N. GREGORY MANKIW

PRINCIPLES OF

ECONOMICS

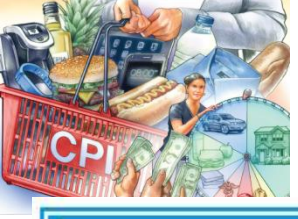
Eight Edition

CHAPTER

24

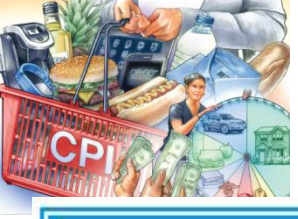
Measuring the Cost of Living

PowerPoint Slides prepared by:
V. Andreea CHIRITESCU
Eastern Illinois University



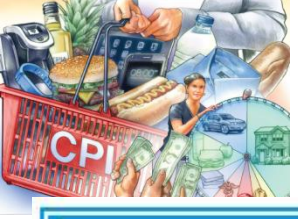
The Consumer Price Index

- Consumer price index (CPI)
  - Measure of the overall level of prices
  - Measure of the overall cost of goods and services
    - Bought by a typical consumer
  - Computed and reported every month by the Bureau of Labor Statistics



Calculating CPI, Part 1

1. Fix the basket
   - Which prices are most important to the typical consumer
   - Different weight
2. Find the prices
   - At each point in time
3. Compute the basket's cost
   - Same basket of goods
   - Isolate the effects of price changes



Calculating CPI, Part 2

4. Chose a base year and compute the CPI

- Base year = benchmark
  - Price of basket of goods and services in current year
  - Divided by price of basket in base year
  - Times 100

5. Compute the inflation rate

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

Table 1 Calculating the Consumer Price Index and the Inflation Rate: An Example, Part 1

Step 1: Survey Consumers to Determine a Fixed Basket of Goods

Basket = 4 hot dogs, 2 hamburgers

Step 2: Find the Price of Each Good in Each Year

Year	Price of Hot Dogs	Price of Hamburgers
2016	$1	$2
2017	2	3
2018	3	4

Step 3: Compute the Cost of the Basket of Goods in Each Year

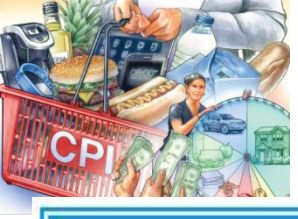
2016	($1 per hot dog × 4 hot dogs) + ($2 per hamburger × 2 hamburgers) = $8 per basket
2017	($2 per hot dog × 4 hot dogs) + ($3 per hamburger × 2 hamburgers) = $14 per basket
2018	($3 per hot dog × 4 hot dogs) + ($4 per hamburger × 2 hamburgers) = $20 per basket

This table shows how to calculate the CPI and the inflation rate for a hypothetical economy in which consumers buy only hot dogs and hamburgers.

Table 1 Calculating the Consumer Price Index and the Inflation Rate: An Example, Part 2

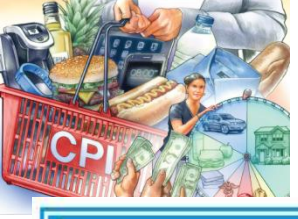
Step 4: Choose One Year as a Base Year (2016) and Compute the CPI in Each Year	
2016	($8/$8) × 100 = 100
2017	($14/$8) × 100 = 175
2018	($20/$8) × 100 = 250
Step 5: Use the CPI to Compute the Inflation Rate from Previous Year	
2017	(175 – 100)/100 × 100 = 75%
2018	(250 – 175)/175 × 100 = 43%

This table shows how to calculate the CPI and the inflation rate for a hypothetical economy in which consumers buy only hot dogs and hamburgers.



