

## Chapter 6 - *Measuring the Cost of Living*

- *Consumer Price Index (CPI)*
  - A measure of the overall cost of goods and services bought by a typical customer
  - CPI is used to monitor the cost of living over time
- *Calculating CPI*

### 1. Determine the basket

- Determine what prices are more important to the typical customer
  - If the typical customer buys more of good 1 than good 2, the price of good 1 is given more weight in measuring the cost of living
  - Statistics Canada sets these weights by surveying consumers to find out the basket of goods the typical consumer buys

### 2. Find the Prices

- Find the prices of each of the goods and services in the basket for each point in time

### 3. Compute the Basket's Cost

- Use data on prices to calculate the cost of the basket of goods and services at different times

### 4. Choose a base year and compute the Index

- Designate one year as the base year - make 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 of the basket in the base year and multiplying by 100.

$$\text{CPI} = \frac{\text{cost of basket in current year}}{\text{cost of basket in base year}} \times 100$$

### 5. Compute the Inflation Rate

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

$$\text{Inflation Rate} = \frac{\text{CPI this year} - \text{CPI last year}}{\text{CPI last year}} \times 100$$

- *Problems in Measuring the Cost of Living*
  - The CPI is an accurate measure of the selected goods that make up a typical bundle, but it not a perfect measure of the cost of living.
  - Three problems with the index were acknowledged.

- **Substitution Bias**
  - Overtime, some prices rise faster than others
  - Consumers substitute towards goods that become relatively cheaper
  - The CPI misses this substitution because it uses a fixed basket of goods
  - Thus, the CPI overstates increases in the cost of living
- **Introduction of New Goods**
  - When a new good becomes available, variety increases, allowing consumers to find products that more closely meet their needs.
  - This has an effect on making each dollar more valuable
  - The CPI misses this effect because it uses a fixed basket of goods
  - Thus, the CPI overstates increases in the cost of living
- **Unmeasured Quality Changes**
  - Improvements in the quality of goods in a basket increases the value of each dollar
  - Statistics Canada tries to account for quality changes, but probably misses some quality improvements, as quality is hard to measure
  - Thus, CPI overstates increases in the cost of living
- *Overall Problems with CPI*
  - CPI tends to overstate increases in the cost of living
  - Statistics Canada has made technical adjustments, but CPI still overstates inflation by about 0.5% per year
  - This is important, because many government programs and many contracts have COLAs tied to the CPI
- *GDP Deflator Versus CPI*
  - The GDP Deflator reflects the current level of prices relative to the level of prices in the base year
  - It is monitored by economists to gauge how quickly prices are rising

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

- *Contrasting CPI and GDP Deflator*
  - **Imported Consumer Goods**
    - Included in CPI
    - Excluded from GDP Deflator
  - **Capital Goods**
    - Excluded from CPI
    - Included in GDP Deflator if produced domestically

- **The Basket**
  - CPI uses a fixed basket
  - GDP deflator uses baskets of currently produced goods and services - this matters if different prices are changing by different amounts
- *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
- *Comparing Dollar Figures from Different Times*
  - Inflation makes it harder to compare dollar amounts from different times
  - We can use the CPI to adjust figures so that they can be compared

$$\text{Amount in today's \$} = \text{Amount in year X} \times \frac{\text{Price level today}}{\text{Price level in year X}}$$

- *Correcting Variables for Inflation: Indexation*
  - A dollar amount is indexed for inflation if it is automatically corrected for inflation by law or in a contract
  - E.g. The increase in the CPI automatically determines:
    - The COLA in multi-year labour contracts
    - The adjustments in Canada Pension Plan
    - Tax brackets
- *Correcting Variables for Inflation: Real Versus Nominal Interest Rates*
  - **Nominal Interest Rate:**
    - The interest rate is not corrected for inflation
    - The rate of growth in the dollar value of a deposit or debt
  - **Real Interest Rate:**
    - This interest rate is corrected for inflation
    - The rate of growth in the purchasing power of a deposit or debt

$$\text{Real Interest Rate} = \text{Nominal Interest Rate} - \text{Inflation Rate}$$