

higher with the higher income group. ∴ For increasing the consumption, there should be a redistribution of income from rich to poor.

- Credit availability: If ~~taking~~ taking credit is feasible for the consumers, then consumption is high.
- Consumption doesn't depend on income only, it depends on wealth, interest rates, consumers' expectations about the price change, distribution of income and wealth and also the availability of credit.

I N F L A T I O N

Inflation: Continuous rise in general price level.

Deflation: Continuous fall in general price level.

- What is inflation?
- Measurement of inflation?
- Sources of inflation
- Types of inflation
- Causes of inflation
- Theories behind inflation to occur.
- Consequences and effects of inflation
- Inflation refers to a continuous rise in the general price level.

It refers to the continuous rise in the

aggregate or average price level of the economy not of a particular commodity.

∴ Inflation rate is calculated corresponding to the price level at a particular time period.

We calculate inflation by using price indexes. A price index (symbol P) is a measure of the average level of prices.

The rate of inflation is defined as the rate of change of the general price level and is measured by:

$$\text{Rate of inflation in year } t = 100 \times \frac{P_t - P_{t-1}}{P_{t-1}}$$

* Sources of Inflation

- ~~A/c~~ A/c to sources of inflation, it can be categorized as:

- (i) Demand-Pull inflation
- (ii) Cost-Push inflation
- (iii) ~~The behaviour of output~~

- The behaviour of output is a signal to identify the source of inflation.
- If there is rise in output with the rise in price level, ~~it~~ it is one kind of inflation compared to when there is rise in

price, there is a fall in output.

- If with the increase in price level, there is an increase in output or income of the economy, it can be called demand-pull inflation.
- whereas, along with the rise in price-level, there is a fall in output, it is cost-push inflation.
- \therefore The source of inflation can be traced by the behaviour of output with the change in price-level.

If the price is rising and output is falling, then the ~~output may~~ inflation may be due to increase in cost of production. ~~But if on the other hand output is a~~

* Demand-Pull Inflation

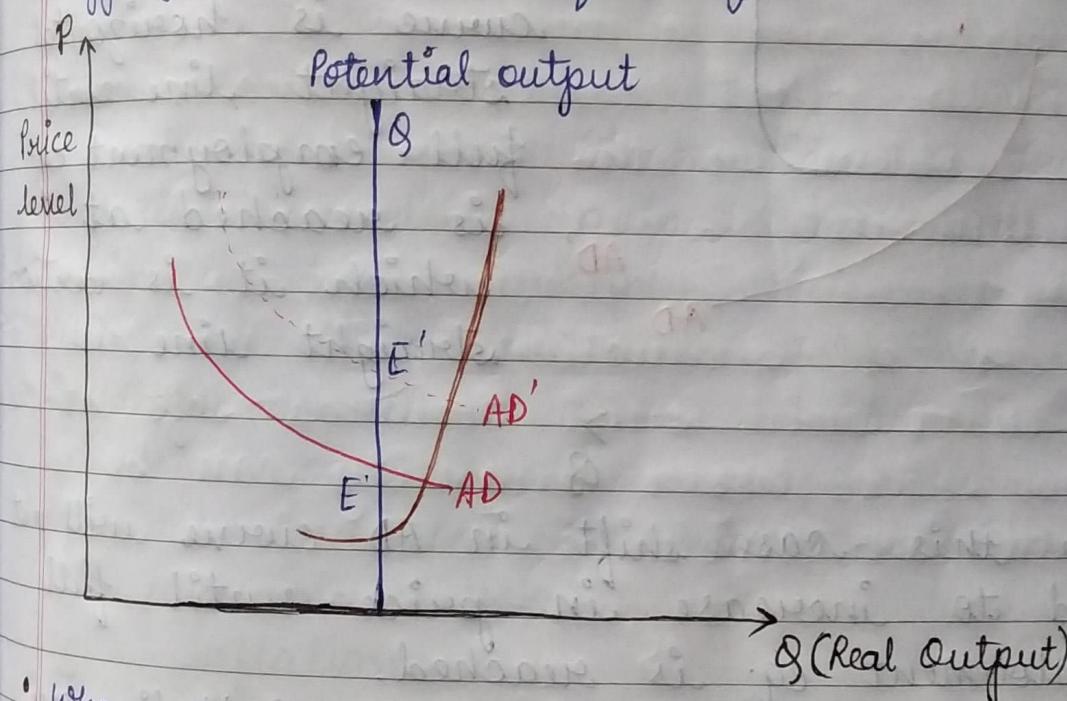
- Demand-pull inflation occurs when aggregate demand ($C + I + G + M$) rises more rapidly than the economy's productive potential, pulling prices up to equilibrate aggregate supply and aggregate demand.
- \therefore Demand pull inflation occurs when there is increase in demand of goods and services.

