

Macroeconomics – Measuring the Cost of Living

Consumer Price Index (TOPIC 2/ Chapter 24)

Dr. Faria Sultana

Assistant Professor

Department of Economics

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

Measuring the cost of living: The consumer price index

☒ Consumer Price Index (CPI)

CPI is the price of a basket of goods and services relative to the price of the same basket in some base year.

Example: Suppose a typical consumer buys 5-apples & 2-oranges every month. Thus, basket consists of 5-apples & 2-oranges, the CPI is

$$\text{CPI} = \frac{(5 * \text{current price of apples}) + (2 * \text{current price of oranges})}{(5 * 2002 \text{ price of apples}) + (2 * 2002 \text{ price of oranges})}$$

Here 2002 is the base year

How the Consumer Price Index Is Calculated

- ❑ ***Fix the Basket:*** Determine what prices are most important to the typical consumer.
 - ❑ The Bangladesh Bureau of statistics(BBS) identifies a market basket of goods and services the typical consumer buys.
 - ❑ The BBS 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.
- ☒ ***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

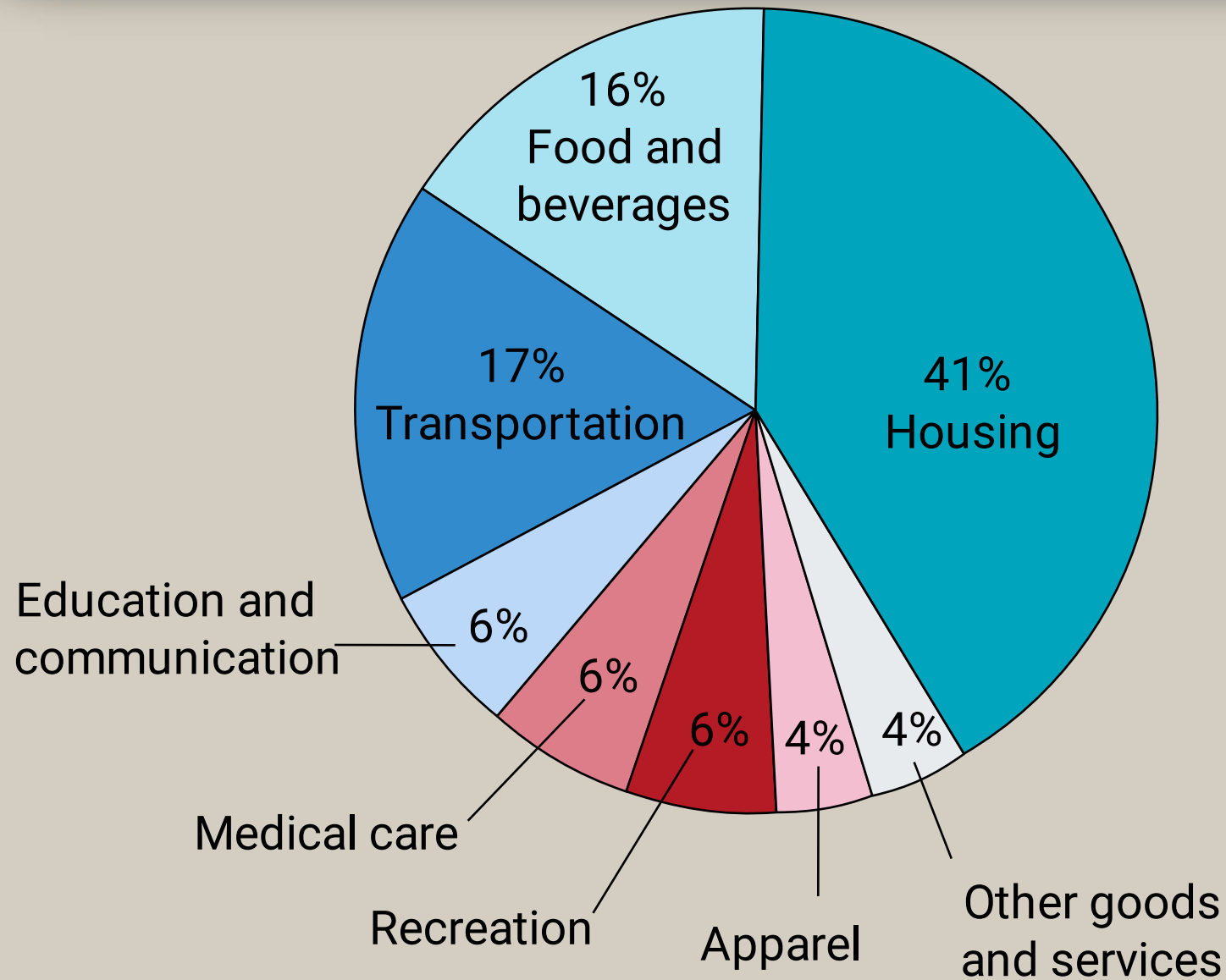
☒ ***Compute the inflation rate:*** The inflation rate is the percentage change in the price index from the preceding period.

