Lecture 6: Measuring the Cost of Living

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Measuring the Cost of Living

- In determining the cost of living, the Bureau of Labor Statistics (BLS) first identifies a “market basket” of goods and services the typical consumer buys.
- Annually, the BLS surveys consumers to determine what they buy and the overall cost of the goods and services they buy.
Measuring the Cost of Living

- The *Consumer Price Index (CPI)* is used to monitor changes in the cost of living (i.e. the selected market basket) over time. When the CPI rises, the typical family has to spend more dollars to maintain the same standard of living.

- The goal of the CPI is to measure changes in the cost of living. It reports the movement of prices not in dollar amounts, but with an *index number*. 
What’s in the CPI’s Basket?

- Housing
- Food/Beverages
- Transportation
- Medical Care
- Apparel & Upkeep
- Entertainment
- Others

% of Budget

Bar chart showing the percentage of budget allocated to different categories.
What is an Index Number?

- An *Index Number* is used to show changes in the level of something.
- An *Index Number* is developed with an arbitrary base (usually starting with 100) for a given point in time (called the “base year”).
- A change in magnitude of the index number relative to its value in the base year describes how much change has occurred.
Calculating the Consumer Price Index and the Inflation Rate

① Determine what goods are most important to the typical consumer: *Fix the Basket*

② Find the prices of each of the goods and services in the basket for each point in time: *Find the Prices*

③ Use the data on prices to calculate the cost of the basket of goods and services at different times: *Compute the Basket’s Cost*

④ Designate one year as the *Base Year*, which is the benchmark for yearly comparison.
Calculating the Consumer Price Index and the Inflation Rate

The final step includes using the CPI to calculate the *Inflation Rate*, which is:

- the percentage change in the price index from the preceding period

**Example:**
- Base Year is 1990
- Bundle of goods in 1990 = $1,200
- The same bundle in 1991 cost = $1,236
- \[ \text{CPI} = \left( \frac{\$1,236}{\$1,200} \right) \times 100 = 103 \]
- Prices between 1990 & 1991 increased 3%
Other Price Indexes

- Other Price Indexes are computed for:
  - Specific regions within the country (e.g. Boston, New York, Los Angeles)
  - Narrow categories of goods and services (e.g. food, clothing, etc.)
  - Producer costs of resources (i.e. producer price index)
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.”

- Three reasons/problems:
  - Substitution Bias
  - Introduction of new goods
  - Unmeasured quality change
The bundle does not change in the short run to reflect consumer reaction to changing relative prices.

- Consumers substitute toward goods that have become relatively less expensive.
- CPI is computed assuming a fixed basket of goods.
- The index overstates the increase in cost of living by not considering the substitution by the consumer.
Problems of CPI: New Goods

- The bundle does not reflect the effects of new products that typically go down in price after introduction.
  - New products result in greater variety, which in turn makes each dollar more valuable. Consumers need fewer dollars to maintain any given standard of living.
  - The CPI is based on a fixed basket of goods and does not reflect the change in the purchasing power of the dollar.
Problems of CPI: Quality Changes

- Higher market prices usually include quality changes that do not necessarily represent a higher cost of living.
  - If the quality of a good decreases from one year to the next, the value of a dollar falls (cost of living rises), even if the price of the good stays the same.
  - If quality increases, the true cost of living may be less even though some goods cost more.
The substitution bias, introduction of new goods, and unmeasured quality change tends to lead the CPI to overstate the increase in the cost of living by about one percent (1%).

This measurement error tends to overstate the “true” cost of living.
The Consumer Price Index versus the GDP Deflator

- The CPI:
  - includes only consumption goods
  - includes imports
  - is a fixed bundle of goods

- The GDP Price Deflator:
  - includes all final goods and services
  - excludes imports
  - uses a current bundle of goods
Correcting Economic Variables for the Effects of Inflation

- Price indexes are used to correct for the effects of inflation when comparing dollar figures from different times.
- When some dollar amount is automatically corrected for inflation by law or contract the amount is said to be indexed for inflation.
  - e.g., COLA’s and Social Security
Correcting Economic Variables for the Effects of Inflation

To convert (inflate) past wages and prices into current terms:

\[
\text{Current Year Dollars} = \frac{(\text{Price index in current year})}{(\text{Price index in past year})} \times \text{Past Year Nominal Value}
\]
Correcting Economic Variables for the Effects of Inflation

- To convert (deflate) current wages and prices into past year terms:

\[
\text{Value in Past Year Dollars} = \frac{\text{Current Year Value} \times (\text{Price index in past year})}{(\text{Price index in current year})}
\]
Real and Nominal Interest Rates

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

- **Nominal interest rate:**
  - The rate that the bank pays in current value.

- **Real interest rate:**
  - The interest rate corrected for inflation.
  - \( \text{Real interest rate} = \text{Nominal} - \text{Inflation} \)
Real and Nominal Interest Rates

- **Example** - Assume:
  - You borrow $1,000 for one year.
  - Nominal Interest rate was 15%.
  - During the year inflation was 10%.
- The real interest rate is:
  \[ 15\% - 10\% = 5\% \]
Summary:

- When comparing dollar values from different times, it is necessary to keep in mind that a dollar today is not the same as a dollar in the past.
- The CPI is an index number that describes how the cost of living for consumers changes over time. This index can be used to adjust values of economic variables for inflation.
- Because the CPI uses a fixed basket of goods, it tends to overstate the impact of price increases on the cost of living by about 1%.
- Nominal interest rates = real interest rate + inflation rate