- However the economy might not have the productive potential to meet the increased aggregate demand.
- In effect, demand competes for the limited supply of commodities and bid up their prices.
- Budget deficit and inflation are closely linked.
- Budget deficit: Govt. expenditure $>$ Govt. income
i.e. $G_1 > T$.

Inflation occurs when governments engage in deficit financing. The rapid money growth increases aggregate demand and finally increases the price level.

- Budget deficit: $G_1 > T$
- Budget surplus: $G_1 < T$
- Balance budget: $G_1 = T$.
- If the govt. is spending more than what it earns, then the govt. borrows from the apex bank of the country. The apex bank prints more money which leads to an increase in money supply in the country. This is called deficit financing. which leads to increase money supply.

- Increase in money supply leads to rise in aggregate demand for goods and services which pulls up the average price level in an economy.
- Demand-pull inflation occurs when too much spending chases too few goods. Too much money leads to ~~is~~ a small increase in the aggregate demand for goods and services.

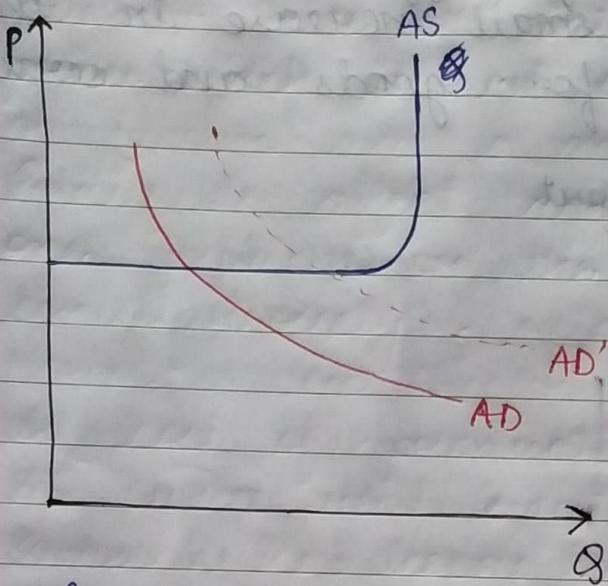


- When the govt. engages in deficit financing, aggregate demand curve shifts towards right. The extent upto which price will rise due to shifting of AD curve will depend upon the slope of AS curve.
- The slope of the AS curve determines the impact of the BD (Budget deficit).
- If $\epsilon_{AS} = 0$, BD is 100% inflationary. AS is a vertical straight line. In this case

in AD increases by 10% then price will rise by 10%.

When Aggregate demand rises, AD curve shifts from AD to AD'.

- If $e_{AS} = \infty$, BD will not create inflation.

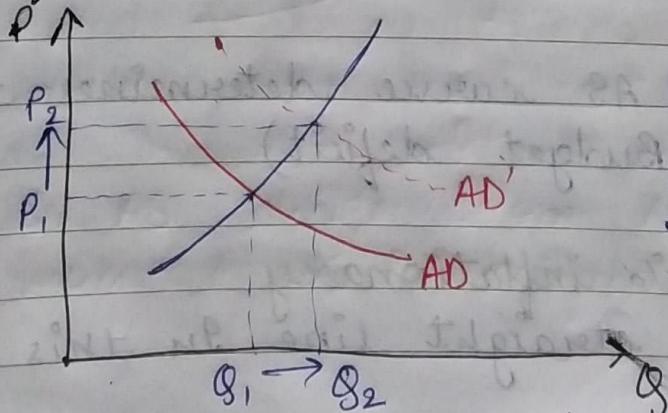


In this case, AS curve is horizontal straight line until full employment eq. is reached at which it is vertical straight line.

∴ In this case shift in AD curve will not lead to increase in price until full employment eq. is reached.

∴ BD will not create any inflationary trend in the economy if AS is infinitely elastic.

- If $0 < e_{AS} < \infty$, BD will increase price level.



