

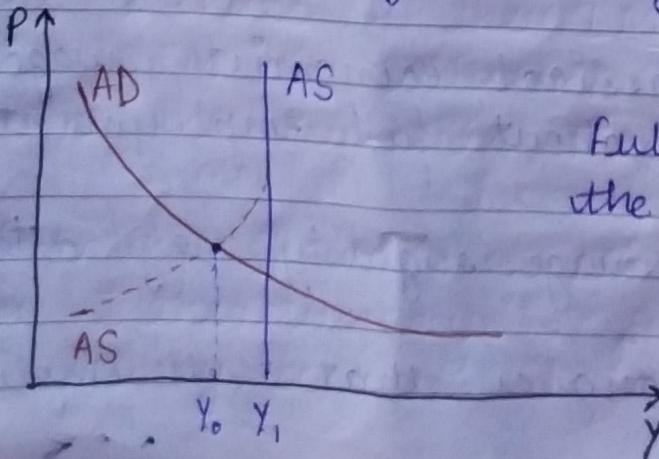
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when the price rises.

- Upward sloping AS curve: Money wage fixity and diminishing MPP.
- ~~However,~~
- Equilibrium below full employment is the rule.
- However, full employment equilibrium can be attained if there is a sufficiently large ~~the~~ rightward shift in IS curve to cause AD curve to shift to the level where it intersects AS curve at the full employment level.
- IS curve will shift towards right when there is fiscal intervention i.e. autonomous expenditure (A_0) must rise.
- Even with flexible prices, we ~~can~~ cannot attain full employment output.
- * Wage Price flexibility and Full Employment Equilibrium
- According to Classical economists, wage-price flexibility brings about full employment eq.
- However, money wage rigidity may deter it.
- Keynes further argues that full employment

eq. may not be attained even if money wage is flexible downward.

- Classical economists concluded that the eq. level of output would be only at the full employment level.
- The ~~AD~~ curve is throughout unitary elastic.
- From the quantity theory of money assumption that the velocity of money is stable.
- Given V , MV is the total spending.
 $V \rightarrow$ No. of times money changes hands.
 ∵ Money spending is known as soon as $M = (Ms)$ is known.
- Because $MV = PY$ & $AD = MV$ (Total spending), any indicated MV or AD will buy various quantities of Y depending on P .
- as MV is constant ∴ $PY = MV$ is a rectangular hyperbola. If price increases then income must fall proportionally.



Full employment Eq. in
the Basic Classical model

- Money wage rigidity - Money wage cannot be revised downward due to presence of labour unions, etc. i.e. money wage is inflexible downward.
Money wage rigidity and diminishing MPPL will cause AS curve to be upward sloping.
- For upward sloping AS curve, if ~~follow~~ price falls, quantity supplied will fall.
- With w remaining constant, if ~~p~~ price level falls then (w/p) , real wage increases, lesser amount of labour will be employed by a firm. As they employ less labour, they will supply less, ∴ output will fall.
- If price falls & money wage is constant, then the firm cannot supply the full employment output i.e. output will fall. For output to remain same as full employment output, wage should be ~~app~~ allowed to fall along with price.
- If the wage is rigid and price falls, then eq. is attained at y_0 output which is less than full employment output y_1 .
- Full employment output can be attained with money wage flexibility, ~~was~~ price flexibility & diminishing MPPL. Any relaxation in these assumptions will result in less than full

employment eq.

- The various possible combination of Y and P consistent with a given AD curve are identified in the classical model by a curve with unitary elasticity that graphically appears as a rectangular hyperbola.
 - The classical theory assumes a flexible money wage rate.
 - The figure follows from combining the AD curve of the basic classical model with the Keynesian assumption of a downwardly inflexible money wage rate.
- ★ Rejection of the Quantity Theory of Money and Underemployment Equilibrium under Flexible money wage Rate.
- If quantity theory of money is dropped, then even if money wage is flexible, full employment eq. cannot be attained.
 - The shape of the LM curve derived from the QTM is different from that derived from the Keynesian Theory.
 - Quantity theory of Money only accounts for transactional & precautionary purposes of money. because it considers money

Demand to be direct func' of income. It does not consider the speculative demand for money.