☒ The Inflation Rate

☒ The *inflation rate* is calculated as follows:

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

FYI: What's in the CPI's Basket?



CPI Versus GDP Deflator

- ⊠ GDP Deflator: It is defined as the ratio of nominal GDP to real GDP:

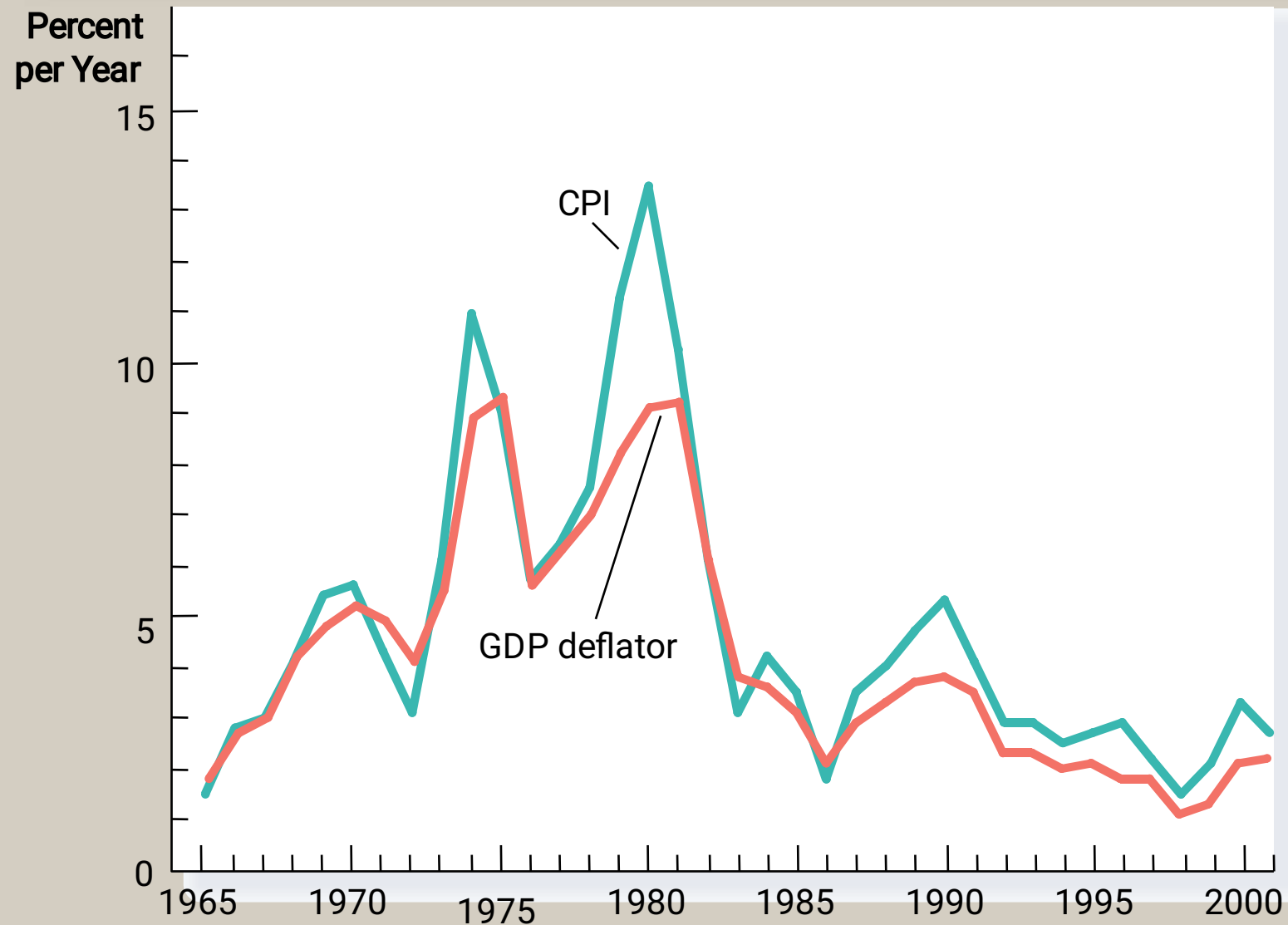
$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

