

CHAPTER 24

Measuring the Cost of Living

PRINCIPLES OF
Economics
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Premium PowerPoint Slides
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**In this chapter,
look for the answers to these questions:**

- § What is the Consumer Price Index (CPI)?
How is it calculated? What's it used for?
- § What are the problems with the CPI? How serious are they?
- § How does the CPI differ from the GDP deflator?
- § How can we use the CPI to compare dollar amounts from different years? Why would we want to do this, anyway?
- § How can we correct interest rates for inflation?

1

The Consumer Price Index (CPI)

§ measures

§ the basis of

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2

How the CPI Is Calculated

1. The Bureau of Labor Statistics (BLS) surveys consumers to determine what's in the typical consumer's "shopping basket."
2. The BLS collects data on the prices of all the goods in the basket.
3. Use the prices to compute the total cost of the basket.

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3

How the CPI Is Calculated

4. **Choose a base year and compute the index.**
The CPI in any year equals
5. **Compute the inflation rate.**
The percentage change in the CPI from the preceding period.

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4

EXAMPLE

basket: {4 pizzas, 10 lattes}

year	price of pizza	price of latte	cost of basket
2007	\$10	\$2.00	
2008	\$11	\$2.50	
2009	\$12	\$3.00	

Compute CPI in each year using 2007 base year:

2007:

2008:

2009:

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5

ACTIVE LEARNING 1
Calculate the CPI

CPI basket:
 {10 lbs beef,
 20 lbs chicken}

The CPI basket cost \$120
 in 2004, the base year.

	<i>price of beef</i>	<i>price of chicken</i>
2004	\$4	\$4
2005	\$5	\$5
2006	\$9	\$6

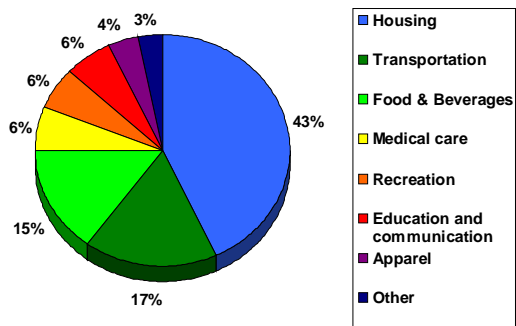
- A. Compute the CPI in 2005.
- B. What was the CPI inflation rate from 2005-2006?

6

ACTIVE LEARNING 1
Answers

7

What's in the CPI's Basket?



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9

ACTIVE LEARNING 2
Substitution bias

CPI basket:
{10# beef,
20# chicken}

	<i>beef</i>	<i>chicken</i>	<i>cost of CPI basket</i>
2004	\$4	\$4	\$120
2005	\$5	\$5	\$150
2006	\$9	\$6	\$210

2004-5:
Households
bought CPI basket.

2006: Households bought {5 lbs beef, 25 lbs chicken}.

- A. Compute cost of the 2006 household basket.
- B. Compute % increase in cost of household basket over 2005-6, compare to CPI inflation rate.

10

ACTIVE LEARNING 2
Answers

11

Problems with the CPI:
Substitution Bias

§ Over time, some prices rise faster than others.

§ Thus, the CPI overstates increases in the cost of living.

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13

**Problems with the CPI:
Introduction of New Goods**

- § The introduction of new goods

- § The CPI misses this effect because it uses a fixed basket of goods.
- § Thus,

**Problems with the CPI:
Unmeasured Quality Change**

- §

- § 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.

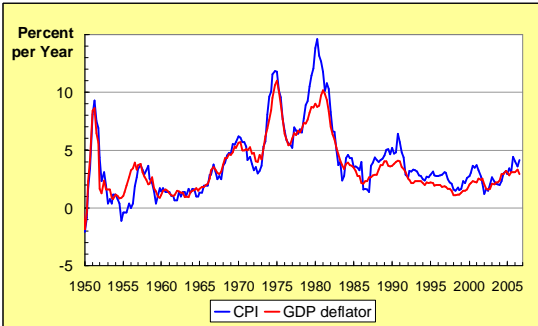
Problems with the CPI

- § Each of these problems causes

- § The BLS has made technical adjustments, but the CPI probably still overstates inflation by about

- § This is important because

Two Measures of Inflation, 1950-2007



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17

Contrasting the CPI and GDP Deflator

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18

ACTIVE LEARNING 3 CPI vs. GDP deflator

In each scenario, determine the effects on the CPI and the GDP deflator.

- A. Starbucks raises the price of Frappuccinos.
- B. Caterpillar raises the price of the industrial tractors it manufactures at its Illinois factory.
- C. Armani raises the price of the Italian jeans it sells in the U.S.

19

**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
 - § \$1.15 in Dec 1964
 - § \$5.85 in Dec 2007
- § Did min wage have more purchasing power in Dec 1964 or Dec 2007?
- § To compare,

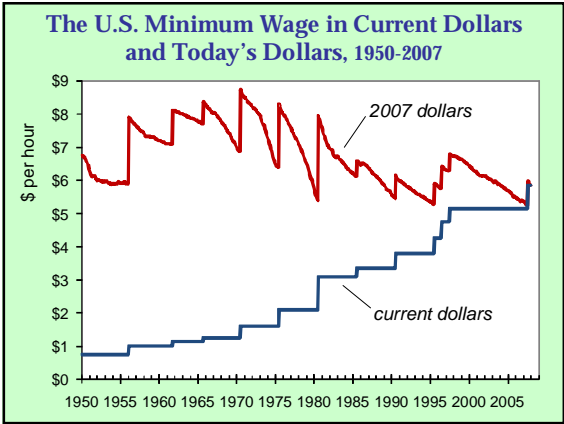
**Correcting Variables for Inflation:
Comparing Dollar Figures from Different Times**

Amount
in today's =
dollars

- § In our example,
 - § year $T = 12/1964$, "today" = 12/2007
 - § Min wage = \$1.15 in year T
 - § $CPI = 31.3$ in year T , $CPI = 211.7$ today

**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, from Jan 1950 to Dec 2007...



ACTIVE LEARNING 4
Converting to “today’s dollars”

Annual tuition and fees, average of all public four-year colleges & universities in the U.S.

- § 1986-87: \$1,414 (1986 CPI = 109.6)
- § 2006-07: \$5,834 (2006 CPI = 203.8)

After adjusting for inflation, did students pay more for college in 1986 or in 2006? Convert the 1986 figure to 2006 dollars and compare.

25

ACTIVE LEARNING 4
Answers

26

**Correcting Variables for Inflation:
Indexation**

For example, the increase in the CPI automatically determines

**Correcting Variables for Inflation:
Real vs. Nominal Interest Rates**

The nominal interest rate:

The real interest rate:

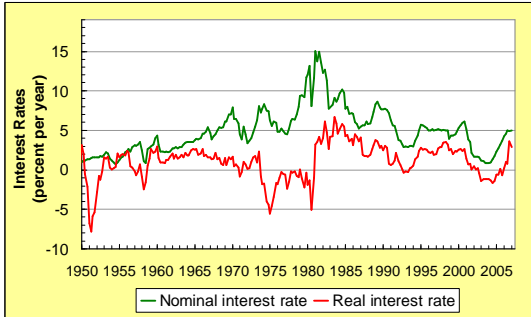
Real interest rate

**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

**Real and Nominal Interest Rates in the U.S.,
1950-2007**



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30