- A/c to Keynes

$$\frac{L}{P} = M_d = K(Y) + h(r)$$

\rightarrow func' of Y & r .

whereas

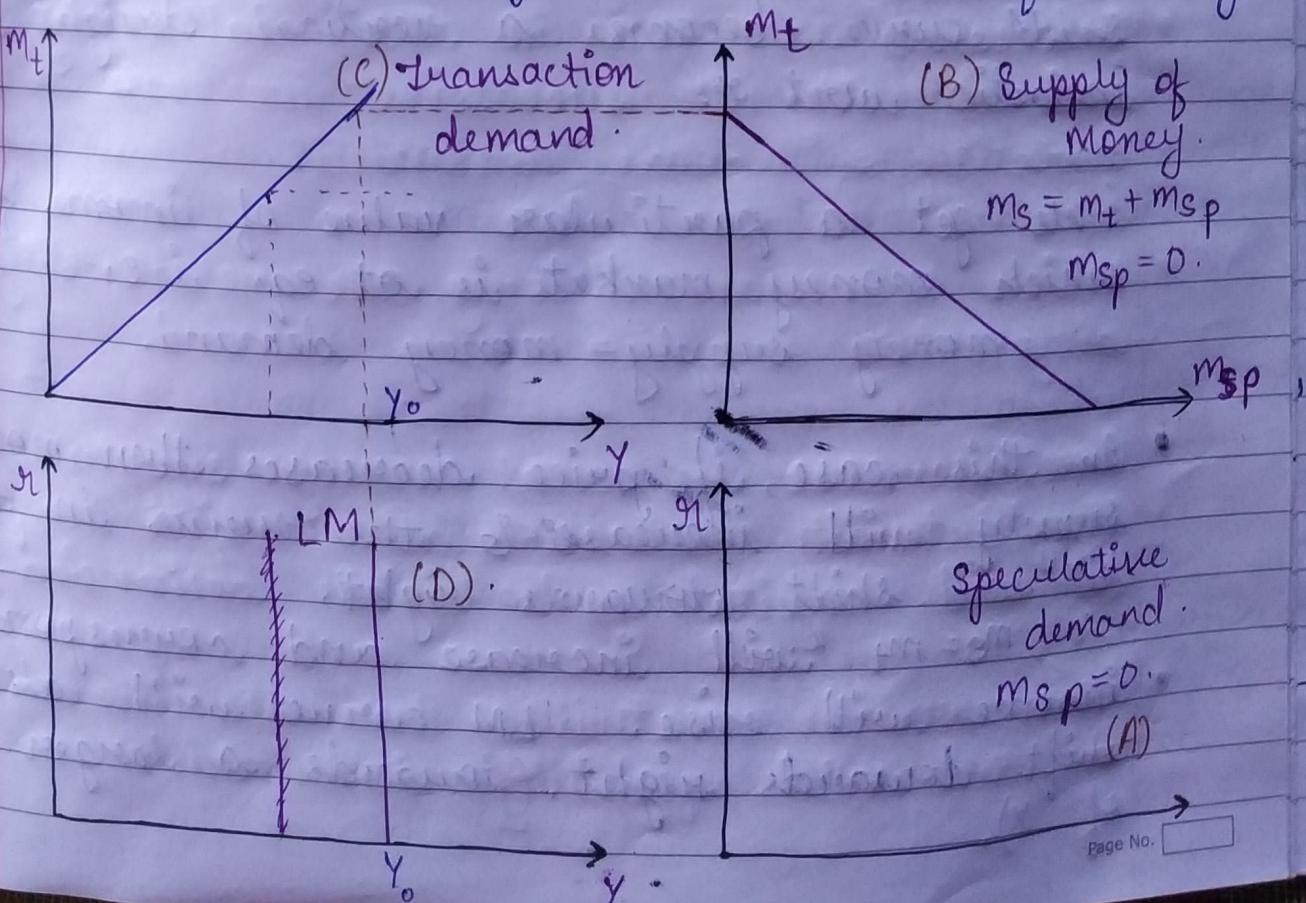
- A/c to QTM

$$\frac{L}{P} = M_d = K(Y)$$

\rightarrow func' of Y only.