The Consumer Price Index, Part 1

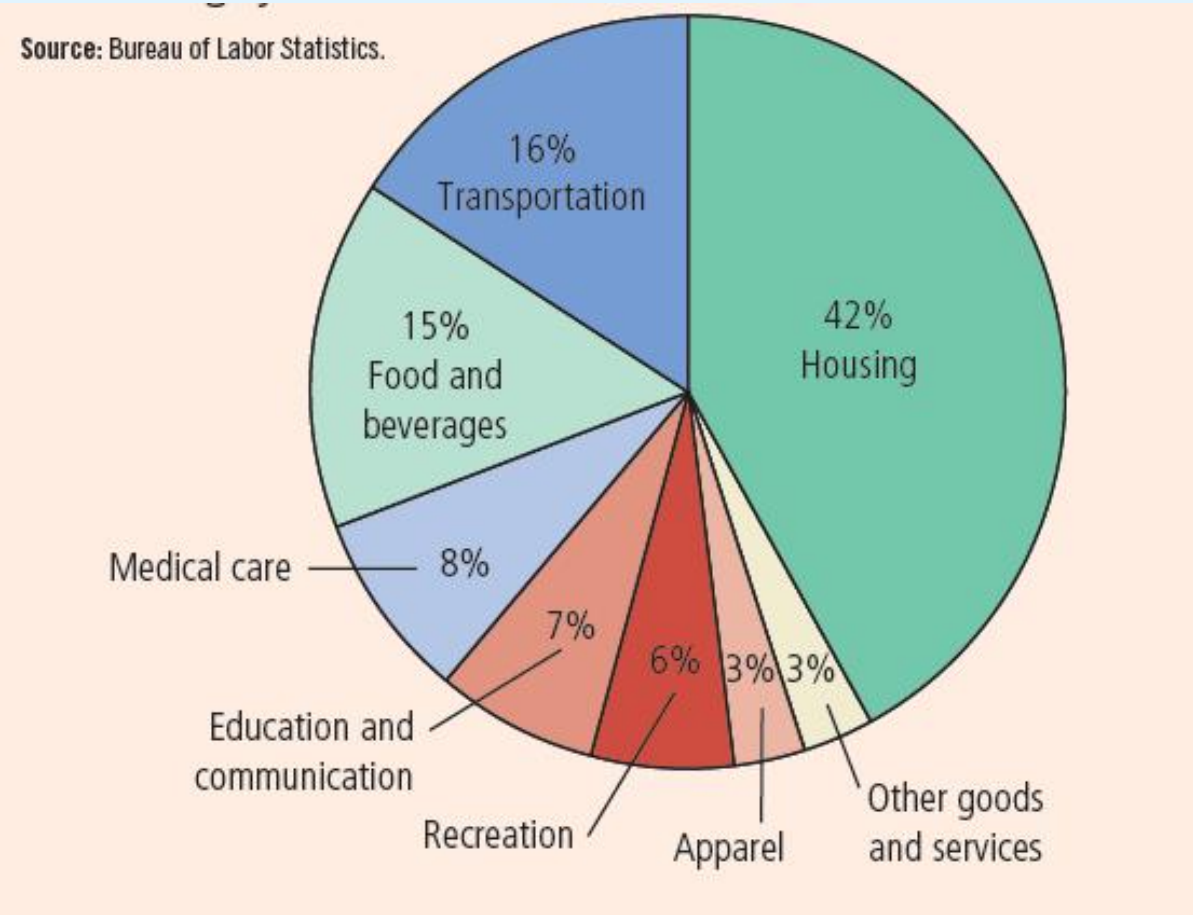
- Inflation rate
  - Percentage change in the price index
    - From the preceding period
- Core CPI
  - Measure of the overall cost of consumer goods and services excluding food and energy



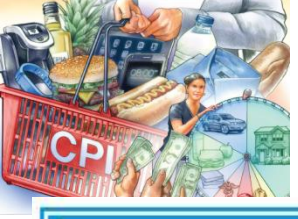
The Consumer Price Index, Part 2

- Producer price index, PPI
  - Measure of the cost of a basket of goods and services bought by firms
  - Changes in PPI are often thought to be useful in predicting changes in CPI

Figure 1 The Typical Basket of Goods and Services

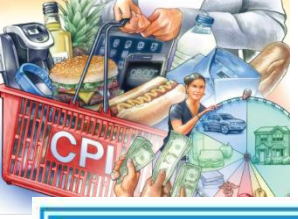


This figure shows how the typical consumer divides spending among various categories of goods and services. The Bureau of Labor Statistics calls each percentage the “relative importance” of the category.