The GDP deflator reflects what's happening to the overall level of prices in the economy

CPI Vs GDP deflator

- ⊠ GDP deflator & CPI give some what different information about what's happening to the overall level of prices in the economy.
- ⊠ Three Key Differences:
 1. GDP deflator measures the prices of all goods and services produced
whereas CPI measures the prices of only the goods and services bought by consumers
 2. GDP deflator includes only those goods produced domestically. Imported goods are not a part of GDP and do not show up in the GDP deflator.
CPI include imported goods.
 3. CPI is computed using a fixed basket of goods whereas GDP deflator allows the basket of goods to change over time as the composition of goods and services changed

Figure 2 Two Measures of Inflation



Basic concepts on index number

- ⌘ *Definition:* An index number is a statistical devices designed to measure the relative changes in the level of a phenomenon (variable) with respect to time, space, location etc.
- ⌘ *Selection of the base period:*
 1. *The base period must be a “normal period”*
 2. *The base period should not be too distant from the given period*

Problems in Measuring the Cost of Living

- ❑ Inflation: The increase in the overall level of prices. It is one of the primary concern of economists and the policymakers.
- ❑ Consumer price index is a closely watched measure of inflation.
- ❑ CPI tends to overstate inflation
 - substitution bias
 - introduction of new goods
 - unmeasured changes in quality

Problems in Measuring the Cost of Living

☒ Substitution Bias

- ☒ The basket does not change to reflect consumer reaction to changes in relative prices.
 - ☒ Consumers substitute toward goods that have become relatively less expensive.
 - ☒ The index overstates the increase in cost of living by not considering consumer substitution.

Problems in Measuring the Cost of Living

- ❑ Introduction of New Goods
 - ❑ The basket does not reflect the change in purchasing power brought on by the introduction of new products.
 - ❑ 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.

Problems in Measuring the Cost of Living

☒ Unmeasured Quality Changes

- ☒ If the quality of a good rises from one year to the next, the value of a dollar rises, even if the price of the good stays the same.
- ☒ If the quality of a good falls from one year to the next, the value of a dollar falls, even if the price of the good stays the same.
- ☒ The BLS tries to adjust the price for constant quality, but such differences are hard to measure.

Problems in Measuring the Cost of Living

- ❑ The substitution bias, introduction of new goods, and unmeasured quality changes cause the CPI to overstate the true cost of living.
- ❑ The issue is important because many government programs use the CPI to adjust for changes in the overall level of prices.
- ❑ The CPI overstates inflation by about 1 percentage point per year.

Nominal & Real Interest rate

The *nominal interest* rate is the interest rate usually reported and 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 the effects of inflation.

⊠ Real Interest rate = Nominal interest rate – Inflation rate

INFLATION

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- ❑ **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.
 - ❑ Not all prices rise at the same rate during inflation.
 - ❑ Not everyone suffers equally from inflation.
 - ❑ Although inflation makes some people worse off, it makes some people better off
 - ❑ Hyperinflation is an extraordinarily high rate of inflation such as Germany experienced in the 1920s.
 - ❑ Hyperinflation is inflation that exceeds 50% per month
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Types of Inflation

❑ Demand-Pull Inflation

- ❑ Demand-pull inflation results from excessive pressure on the demand side of the economy.
- ❑ “Too much money chases too few goods” enabling producers to raise prices.

❑ Cost-Push Inflation

- ❑ The pressure on price could also originate on the supply side.
 - ❑ Higher production costs put upward pressure on product prices
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Effects of Inflation [on..]

| | Consumers | Producers | Economy |
|----------------|--|--|--|
| Zero inflation | Not affected at all | No incentive to produce more, Same production | Stagnant for almost same level of production |
| Mild Inflation | Affected but not much, Demand may be same | Have incentive to produce more, Higher production | Economy expands as production increase |
| High Inflation | Affected much, Demand may be lower in many products | Producers of inelastic products affected, Production lower for lower demand | Economy squeezes as production falls |