In this case, both price & output will rise as AD curve shifts.

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The value of rise in price will depend on the value of LAS b/w 0 & ∞ .

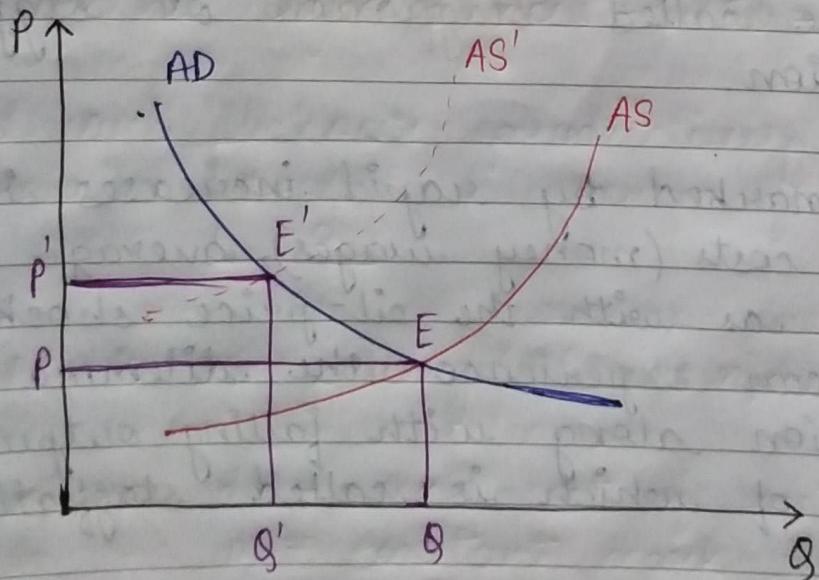
- If AS curve is steeper, rise in price will be greater than the rise in output, while if AS curve is flatter, rise in output will be greater than the rise in price. But, there will be the rise in both price & output.

* Cost-Push Inflation

- Inflation resulting from rising costs during periods of high unemployment and slack resource utilization is called cost-push or supply-shock inflation.
- Often it leads to economic slowdown and to a syndrome called 'stagflation' or stagnation with inflation.
- In periods marked by rapid increases in production costs (money wages), average supply shocks such as with the oil-price shocks, countries can experience the dilemma of rising inflation along with falling output, the combination of which is called stagflation.
- Oil-price in India has increased due to rise in price of crude-oil, because mining of crude-oil has decreased due to ~~pandemic~~

This is an example of supply shock. It is external in nature.

- when the money wages within a country rise which leads to increase in cost of production, then it is an internal factor, but when the fuel price rises, it maybe due to rise in international crude oil price. which is an external factor.
- Policies to affect aggregate demand can cure one problem or the other but not both simultaneously.
- As cost of production will rise, AS curve will shift towards left, at the same price, lesser quantity can be offered for sale.



- As AS shifts from AS to AS', price increases from P to P' , output falls from Q to Q' .

- In case of demand-pull inflation, output may rise with the ~~per~~ rise in price but in cost-push inflation, output is falling with the rise in price.
 - ∴ The behaviour of output indicates the source of inflation.
 - Stagflation \Rightarrow Stagnation w.r.t output + inflation w.r.t price
Both problems cannot be solved simultaneously in this case.
- * Cost-Push Inflation through Mark-up Pricing.
- Price includes a mark-up upon the estimated average cost of production.
 - Price fixed by the firm or market is always cost inclusive i.e. price is always greater than or equal to the average cost of production.
 - Price gives some rough estimate of the cost of production of the product.

Assume that labour is the most important factor.

Firms set P to cover unit cost of labour and a mark up on it to cover non-labour

costs.

- A firm cannot estimate the total cost of production of one unit of output as the production also involves use of machinery & capital apart from labour. And ~~as~~ machinery & capital are one time investment & they last for years.
 \therefore The firm sets P to cover unit ~~of~~ cost of labour and a mark up cost to cover non-labour (capital) costs.
- Per unit cost of output =
 No. of labour hours to produce one unit of output (d) \times wage per hour (w).

Suppose $d = 8$ hours

$$w = 50 \text{ ₹/hour.}$$

$$\text{unit labour cost} = 8 \times 50 = 400 \text{ ₹}$$

d and labour productivity (z) are inversely related

$$z = \frac{1}{d}$$

Mark up pricing $P = (1+m)dw$ where $m > 0$.

where dw = unit cost of output

m = constant mark up fixed by the firm

with $m = 0.2$, $d = 8$, $w = 50$, $P = 480$.

