

**ECON 211 - Principles of Macroeconomics**  
**Notes for Exam 3**

1. What does price level mean? What is inflation? How is the inflation rate calculated? (Ch. 23, 24)

- Price level: A general or average measure of the prices of all goods and services in the economy. It is usually measured using a price index.
- Inflation: A sustained increase in the price level
- Inflation rate: Percentage change in the price level. In particular,  
$$\text{Inflation rate} = [(CPI_{cp} - CPI_{pp}) / CPI_{pp}] \times 100$$
where, CPI = Consumer Price Index,  
cp = current period, and  
pp = prior period.

Suppose,  $CPI_{2002} = 125$  and  $CPI_{2000} = 115$ . Then, inflation rate between 2000 and 2002 =  $[(125 - 115)/115] \times 100 = 8.7\%$

- Depending on the purpose, Gross Domestic Product Price Index (GDPPI) may be substituted for CPI to calculate the inflation rate. The GDPPI is also referred to as the GDP Deflator.

2. What is the major difference between CPI and GDP Deflator? (Ch. 23, 24, Class Notes)

- CPI measures changes over time in the cost of buying a “market basket” of goods and services.
- GDP deflator measures changes over time in the level of prices of all output included in GDP.
- CPI is based on a market basket (sample) of consumer goods and services in the U.S., including imports, whereas GDPPI is based on all domestically produced goods and services.
- GDPPI is a more comprehensive measure of the price level than CPI.
- CPI is more commonly used to calculate inflation rate than GDPPI.

3. Interpreting the values of CPI and GDP Deflator (Ch. 23, 24, Class Notes)

- The values of both CPI and GDP deflator for a given year are interpreted relative to the value of 100 set for the base year.
- The value of CPI equal to 150 in a given year means that the price level increased by 50% between the base year and the current year.
- The values of CPI equal to 250 in one year and 300 in the next year mean that the annual rate of inflation as measured by the CPI is approximately 20%.
- The value of CPI equal to 100 in a given year means that the price level in this year is the same as it was in the base year.
- A specific value of GDP deflator in a given year is interpreted similarly.

4. What are the causes of inflation? Demand pull vs. cost-push inflation (Ch. 23, Class Notes)

- Causes of inflation: Increase in aggregate demand (AD), decrease in aggregate supply (AS), or a combination.

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- AD is the real total quantity of all goods and services demanded in the economy in a given time period.
  - AS is the real total quantity of all goods and services supplied in the economy in a given time period.
  - Demand-pull inflation: A rising AD (outward shifting AD curve) pulls up the price level while reducing unemployment.
  - Cost-push inflation: A decreasing AS (inward shifting AS curve) pushes up the price level while reducing aggregate output.
5. Difference between anticipated and unanticipated inflation; which one is more detrimental? (Ch. 30, Class Notes)
- Anticipated inflation: Widely expected by decision makers.
  - Unanticipated inflation: Comes as a surprise to most decision makers.
  - Unanticipated inflation is more detrimental because decision makers are not prepared for it. Some decision makers end up being winners (e.g., debtors) whereas others end up being losers (e.g., creditors) as a result of unanticipated inflation.
6. Relationship between inflation and purchasing power (Ch. 24, Class Notes)
- Inflation reduces the purchasing power of a given amount of nominal or current income because it takes more dollars to buy the same good than before. The reduction in purchasing power is also referred to as a reduction in real income.
  - Deflation, which is a sustained decrease in the price level, increases real income and the purchasing power.
  - An increase in nominal income may not necessarily result in an increase in real income depending on the rate of inflation. Suppose, one's nominal income increased by 4% during a period while inflation ran about 5%. The person's real income decreased by 1% during the period despite a 4% increase in nominal income. On the other hand, the person's real income would have increased by 1% if inflation rate were 3%.
7. Expected vs. actual inflation; nominal interest rate vs. real interest rate (Ch. 24)
- Expected inflation: Inflation that is expected to occur in the future.
  - Actual inflation: Inflation that has already occurred or is currently occurring.
  - There is a time lag involved in the determination of actual inflation. The actual inflation that is currently occurring is not known until it is measured sometime in the future. Thus, actual inflation ends up being a measure of past inflation and current decisions need to incorporate expected inflation along with the knowledge of actual inflation.
  - Nominal interest rate: Interest rate that incorporates expected inflation in order to maintain the purchasing power of interest received.
  - Real interest rate: Interest rate that reflects the purchasing power of interest received.

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8. How does nominal interest rate account for expected inflation? (Ch. 24, 30)
- Nominal interest rate ( $i$ ) = Real interest rate ( $r$ ) + Inflation rate ( $\rho$ ). Because decision makers want to maintain the real interest rate at a desired level, inflation rate is added to the desired real interest rate as a premium when calculating the nominal interest rate.
  - The higher the expected inflation rate, the higher the nominal interest rate. The interest rates quoted or posted by financial institutions are nominal rates.
  - Real interest rate,  $r = i - \rho$ . Because the interest received at a point in time is nominal interest, inflation rate is subtracted from the nominal interest rate to calculate the real interest rate.
  - Real interest rate is known after the fact; that is, after inflation has occurred.
  - Suppose, decision makers want to maintain a real interest rate of 3% and expect inflation rate to be 2% in the coming year. They will want a nominal interest = 3% + 2% = 5% to invest their money for the year.
  - If the actual inflation rate differs from the expected inflation rate at the end of the period, investors will end up better or worse off than expected. In the above example, suppose the actual inflation rate turned out to be 3% instead of 2% as expected. Then, real interest rate = 5% - 3% = 2% instead of the desired rate of 3%. Thus, investors will be 1% worse off in terms of the real interest rate earned. On the other hand, if the actual inflation rate ended up at 1%, real interest rate = 5% - 1% = 4%, leaving investors 1% better off in terms of the real interest rate earned.
9. How does inflation affect lending, borrowing, contracts, and overall economic activities? Why is inflation so unpopular? (Ch. 30, Class Notes)
- Lenders charging fixed interest rates lose because they receive repayments with reduced purchasing power.
  - Borrowers paying fixed interest rates gain because they make payments that have reduced purchasing power.
  - Contractors without inflation clause lose because they face rising costs of goods or services they are obligated to deliver.
  - Overall economic activity is dampened because economic participants spend more time on fighting inflation than on expanding economic activities.
  - When inflation fluctuates widely, economic efficiency is reduced because of uncertainty about changes in relative prices.
  - Inflation is unpopular because it:
    - affects practically everyone,
    - is viewed as a penalty that unjustly robs people of purchasing power,
    - arbitrarily redistributes income and wealth from one group to another,
    - cannot be anticipated with complete accuracy and reduces the ability to make long-term plans, and
    - forces decision makers to pay more attention to prices than to productive activities.