Demand for money is interest inelastic, for a given price level, LM curve based on QTM is a vertical straight line or perfectly inelastic.

(~~then~~ There is no speculative demand for money).



(A) Speculative demand for money.

In QTM, $m_{sp} = 0$. There is no demand for money that is interest sensitive.

(B) Supply of Money

Total demand for money is only transaction demand.

$$\therefore m_t = M_t.$$

∴ Supply of money is equal to transaction demand for money.

$$\text{As } m_{sp} = 0 \quad \therefore M_t = m_s.$$

(C) Transaction demand

Corresponding to $M_t = m_s$, the income is Y .

(D) Money market equilibrium

$$M_t = K(Y) + h(r); h(r) = 0$$

∴ LM curve becomes a vertical straight line, inelastic w.r.t r .

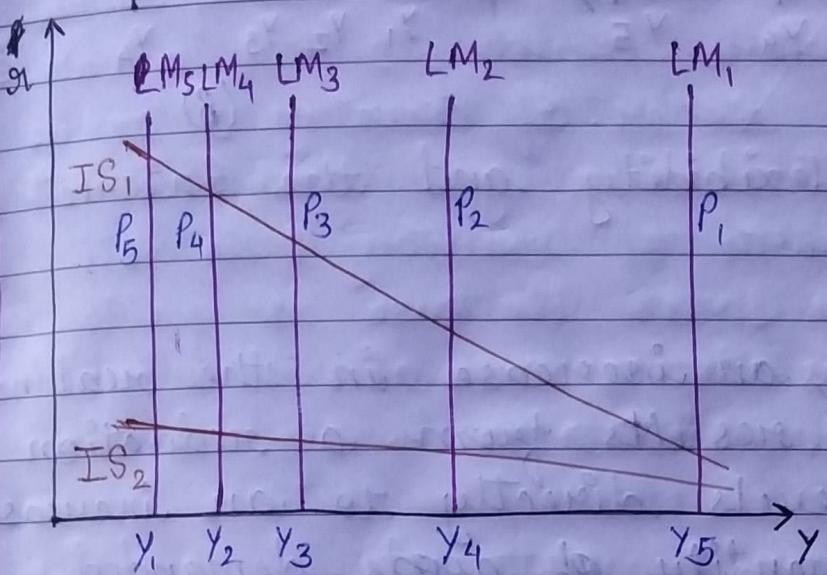
We get a particular value of income for which money market is at eq. i.e. money supply = money demand.

- In this case, if price decreases then money supply will increase & the curve in part (B) will shift towards right.