- Equation ① states that P is higher if
 - w is higher.
 - Non-labour costs are higher (rise in m)
 - d is higher (lower labour productivity)
- Depending upon different market conditions and production conditions, mark-up varies from firm-to-firm and product-to-product.
- Mark up pricing provides a cost-push explanation to inflation.
- Constant increase in prices of inputs (or decline in labour productivity) leads to inflation. This occurs even if m remains constant.
- Denoting average productivity of labour, $z = 1/d$.
Equation (1) can be re-expressed as

$$P = (1+m) \left(\frac{w}{z} \right)$$

- Assuming m as constant, this gives the rate of inflation as

$$gp = gw - gz$$

- Proportionate change in P is equal to rate of wage inflation - rate of growth of labour productivity

- ∴ rate of inflation depends upon rate of change of wage & rate of change of labour productivity.

If $gp \geq gw > gz \Rightarrow gp > 0$ (Inflation)

- Increase in wages or adverse supply shock leads to cost-push inflation but if labour productivity increases as much as labour wage, then there may still be price stability.
i.e. if $gw = gz \Rightarrow gp = 0$.
i.e. there may be no rise in price level.
- This implies, the firm should not pay higher wages to the labours without ensuring improved labour productivity.
If price has to kept low, wages of those workers should be increased whose productivity have increased.
- Those who contribute more to the production process should be rewarded sufficiently.
- If there is no improvement in labour productivity & still more wages are paid then it leads to inflation.
- On the other-hand, if more wages are paid, income of the individuals will rise and consumption demand will rise which will lead to demand-pull inflation.

- If the source of inflation is demand driven then it is demand-pull inflation & if it is cost-driven then it is cost-push inflation.

Demand-pull: Output ↑, price ↑

Cost-push: Output ↓, price ↑.

* Quantity Theory of Money or Monetarist approach

- A/c to the Quantity Theory of Money, inflation is a monetary phenomenon. i.e. Inflation occurs due to the increase in money supply in the economy.
- The general price level is determined by the demand for and supply of money balances in an economy.
- For a particular good, its price is determined by the intersection of demand and supply of the good in market.
- The price of goods determine the value of money in an economy. If the price is high, then the value of money is lower and vice-versa. ∵ The value of money is determined by the total money supply & demand in an economy.
- Money supply (M) is exogenously controlled by the central bank.

- Demand for money (M_d) involves only transaction demand.
- ∵ Supply of money (M) is fixed in a particular time period, a vertical straight line.
- At M_d , this model ~~is~~ takes classical theory basics, ∵ M_d is only transaction demand and does not include speculation demand.
- ~~When~~ When supply of money changes, price level changes given the demand for money.
- Demand for ~~money~~ nominal money balances

$$M_d = kPY$$

(Transaction demand \rightarrow inc. func' of income)
Demand for real money balances