The Consumer Price Index, Part 3

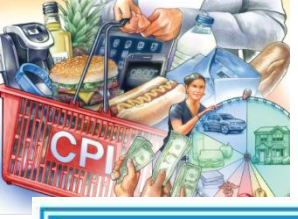
- Problems in measuring the cost of living
  - Substitution bias
    - Prices do not change proportionately
    - Consumers substitute toward goods that have become relatively less expensive
  - Introduction of new goods
    - More variety of goods
  - Unmeasured quality change
    - Changes in quality



GDP deflator versus CPI, Part 1

- GDP deflator
  - Ratio of nominal GDP to real GDP
  - Reflects prices of all goods & services produced domestically
- CPI
  - Reflects prices of goods & services bought by consumers

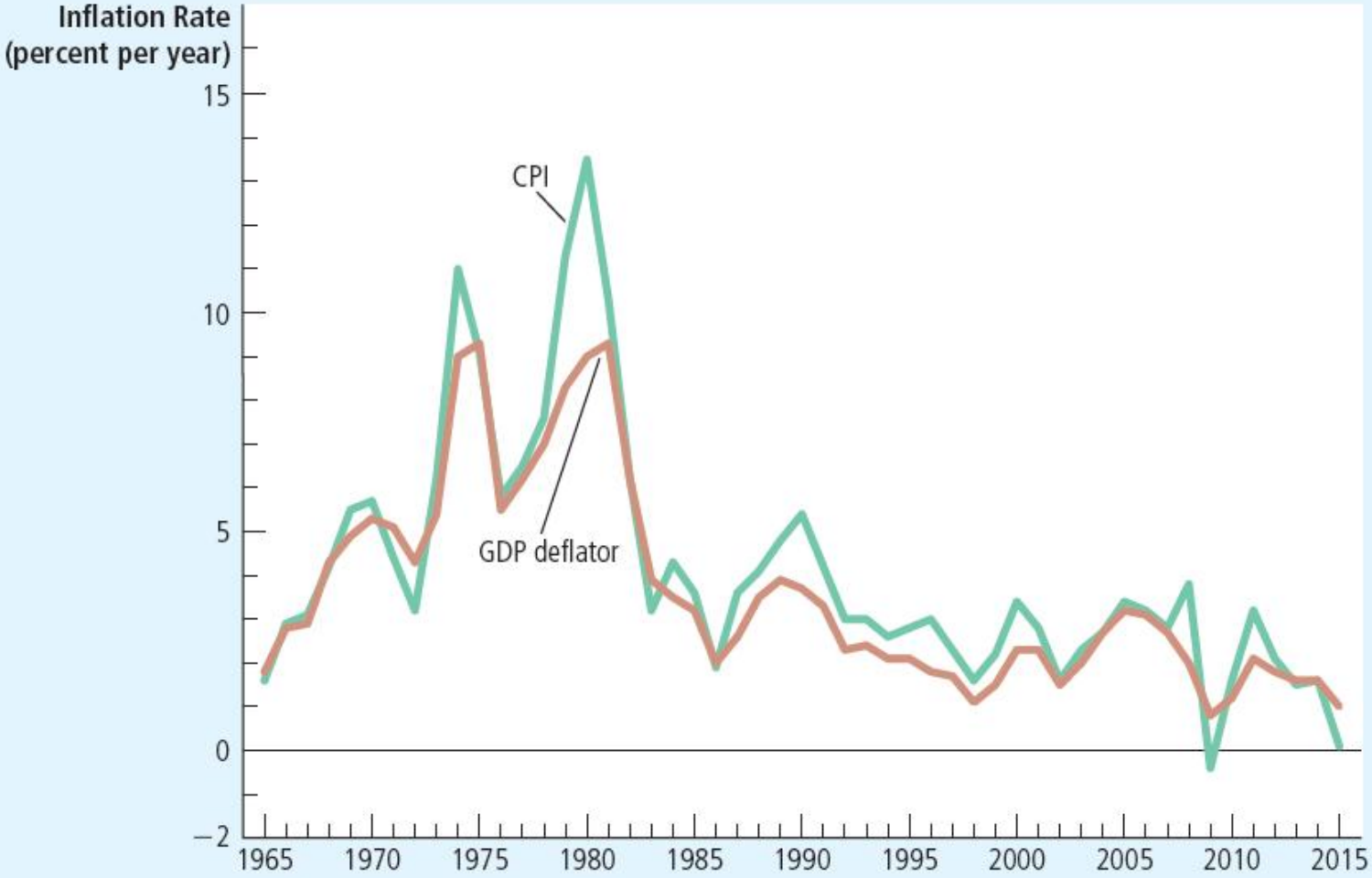
"The price may seem a little high, but you have to remember that's in today's dollars."