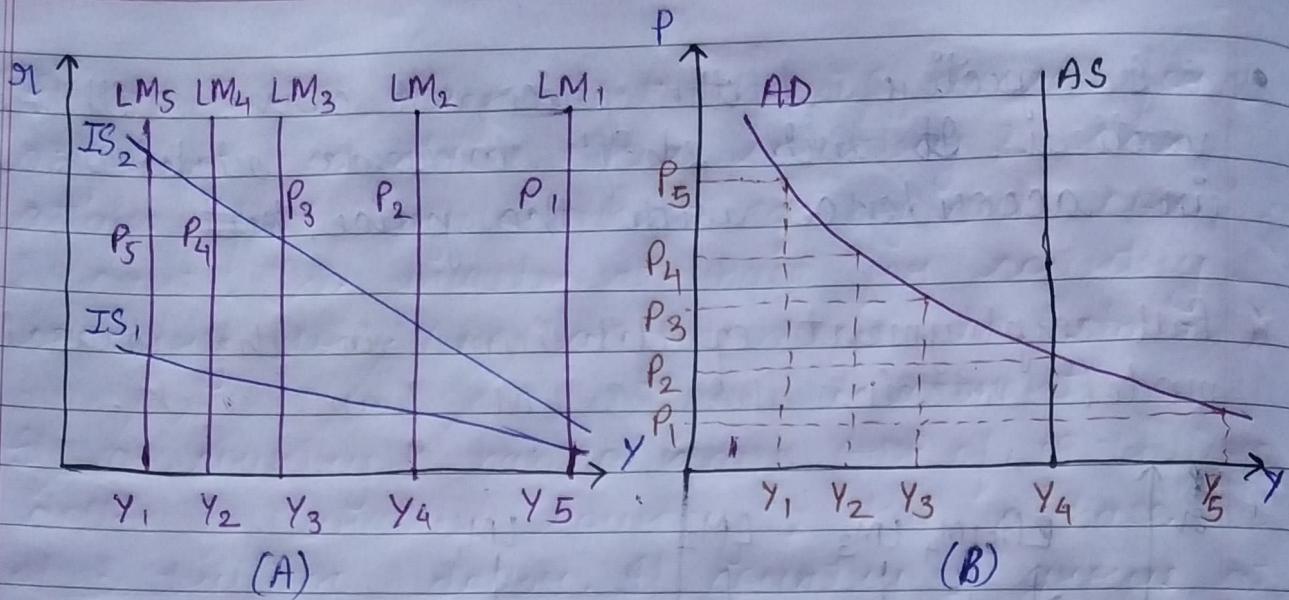
$\therefore m_s = M_t$ will increase and correspondingly income will rise. ∴ LM curve will also shift towards right. (towards a larger value of Y).

- irrespective of the price, LM curve will remain vertical. It will shift towards right or left in accordance with the price.

- * full employment equilibrium in the classical model within the IS-LM framework.

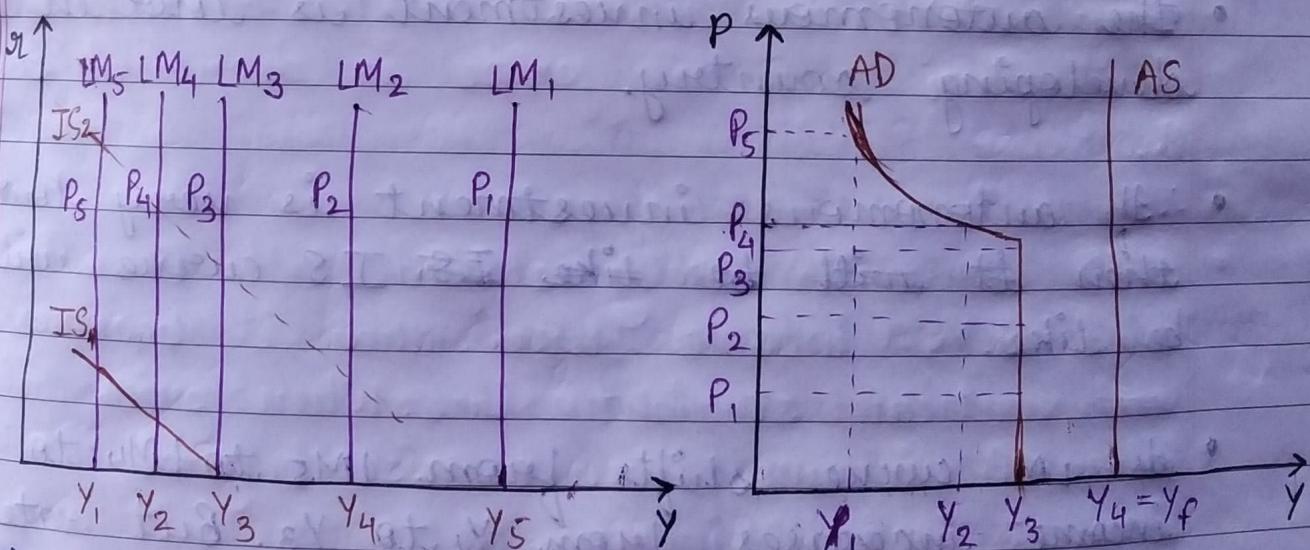


- if price falls, LM curve shifts & eq. income increases and rate of interest falls. But change in rate of interest has no effect ~~on~~ whatsoever on money demand or money supply
- IS₁ & IS₂ curves will give the same AD curve. ∵ we get the AD curve irrespective of the IS curve.
- The AD curve we get is unitary elastic.
If we either directly follow QTM or apply QTM in IS-LM framework, we get the same unitary elastic AD curve.



