Measuring the Cost of Living

Chapter 24

Measuring the Cost of Living

- **Inflation** refers to a situation in which the economy's overall price level is rising.
- The inflation rate is the percentage change in the price level from the previous period.

The Consumer Price Index

- The consumer price index (CPI) is a measure of the overall cost of the goods and services bought by a typical consumer.
- The Bureau of Labor Statistics reports the CPI each month.
- It is used to monitor changes in the cost of living over time.
Example of CPI in Action

- CPI is also called the Consumer Price Index.
- Try and figure how the CPI is biased.

Problems in Measuring The Cost of Living

The CPI is an accurate measure of the selected goods that make up the typical bundle, but it is not a perfect measure of the cost of living.

Problems in Measuring The Cost of Living

- Substitution bias
- Introduction of new goods
- Unmeasured quality changes
- Because of these problems the CPI tends to overstate the true cost of living for most individuals.
The Consumer Price Index

- When the CPI rises, the typical family has to spend more dollars to maintain the same standard of living.

- Cost of Living for US cities
- CPI for Honolulu and USA cities 1940-2002
- Housing Costs 1995-2002

How the Consumer Price Index Is Calculated

- **Fix the Basket:** Determine what prices are most important to the typical consumer.
  - The Bureau of Labor Statistics (BLS) identifies a market basket of goods and services the typical consumer buys.
  - The BLS conducts monthly consumer surveys to set the weights for the prices of those goods and services.

- **Find the Prices:** Find the prices of each of the goods and services in the basket for each point in time.
How the Consumer Price Index Is Calculated

- **Compute the Basket’s Cost:** Use the data on prices to calculate the cost of the basket of goods and services at different times.

How the Consumer Price Index Is Calculated

- **Choose a Base Year and Compute the Index:**
  - Designate one year as the base year, making it the benchmark against which other years are compared.
  - Compute the index by dividing the price of the basket in one year by the price in the base year and multiplying by 100.

How the Consumer Price Index Is Calculated

- **Compute the inflation rate:** The **inflation rate** is the percentage change in the price index from the preceding period.
The Inflation Rate

The inflation rate is calculated as follows:

\[
\text{Inflation Rate in Year 2} = \frac{\text{CPI in Year 2} - \text{CPI in Year 1}}{\text{CPI in Year 1}} \times 100
\]

Calculating the Consumer Price Index and the Inflation Rate: An Example

- Base Year is 1998.
- Basket of goods in 1998 costs $1,200.
- The same basket in 2000 costs $1,236.
- Basket of goods in 2004 costs $1,400.
- CPI for 1998 = ($1,200/$1,200) \times 100 = 100
- CPI for 2000 = ($1,236/$1,200) \times 100 = 103.
- CPI for 2004 = ($1,400/$1,200) \times 100 = 116
- Prices increased 3 percent between 1998 and 2000 and increased 16 percent between 1998 and 2004.
- Another Example-Cost of a Party.

GDP Deflator

The GDP deflator is calculated as follows:

\[
\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100
\]
Other Price Indexes

- The BLS calculates other prices indexes:
  - The index for different regions within the country.
  - The producer price index, which measures the cost of a basket of goods and services bought by firms rather than consumers.

What’s in the CPI’s Basket?

Dollar Figures from Different Times

Price indexes are used to correct for the effects of inflation when comparing dollar figures from different times.
Dollar Figures from Different Times

- Do the following to convert (inflate) Babe Ruth’s wages in 1931 to dollars in 1999:

\[
\text{Salary}_{1999} = \text{Salary}_{1931} \times \frac{\text{Price level in 1999}}{\text{Price level in 1931}}
\]

- Example: Convert Babe Ruth’s salary of $80,000 in 1931 dollars to 1999 dollars:

\[
\begin{align*}
\text{Salary}_{1999} &= \text{Salary}_{1931} \times \frac{\text{Price level in 1999}}{\text{Price level in 1931}} \\
&= 80,000 \times \frac{166}{15.2} \\
&= 873,684
\end{align*}
\]

Dollar Figures from Different locations

- If I want to know how much salary I would need to match the cost of living in another location, this is the formula:

\[
\text{Honolulu salary in Boston Dollars} = \text{Honolulu Salary} \times \frac{\text{CPI Boston}}{\text{CPI Honolulu}}
\]
Real and Nominal Interest Rates

Interest represents a payment in the future for a transfer of money in the past.

The nominal interest rate is the interest rate not corrected for inflation.
- It is the interest rate that a bank pays.
- The real interest rate is the nominal interest rate that is corrected for inflation.

Real interest rate = (Nominal interest rate – Inflation rate)

You borrowed $1,000 for one year.
- Nominal interest rate was 15%.
- During the year inflation was 10%.

Real interest rate = Nominal interest rate – Inflation
= 15% - 10% = 5%