Low and Stable rate of Inflation

RIDLEY COLLEGE

SINCE 1889

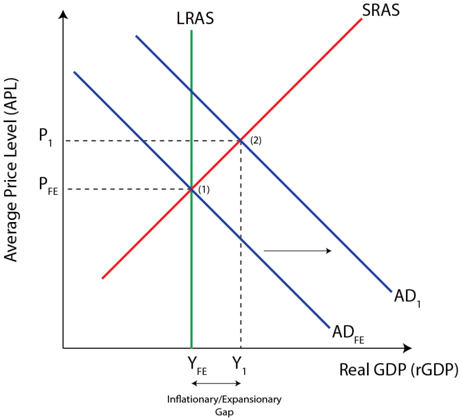
Assessment Objectives

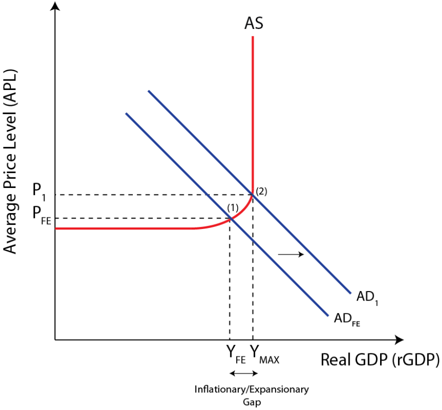
Specific Expectations	
1.F	Define the consumer price index (CPI), inflation, deflation, disinflation, the inflation rate, and real variables.
1.F	Explain how price indices can be used to calculate the inflation rate and to compare nominal variables over time periods.
1.F	Calculate the CPI, the inflation rate, and changes in real variables.
1.G	Define the shortcomings of the CPI as a true measure of inflation.
2.H	Explain (using graphs as appropriate) the response of output, employment, and the price level to an aggregate demand or aggregate supply shock in the short run.

Inflation

- **Inflation**, an increase in the general price level of a nation's output overtime, can be caused by changes in either AD or AS.
  - An analysis of demand and supply shocks reveals that inflation can result from either a positive demand shock or negative supply shock.
  - **Demand-pull inflation:** a type of inflation caused by an increase in aggregate demand, shown in the AD-AS model as a rightward shift in the AD curve.
    - Demand-pull inflation occurs when a component of AD increases in an economy already producing at or near its full employment level of output.
    - It involves an excess of aggregate demand over aggregate supply.
    - Resources become increasingly scarce and producers find that consumers are willing to pay more for their output.

Demand-pull inflation



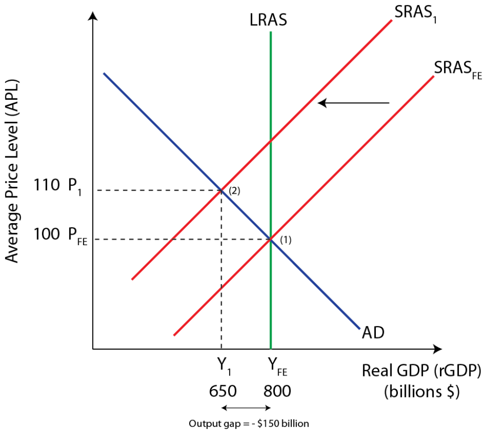


Inflation

- **Cost-push inflation:** a type of inflation caused by a fall in aggregate supply, usually resulting from increases in costs of production, shown in the AD-AS model as a leftward shift of the AS curve.
  - Arises when a factor affecting SRAS causes the costs of production to increase.
  - Arises from increases in wages or prices of other inputs.

    In the short-run firms will pass higher costs onto consumers through price increases.
  - Cost-push inflation is characterized by a negative output gap and an increase in unemployment.

Cost-push inflation



Costs of Inflation

- **Redistribution effects:** inflation redistributes income away from certain groups in the economy and towards other groups.
  - Redistribution arises in situations where certain groups lose some purchasing power and become worse off, while other groups gain purchasing power and become better off.