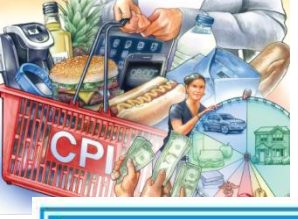
GDP deflator versus CPI, Part 2

- GDP deflator
  - Compares the price of currently produced goods and services
    - To the price of the same goods and services in the base year
- CPI
  - Compares price of a fixed basket of goods and services
    - To the price of the basket in the base year

Figure 2 Two Measures of Inflation



This figure shows the inflation rate—the percentage change in the level of prices—as measured by the GDP deflator and the CPI using annual data since 1965. Notice that the two measures of inflation generally move together.



Correcting Economic Variables, Part 1

- Dollar figures from different times

$$\text{Amount } \textit{in today's dollars} = \text{Amount } \textit{in year T dollars} \times \frac{\textit{Price level today}}{\textit{Price level in year T}}$$

A price index such as the CPI

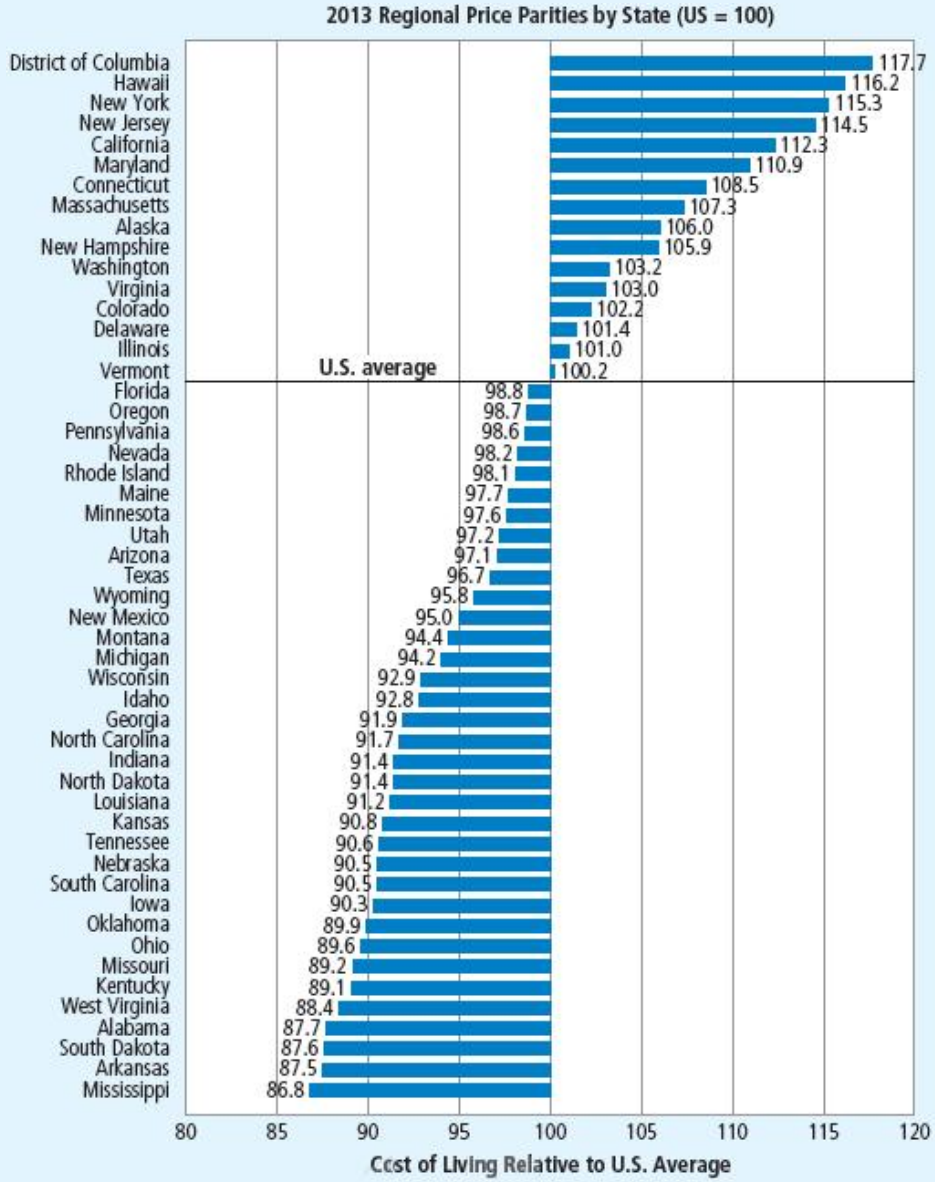
- Measures the price level and thus determines the size of the inflation correction

CASE STUDY Regional differences in the cost of living, Part 1