- ★ Wage-Price Flexibility and the Interest Rate Effect
 - In the QTM, an increase in the real money supply that results from a reduction in the price levels directly to an increase in the ~~quant~~ quantity of goods demanded.
 - Successive increases in the real money supply lead directly to successive increases in the quantity of goods demanded.
 - Under Keynesian theory, the relationship is different.
 - Here, increase in real money supply causes the interest rate to fall, leading to increase in the capital ~~goods~~ goods demanded.
 - This would eventually lead to increase in the total quantity demanded.

- This difference in approach could be one of the reasons why full employment may not be attainable even if wages and prices are flexible.
- Inconsistency between saving & Investment.
- There may be 2 reasons that full employment eq. cannot be attained even if there is wage flexibility:
 - (i) Inconsistency b/w saving and investment.
 - (ii) Presence of liquidity trap.
- Full employment eq. cannot be achieved if the IS curve is very close to the axis.



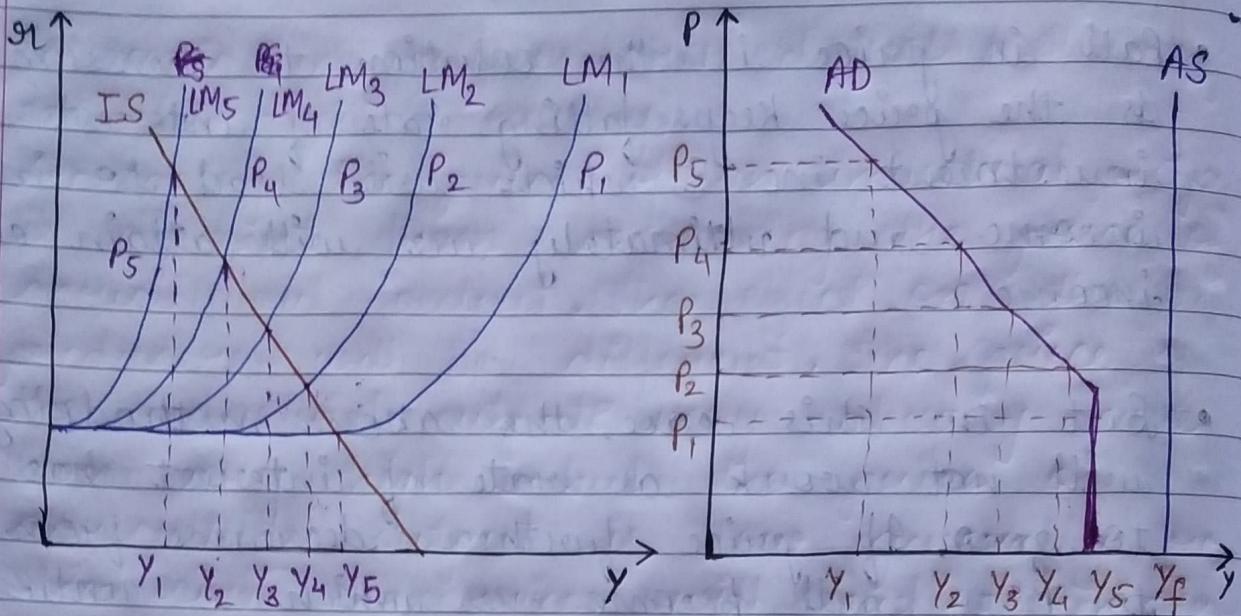
- The position of the IS curve depends on the value of autonomous demand.
- IS curve can be close to the axis possibly because I curve is close to the axis. If I is closer to the axis, then the value of autonomous investment is very low.