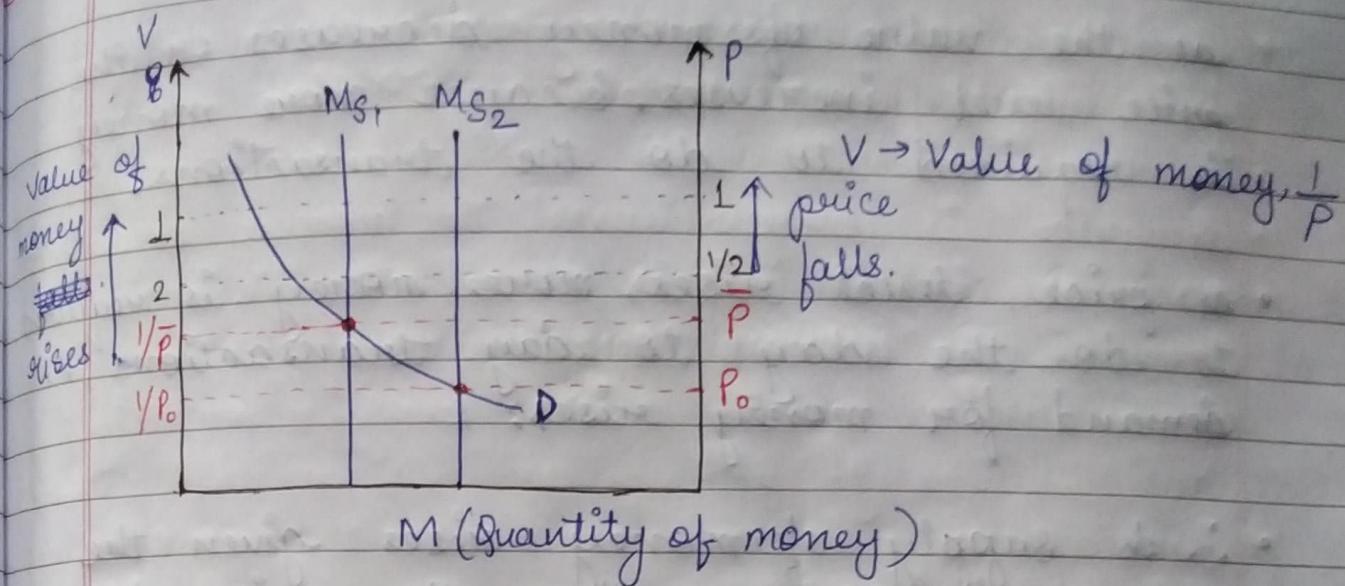
$$\frac{M_d}{P} = KY$$

- At equilibrium

$$M_s = M_d \text{ or } M_s = kPY.$$

$$P = \frac{M_s}{KY}$$

- Behaviour of P in response to change in money stock (M_s) depends on the ~~the~~ behaviour of real income Y . Relative strength of the 2 factors will determine the change in P .



- Higher the value of price prevailing in an economy, lower is the value of money.
- If the price of a good is doubled, double amount of money has to be paid to buy the same quantity of good.
- Price rises, so the good becomes dearer whereas money becomes cheaper.
- There is a certain amount of goods that can be bought with \$1, but when the price level ~~rises~~ rises, less quantity can be bought with the same \$1. ∵ The value of money i.e. $\$1/P$ has decreased.

$$V \propto \frac{1}{P}$$

- Demand for money decreases as the value of money increases, demand for money increases

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as the value of money decreases or the price level increases, because more money is required to do the transactions.

- As price level rises, more money is required to do the day to day transactions, ∴ demand for money rises.
- ∵ As supply of money rises given the demand for money, then the price level rises.
- As money supply increases, M_3 shifts to M_2 and price rises from P_1 to P_0 .
- When the money supply increases, initially there ~~is~~ is excess supply of money in the economy, i.e. people have excess ideal balances. As people have excess ideal balances, they will demand more goods & services, ∴ demand for goods and services will rise.
- But a/c to classical economics, rise in money supply cannot lead to rise in output. Output can be affected only by real factors i.e. by increase in factors of production or inputs. Output cannot rise by rise in supply of money.

- Money is neutral w.r.t the real output. Real output cannot be increased by rise in money supply.
- Excess supply of money given the demand for money which will lead to increase in demand for goods and services. Rise in demand for goods and services given the supply, will lead to increase in price of goods and services. ∴ Price level will rise due to excess supply of money.
- Increased demand for money implies that people will carry out more transactions, for which they will hold greater ideal balances. ∴ Demand for money will increase eventually to the level of supply of money.
- Demand for money becomes equal to the supply of money w.r.t a lower value of value of money and a higher value of price level.
- Because money supply has increased, prices of goods and services will rise, ~~and~~ correspondingly the value of money will ~~increase~~ fall
- If $Y = Y_p$ (full employment output), P is proportionately related to M_s (Neutrality of money) because Y cannot rise further

- And a/c to classical theory, Y is always full employment output, $\therefore p \propto M_s$.
- As price is proportional to money supply, rate of inflation is equal to the rate of growth of money supply.

$$g^P = g^M$$

- Let $k = \frac{1}{10}$, $M_s = 200$.

$$Y = 100, \text{ Hence } P = \frac{M_s}{kY} = 20$$

If $M_s = 300$, with Y unchanged at 100, $P = 30$.

Leading to money demand $(\frac{1}{10} \times 30 \times 100) =$

Money supply (300).