- The cost of living varies
  - Not only over time
  - But also over geography
- Regional price parities
  - Measure variation in the cost of living from state to state.

Figure 3 Regional Variation in the Cost of Living

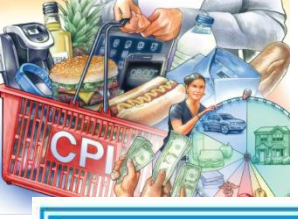
This figure shows how the cost of living in the fifty U.S. states and the District of Columbia compares to the U.S. average.



CASE STUDY

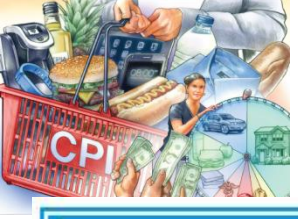
Regional differences in the cost of living, Part 2

- Regional differences explained by
  - Prices of goods – small part
  - Prices of services – larger part
  - Housing services – persistently large



Correcting Economic Variables, Part 2

- Indexation
  - Automatic correction by law or contract
  - Of a dollar amount
  - For the effects of inflation
  - COLA: Cost-of-living allowance



Real and Nominal Interest Rates

- Nominal interest rate
  - Interest rate as usually reported
  - Without a correction for the effects of inflation
- Real interest rate
  - Interest rate corrected for the effects of inflation