  1. **People who receive fixed income or wages** – when individuals receive an income or wage that is fixed or constant, as the general price level increases the become worse off.
  2. **People who receive income or wages that increase less rapidly than the rate of inflation** – when individuals incomes do not keep up with a rising price level a fall in their real incomes results.
  3. **Holders of cash** – as the price level increases, the real value or purchasing power of cash held falls

Costs of Inflation

4. **Savers** – people who save money may become worse off as a result of inflation. In order to maintain the real value of their savings, savers must receive a rate of interest that is at least equal to the rate of inflation.

5. **Lenders (creditors)** – people (or financial institutionss) who lend money may be worse off due to inflation. In general, lending at a lower interest rate than the rate of inflation makes the lender (creditor) worse off at the end of the loan period.

- Groups that gain from inflation include:

1. **Borrowers (debtors)** – In general, borrowing at a lower interest rate than the rate of inflation make the borrower (debtor) better off at the end of the loan period.

2. **Payers of fixed incomes or wages** – as long as nominal wages, pensions, etc. are fixed while their is inflation, the payers benefits as the real value of their payments falls due to inflation.

Costs of Inflation

3. **Payers if income or wages that increase less rapidly than inflation** – as long as income of any kind increase less rapidly that the rate of inflation, the payers of these incomes benefit due to falling real value of their payments.

- **Uncertainty:** inability to accurately predict what inflation will be in the future means that people cannot predict future changes in purchasing power.
  - This causes uncertainty among economic decision makers.
  - Firms become more cautious about making future plans under uncertainty about future price levels, because they are unable to accurately forecast costs and revenues.
  - This uncertainty leads them to make fewer investments, which may lead to lower economic growth.

Costs of Inflation

1. **Effects on savings** – inflation lowers the incentive to save. If the inflation rate is high, people may spend more now in order to avoid higher prices in the future.

2. **International (export) competitiveness** – when the price level in a country increases more rapidly than the price level in other countries with which it trades, its exports become more expensive to foreign buyers, while its imports become cheaper to domestic buyers.

   - The result is that the quantity of exports falls, and the quantity of imports increases.

1. **Effects of economic growth** – high inflation does not favor economic growth.

   - The uncertainty among firms causes investment to fall. In addition, lower saving means that there are less available funds for investment
   - Inflation also leads to lower exports and higher imports, both contributing to a fall in net exports, which also causes a fall in GDP.

Costs of Inflation

2. **Effects on resource allocation** – If prices are rising rapidly, the signalling and incentive function of prices do not work effectively.
   - Prices do not increase by the same proportion for all products, they rise more for some products than others, meaning that the signals and incentives they provide for consumers and producers become distorted and inaccurate.
   - This results in allocative inefficiency.
3. **Social and personal costs that are unequally distributed** – people on low incomes are more seriously affected by high rates of inflation than people on higher incomes.
   - People on low incomes are not in position to places their savings in assets that do not lose their value with inflation such as real estate, stocks in the stock market, or gold.
   - Rising prices of necessities such as energy and food can cut deeply into income of lower income people.

Price Index

- **Price Index** The price index measures changes in the general price level over time different price indices to measure how the price of different categories of a country's output change over time.
- **Consumer price index (CPI)** is measure of the cost of living for the typical household, and compares the value of a basket of good and service in one year with value of the same basket in a base year.
  - Inflation (and deflation) are measured as a percentage change in the value of the basket from one year to another.
  - **Inflation** is defined as a sustained increase in the general price level.
  - **Deflation** is defined as a sustained decrease in the general price level.
  - **Disinflation** refers to a fall in the rate of inflation; it involves a positive rate of inflation and should be contrasted with deflation.

Price Index

- **Weighted price index** a measure of average prices in one period relative to average prices in a reference period called a base period.
  - A weighted price index is a price index that "weights" the various goods and services according to their relative importance.
  - In the consumer price index (CPI), goods and services are weighed according to their relative importance for consumer spending.
  - To construct a weighted price index,
    1. Find the value of the basket in current prices for each year
    2. Divide the value of the basket for each year by the value of the basket in the base year and multiple by 100. This will give you the price index number for each year.

Price Index: Example

Example: Suppose a there is a country that produces three goods: pizza, haircuts, and wine. The following table shows the prices of the three goods over three years.

