base year:

$$\begin{aligned} 2010: & 100 \times (\$60/\$60) = 100 \\ 2011: & 100 \times (\$69/\$60) = 115 \\ 2012: & 100 \times (\$78/\$60) = 130 \end{aligned} \quad \left. \begin{array}{l} 15\% \\ 13\% \end{array} \right\} = \frac{\text{CPI} - \text{CPI}_{\text{base}}}{\text{CPI}_{\text{base}}} \times 100\%$$

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What's in the CPI's Basket?



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Problems with the CPI:

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- Over time, some prices rise faster than others.
- Consumers substitute toward goods that become relatively cheaper, mitigating the effects of price increases.
- The CPI misses this substitution because it uses a fixed basket of goods.
- Thus, the CPI overstates increases in the cost of living.

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Problems with the CPI:

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- The introduction of new goods increases variety, allows consumers to find products that more closely meet their needs.
- In effect, dollars become more valuable.
- The CPI misses this effect because it uses a fixed basket of goods.
- Thus, the CPI overstates increases in the cost of living.

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Problems with the CPI:

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- Improvements in the quality of goods in the basket increase the value of each dollar.
- The BLS tries to account for quality changes but probably misses some, as quality is hard to measure.
- Thus, the CPI overstates increases in the cost of living.

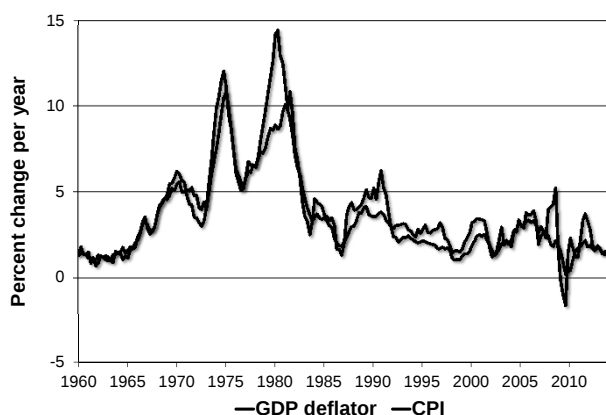
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Problems with the CPI

- Each of these problems causes the CPI to overstate cost of living increases.
- The BLS has made technical adjustments, but the CPI probably still overstates inflation by about 0.5 percent per year.
- This is important because Social Security payments and many contracts have COLAs tied to the CPI.

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Two Measures of Inflation, 1960–2013



Contrasting the CPI and GDP Deflator

Imported consumer goods:

- included in CPI
- excluded from GDP deflator

Capital goods:

- excluded from CPI
- included in GDP deflator (if produced domestically)

The basket:

- CPI uses fixed basket
- GDP deflator uses basket of currently produced goods & services

This matters if different prices are changing by different amounts.

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Correcting Variables for Inflation:
Comparing Dollar Figures from Different Times

- Inflation makes it harder to compare dollar amounts from different times.
- Example: the minimum wage
 - \$1.25 in Dec 1963
 - \$7.25 in Dec 2013
- Did min wage have more purchasing power in Dec 1963 or Dec 2013?
- To compare, use CPI to convert 1963 figure into "2013 dollars"...

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Correcting Variables for Inflation:
Comparing Dollar Figures from Different Times

Amount in today's dollars	=	Amount in year T dollars	$\times$	$\frac{\text{Price level today}}{\text{Price level in year } T}$
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- In our example,
 - "year T " is 12/1963, "today" is 12/2013
 - Min wage was \$1.25 in year T
 - CPI = 30.9 in year T , CPI = 234.6 today

The minimum wage in 1963 was \$1.25 in 2013 dollars.

$$9.49 = \$1.25 \times \frac{234.6}{30.9}$$

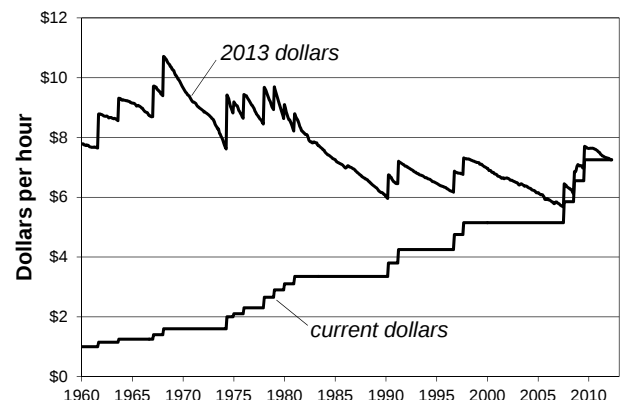
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Correcting Variables for Inflation:
Comparing Dollar Figures from Different Times

- Researchers, business analysts, and policymakers often use this technique to convert a time series of current-dollar (nominal) figures into constant-dollar (real) figures.
- They can then see how a variable has changed over time after correcting for inflation.
- Example: the minimum wage...

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The U.S. Minimum Wage in Current Dollars and Today's Dollars, 1960–2013



Correcting Variables for Inflation:
Indexation

A dollar amount is **indexed** for inflation if it is automatically corrected for inflation by law or in a contract.

For example, the increase in the CPI automatically determines:

- the COLA in many multi-year labor contracts.
- adjustments in Social Security payments and federal income tax brackets.

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Correcting Variables for Inflation:
Real vs. Nominal Interest Rates

The nominal interest rate:

- the interest rate not corrected for inflation
- the rate of growth in the dollar value of a deposit or debt

The real interest rate:

- corrected for inflation
- the rate of growth in the purchasing power of a deposit or debt

$$(\quad) = (\text{nominal interest rate}) - (\text{inflation rate})$$

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Correcting Variables for Inflation:
Real vs. Nominal Interest Rates

Example:

- Deposit \$1,000 for one year.
- Nominal interest rate is 9%.
- During that year, inflation is 3.5%.
- Real interest rate
= Nominal interest rate – Inflation
= 9.0% – 3.5% = 5.5%
- The purchasing power of the \$1000 deposit has grown 5.5%.

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Real and Nominal Interest Rates in the U.S.,
1950–2013