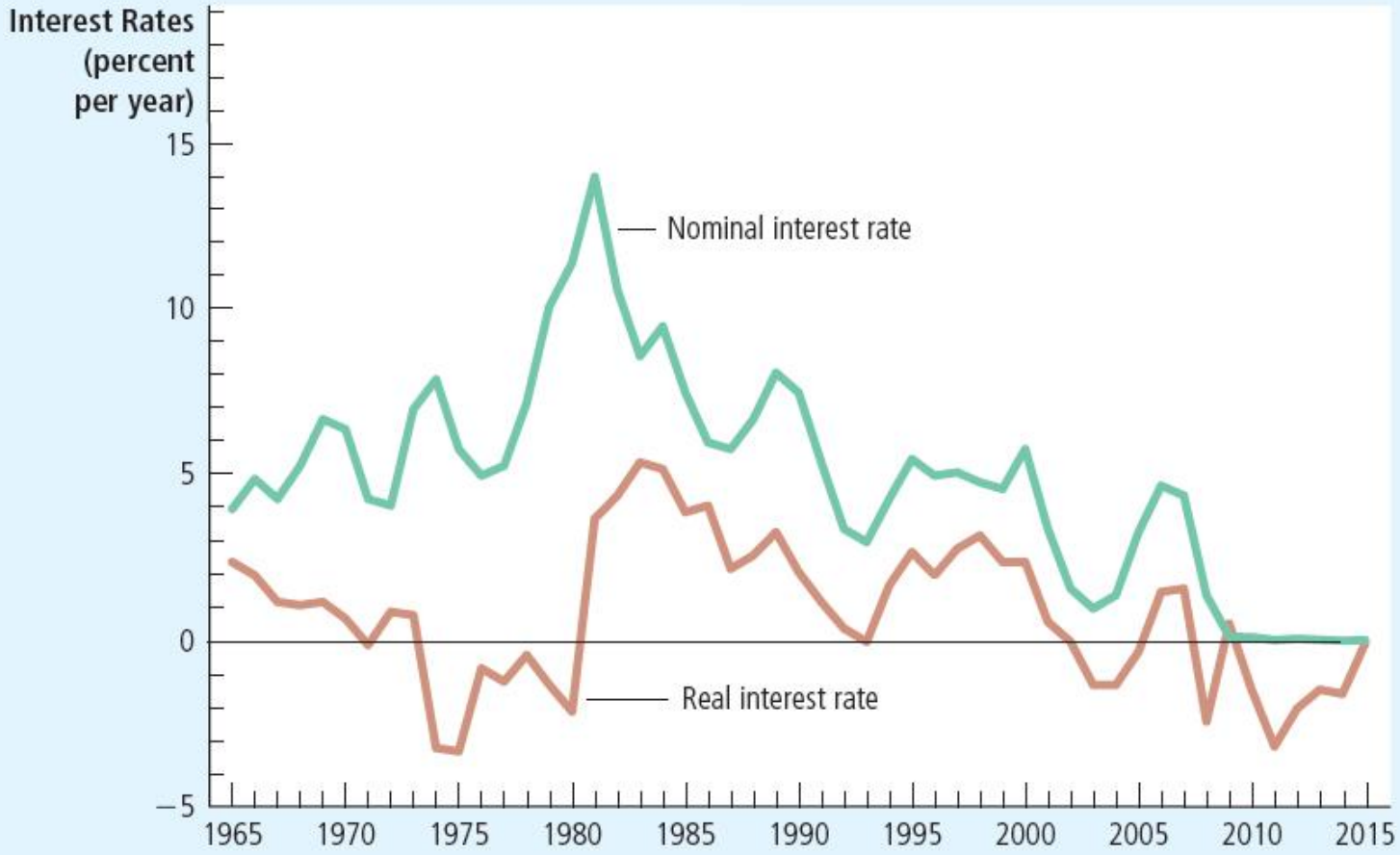
    = Nominal interest rate – Inflation rate

CASE STUDY

Interest rates in the U.S. economy

- Nominal interest rate
  - Always exceeds the real interest rate
  - U.S. economy has experienced rising consumer prices in every year
- Inflation is variable
  - Real and nominal interest rates do not always move together
- Periods of deflation
  - Real interest rate exceeds the nominal interest rate

Figure 4 Real and Nominal Interest Rates



This figure shows nominal and real interest rates using annual data since 1965. The nominal interest rate is the rate on a three-month Treasury bill. The real interest rate is the nominal interest rate minus the inflation rate as measured by the CPI. Notice that nominal and real interest rates often do not move together.