Good or service	Price in 2019	Price in 2020	Price in 2021
Pizza	10	10.50	12
Haircuts	20	19	22
Wine	8	10	9
Total basket price	38	39.50	43

$$CPI_{2019} = \frac{\text{Price of the basket of goods in 2019}}{\text{Price of the basket in base year}} \times 100 = \frac{38}{38} \times 100 = 100$$

$$CPI_{2020} = \frac{\text{Price of the basket of goods in 2020}}{\text{Price of the basket in base year}} \times 100 = \frac{39.5}{38} \times 100 = 103.9$$

$$CPI_{2021} = \frac{\text{Price of the basket of goods in 2021}}{\text{Price of the basket in base year}} \times 100 = \frac{43}{38} \times 100 = 113.2$$

Calculating the rate of inflation

- The inflation rate is measured as the rate of change in the CPI between two periods of time.
  - While inflation can be measured quarterly or even monthly, it is standard to report inflation annually.

$$\text{Inflation rate} = \frac{\text{CPI in year 2} - \text{CPI in year 1}}{\text{CPI in year 1}} \times 100$$

- **Example:**

$$\text{Inflation rate}_{\,2019-2020} = \frac{103.9 - 100}{100} \times 100 = 3.9\%$$

$$\text{Inflation rate}_{\,2020-2021} = \frac{113.2 - 103.9}{103.9} \times 100 = 8.95\%$$

Nominal versus Real variable

- **Real income** also known as real wage, is how much money an individual or entity makes after adjusting for inflation.
  - If nominal income increases by the same percentage as the price level (measured in CPI), real income remains unchanged.
  - An inflation rate higher than that at which nominal incomes increase leads to a decreased standard of living.
  - The percentage change in a worker's real income is the percentage change in her nominal income minus the inflation rate.

$$\text{Real income} = \frac{\text{Nominal income}}{\text{CPI}} \times 100$$

  - The **real interest rate** in an economy is the nominal interest rate minus the inflation rate. (The nominal interest rate is the actual interest rate before taking inflation into account)

$$\text{Real interest rate} = \frac{\text{Nominal interest rate}}{\text{Inflation rate}}$$

Problems with the consumer price index (CPI)

- There are shortcomings associated with the consumer price index (CPI):

    1. **Different rates of inflation for different income earners** – different consumers have different consumption patterns depending on their income levels.

    2. **Different rates of inflation depending on regional or cultural factors**

    3. **Changes in consumption patterns due to consumer substitutions when relative prices change** – As some goods and services become cheaper or more expensive over time, consumers have substitutions, buying more units of the cheaper goods and less of the more expensive ones which changes the weights of CPI which were fixed.

    4. **Changes in consumption patterns due to increasing use of discount stores and sales**

Problems with the consumer price index (CPI)

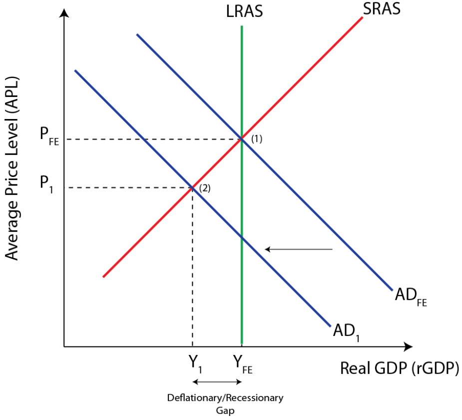
5. **Changes in consumption patterns due to the introduction of new products** – A fixed basket of goods and services cannot account for new products introduced into the market, as well as older products that become less popular or are withdrawn.
6. **Changes in product quality** – The CPI cannot account for quality changes over time.
7. **International comparisons** – The CPIs of different countries differ from each other with respect to the types of goods and services include in the basket and the weights used and methods of calculation.
8. **Comparability over time** – Price index numbers are comparable over short periods of time, but over longer periods comparability is lessened because of cumulative changes in the basket of goods and services.

Causes of Deflation

- Deflation, a falling price level on average, is not a common phenomena. Whereas it is often the case that the price of a particular good or service may fall over time, it is rare to see the general price level of an economy falling.
  - **Wages of workers do not ordinarily fall** – this means it is difficult for firms to lower the prices of their products, as this would cut into their profits, especially since wages represent a large portion of firms' costs of production.
  - **Large oligopolistic firms may fear price wars** – If one firms lowers its price, then others may lower theirs more aggressively in an effort to capture market share, and then all firms will be worse off.
    - Therefore, firms avoid cutting their costs.

