

# EC132.02

# Principles of Macroeconomics

Boston College

Tuesday, February 5

# Reminder

Aplia homework on GDP due this Friday,  
February 8, at 9am.

# Ch 24 Measuring the Cost of Living

In 1931, the Yankees paid Babe Ruth \$80,000.

In 2012, the Yankees paid Derek Jeter about \$16 million.

But in 1931, a movie ticket cost 25 cents.

So who really made more, Ruth or Jeter, after adjusting for inflation?

# Ch 24 Measuring the Cost of Living

1. The Consumer Price Index
  - A. How the CPI is Measured
  - B. Problems in Measuring the Cost of Living
  - C. The GDP Deflator and the CPI
2. Correcting Economic Variables for the Effects of Inflation
  - A. Dollar Figures at Different Points in Time
  - B. Indexation
  - C. Real and Nominal Interest Rates

# The Consumer Price Index

The CPI is computed by the Bureau of Labor Statistics (BLS), a division of the US Department of Labor.

Mankiw's Table 1 highlights the 5 steps involved in measuring the CPI.

# Measuring the CPI

**Step 1** - Survey consumers to determine the relevant “basket of goods.”

Suppose the “typical American consumer” eats 4 hot dogs and 2 hamburgers.

Then the “basket” is 4 hot dogs and 2 hamburgers.

# Measuring the CPI

**Step 2** – Record the price of each good in the basket in each year.

Year	Price of HD	Price of HB
2010	\$1	\$2
2011	\$2	\$3
2012	\$3	\$4

# Measuring the CPI

**Step 3** – Compute the cost of the basket (4 HDs, 2 HBs) in each year.

Year	Price of HD	Price of HB
2010	\$1	\$2
2011	\$2	\$3
2012	\$3	\$4

2010:  $(\$1 \text{ per HD}) \times (4 \text{ HDs}) + (\$2 \text{ per HB}) \times (2 \text{ HBs}) = \$4 + 4 = \$8$  per basket

2011:  $(\$2 \text{ per HD}) \times (4 \text{ HDs}) + (\$3 \text{ per HB}) \times (2 \text{ HBs}) = \$8 + 6 = \$14$  per basket

2012:  $(\$3 \text{ per HD}) \times (4 \text{ HDs}) + (\$4 \text{ per HB}) \times (2 \text{ HBs}) = \$12 + 8 = \$20$  per basket



# Measuring the CPI

**Step 4** – Choose a base year then compute the **CPI** for each year as

$$\text{CPI} = \frac{\text{Cost of the Basket in the Current Year}}{\text{Cost of the Basket in the Base Year}} \times 100$$

# Measuring the CPI

$$\text{CPI} = \frac{\text{Cost of the Basket in the Current Year}}{\text{Cost of the Basket in the Base Year}} \times 100$$

Choosing 2010 as the Base Year

Year	Cost of the Basket	CPI
2010	\$8	$(\$8/\$8) \times 100 = 100$
2011	\$14	$(\$14/\$8) \times 100 = 175$
2012	\$20	$(\$20/\$8) \times 100 = 250$

# Measuring the CPI

**Step 5** – Compute the **inflation rate** as the percentage change in the CPI from one year to the next:

$$\text{Inflation Rate} = \frac{\text{CPI in Current Year} - \text{CPI in Previous Year}}{\text{CPI in Previous Year}} \times 100$$

# Measuring the CPI

$$\text{Inflation Rate} = \frac{\text{CPI in Current Year} - \text{CPI in Previous Year}}{\text{CPI in Previous Year}} \times 100$$

Year	Cost of the Basket	CPI
2010	\$8	$(\$8/\$8) \times 100 = 100$
2011	\$14	$(\$14/\$8) \times 100 = 175$
2012	\$20	$(\$20/\$8) \times 100 = 250$

Inflation Rate for 2011 =  $(175 - 100)/100 \times 100 = 75\%$

Inflation Rate for 2012 =  $(250 - 175)/175 \times 100 = 43\%$

# Measuring the CPI

Basket for the Typical American Consumer, December 2011

Type of Good	Percentage of Total
Housing	41.0
Transportation	16.9
Food	15.3
Medical Care	7.1
Recreation	6.0
Apparel	3.6
Communication	3.6
Education	3.2
All Others	3.4

# Problems in Measuring the Cost of Living

1. Substitution bias.
2. Introduction of new goods.
3. Unmeasured quality change.