- The proportionality can hold good even if $Y \neq Y_f$.
- If Y is constant and does not respond to the change in M_s .
- Y may be fixed in the short-run (due to given technology, fixed input supply, etc.)
- In the long-run, Y may rise (due to improvement in technology, capital, increase in labour force, etc)

- If Y changes, the equation predicts

$$g^P = g^M - g^Y$$

g^M = Rate of growth of money.

g^Y = Rate of growth of real output

g^P = Rate of inflation

- In the short-run, the proportionality b/w ~~rate of~~ price level & Money supply can be maintained which gives $g^P = g^M$. but in the long-run, when output keeps changing, $g^P = g^M - g^Y$.
- In case of short-run, if money supply rises by 10% then price level is also increased by 10%.
- But in case of long-run, where $g^P = g^M - g^Y$, even if money supply rises, price stability can be maintained. Price level will not rise, if with the rise in money supply, income rises proportionately.
If rate of change of money supply & income is equal, then change in price level is zero.
i.e. if $g^M = g^Y$, $g^P = 0$.
- It is the relative strength of change in money supply to change in income that determines the change in price level. Price level will rise only when $g^M > g^Y \Rightarrow g^P > 0$.

★ Modern Quantity Theory of Money

- Money is treated as luxury good.
- In case of luxury good, when income increases, then the demand for luxury good rises more than proportionately.

Increase in income will lead to more than proportionate increase in the demand for money.

$$\epsilon_{Md} > 1.$$

- If Md is proportional to income, $\epsilon_{Md} = 1$.
- Money is a non-interest bearing asset.
- gP is difference b/w the change in money supply & income. It can be converted to change in money supply & change in money demand.

$\beta gY \rightarrow$ change in money demand.

- In this case,

$$gP = gM - \beta gY.$$
 where $\beta > 1$, which represents the income elasticity of demand for money.
- For maintaining price stability, ($gP = 0$), gM should be greater than gY .

- The above equation suggests that money supply and real income exert opposite pressure on the price level.
- Money supply causes the prices to rise, money demand causes the prices to fall. Net impact depends upon the relative strength of the 2 effects.
- Higher is the money demand, higher is the scope to increase the money supply to keep the price under control.
- Money supply can be increased & in order to keep the ~~inflation~~ inflation rate under control only when β value is very high. If β value is low, then inflation rate cannot be limited by increasing the money supply.
- Rising real income causes demand for real balances or demand for money ~~rises~~ rises. This reduces the inflation potential of money supply. Whenever there is rise in money supply, if there is rise in money demand then inflation can be kept under control.

$g^P = \frac{\text{Growth rate of nominal money supply}}{\text{Growth rate of real money demand}}$

If growth rate of money supply $>$ growth rate of money demand, inflation rate is high &

vice-versa.

- * Rate of inflation can be controlled by controlling the money supply in an economy.
- When we consider demand for money as BgY , we consider it as a func' of income only. But there may be other factors affecting demand for money as well.
- Rate of inflation depends upon the relative strength of demand and supply of money.
Rate of inflation can also be kept under control if money ~~supply~~ ^{demand} is increased sufficiently corresponding to rise in money ~~supply~~.
- Factors affecting demand for money.
 - i) Real income.
As real income rises, demand for money rises. Money demand is either proportionate or more than proportionate to real income.
 - ii) Cost of holding money
Interest rate.
 - iii) Financial innovations
 - iv) Institutional changes.
 - v) Expectation for future inflation.
- Interest money is sacrificed when people decide to hold more ideal balances.

- \therefore Higher is the interest rate, lower is the demand for money. Opportunity cost for holding money rises as interest rate rises.
- \therefore As i rises, real money demand falls. \therefore Inflation can rise with the rise in the interest rate, as money demand falls.
- But Rise in interest rate causes money demand to fall, and fall in money demand given money supply can lead to rise in inflation.
- ~~Use~~ Use of credit cards decrease the ~~need~~ need for holding cash for transaction purposes. This will lead to fall in demand for money, thus rise in inflation.
- If inflation is expected to rise in the future, then people will buy the goods & services at present time which will ~~decrease~~ as the people have lesser demand for money in the current time & thus lead to inflation.
- Instead, if the money supply is high in the current period, then if inflation rate is expected to rise in future, then people will buy goods & services and ideal balances will fall leading to fall ~~in~~ in money demand. and thus inflation rate will rise in the current period as well.

- ∵ if the inflation is expected to rise in the future, then it will also rise in the current period due to fall in ideal balance in the current period as people will buy more goods in the current period.
- ∵ Both demand & supply for money have to be changed in order to maintain price stability.