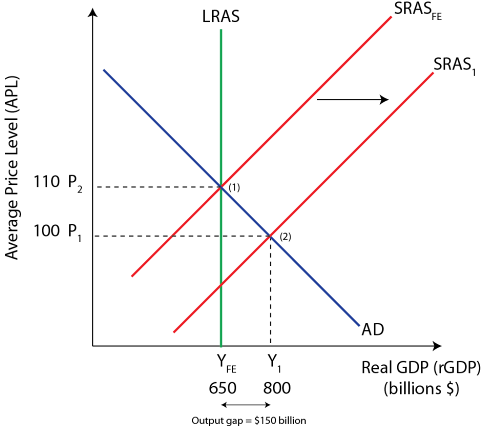
Causes of Deflation: Types

- **Demand deficient deflation** refers to the situation when aggregate demand (AD) is less than the aggregate supply (AS) corresponding to the full employment level of output in the economy.



Causes of Deflation: Types

- **Supply-side deflation** refers to the situation when aggregate supply (SRAS) is more than the aggregate demand (AD) corresponding to the full employment level of output in the economy.



Costs of Deflation

- It must be stressed that while it may be possible to make a theoretical distinction between "good" and "bad" deflation, no deflation is ever good.

1. **Redistribution effects** – with a falling price level, individuals on fixed incomes, holders of cash, savers and lenders (creditors) all gain as the real value of their income or holdings increase.
    - By contrast, borrowers (debtors) and payers of individuals with fixed incomes lose with a falling price level, as they must pay out sums that have an increasing real value.
2. **Increase in the real value of debt** – the real value of debt in terms of purchasing power increases when the price level falls.
3. **Uncertainty** – deflation, creates uncertainty for firms, which are unable to forecast their costs and revenues due to declining price levels.

Costs of Deflation

4. **Deferred consumption, high and increasing cyclical unemployment: risk of a deflationary spiral** – deferred consumption means consumers postpone spending. Consumers postpone making purchases when they see falling prices as they expect that prices will continue to fall. Therefore, deflation discourages spending.

   - Deflation also discourages borrowing by both consumers and firms, because the real value of debt increases as the price level falls.
   - The result is that consumer and business spending falls, causing aggregate demand to fall.

5. **Risk of bankruptcies and a financial crisis** – if an economy is in a recession, and incomes are falling while the real value of debt is increasing, the result will most likely be bankruptcies of firm and consumers who are unable to pay back their debts.

   - If such bankruptcies become widespread, banks and financial institutions will be affected, and a large risk of a major financial crisis arises.

Costs of Deflation

6. **Inefficient resource allocation** – in deflation, prices of all goods and services do not fall uniformly, with the result that the price signals and incentives get distorted, leading to resource misallocation.

7. **Policy Ineffectiveness** – it may be difficult for policy makers to deal with.

   - People's expectations of a falling price level become well established, and they get used to spending less in the expectation of falling prices, it may be difficult for them to change their mindset.

   - Also, expansionary monetary policy involves decreases in the rate of interest in order to encourage more borrowing and spending by consumers and firms, however once interest rates approach zero the cannot continue to fall. Therefore, monetary policy cannot be relied upon to solve the problem.

Summary

- **Enduring Understanding**
  - An economy's performance can be measured by different indicators such as gross domestic product (GDP), the inflation rate, and the unemployment rate.

- **Essential Knowledge**
  - The consumer price index (CPI) measures the change in income a consumer would need in order to maintain the same standard of living over time under a new set of prices as under the original set of prices.
  - The CPI measures the cost of a fixed basket of goods and services in a given year relative to the base year.
  - Inflation can be caused by changes in aggregate demand (demand-pull) or aggregate supply (cost-push).
  - The inflation rate is determined by calculating the percentage change in a price index, such as CPI or the GDP deflator.

Summary (Continued)

- Real variables, such as real wages, are the nominal variables deflated by the price level.
- The CPI as a measure of inflation has some shortcomings, such as substitution bias, causing it to overstate the true inflation rate.