- If IS_1 & IS_2 represent the IS curves for 2 different countries. Then country 2 can attain full employment eq. ~~by~~ but country 1 can't. The investment base for country 1 is very low (i.e. autonomous investment) investment
- If a country 1 has a base ~~of~~ of 18 trillion dollar & another country 2 has a base ~~of~~ of 3 trillion dollar. If country 1 grows at 3% per year & country 2 grows at 5% per year. The growth of country 2 is still less than country 1 as its base is quite less. Country 1 has to grow at a much faster rate in order to catch up.
- The autonomous investment is low in developing country.
- If autonomous investment is very low, then ~~it will be like~~ ~~IS~~, IS curve will be like.
- As LM curve shifts from LM_3 to LM_4 to LM_5 , income increases from Y_1 to Y_3 . But rate of interest also decreases gradually and become 0 at Y_3 . \therefore Further fall in price cannot be achieved.
- In this case, ~~eq.~~ full employment income cannot be achieved via fall in price.

- Fall in price is the solution to recession.
As the price keeps falling, rate of interest dec., investment inc. which will lead to inc. in income and ultimately we will attain eq. income.
- But in this case, the above methodology will not work as rate of interest has fallen to zero. If price further decreases from P_3 to P_2 , it will become -ve. which is unlikely.
- $\therefore AD$ curve will be unitary elastic until P_3, Y_3 and below P_3 price, it will become a vertical straight line. It will not reach Y_4 .
- If inflation is kept under control, then full employment eq. can be reached. i.e. full employment eq. can be attained via reducing prices. This is not a valid argument in case of economies with very low autonomous investment base. Money market change is not supported by the goods market.

* Liquidity trap

- Liquidity trap stage arises much before the rate of interest reaches zero.
- Rate of interest falls as price falls, but there is a lower limit ~~to the~~ for rate of interest.



- As price falls from P_5 to P_1 gradually, rate of interest falls too and correspondingly income rises. But at P_1 , the IS curve is intersecting the LM curve in the liquidity trap stage i.e. interest rate cannot fall in further even if price is decreased beyond P_1 .
- \therefore AD curve is -vely sloped till P_1 price level and y_5 income level, then it becomes a ~~not~~ vertical straight line. When price falls below P_1 , income cannot rise beyond y_5 \because it cannot reach income y_f .
- Therefore if either of the above 2 cond's arise, full employment eq. cannot be reached even if there is wage-price flexibility.

If price falls, demand for goods and services rise. And price falls due to fall in money

wage, and as demand for goods and services rise, we might attain the full employment eq. income.

* Price Deflation vs Nominal Money Supply Expansion: A Policy Debate.

- In general, when price level falls, demand for goods and services increase. Not directly, but through increase in real money supply.
- Real money supply can increase if either price level falls or nominal value of money supply rises.
- Wage and price cut may meet the same goal as direct increase in money stock can.

Wage and price cut involves:

(i) Institutional barriers

Reduction in wages will lead to fall in price. For any economy, increase in wage is much easier than decreasing wages. Price of the output cannot be decreased unless wages of the workers is reduced. Cutting down wages will give rise to protest from different labour unions. Similarly, firms may not be willing to reduce the price of their products. ∴ These are the institutional barriers which make price & wage cut difficult.

(ii) Economic inequalities and distress (all may not be affected equally).

Decreasing the price of an industrial output is different from decreasing the price of agricultural output. The effect on the diff. producers will be different. The price of the industrial output may already have been very high ~~is~~ but the price of agricultural output is ~~too~~ generally low.

Reducing the prices will lead to inequality & distress among the farmers. ~~Similarly,~~ reducing the wages or salary of the high income group may not have much effect, but reducing the wages of small labours will ~~not~~ cause much distress. \therefore wage & price cut may affect diff. sections of population differently.

(iii) Expectation effect.

When there is a fall in price, then people may expect it to fall further and may postpone their demand for that good. \therefore price change will not lead to increase in demand of the product which was required.

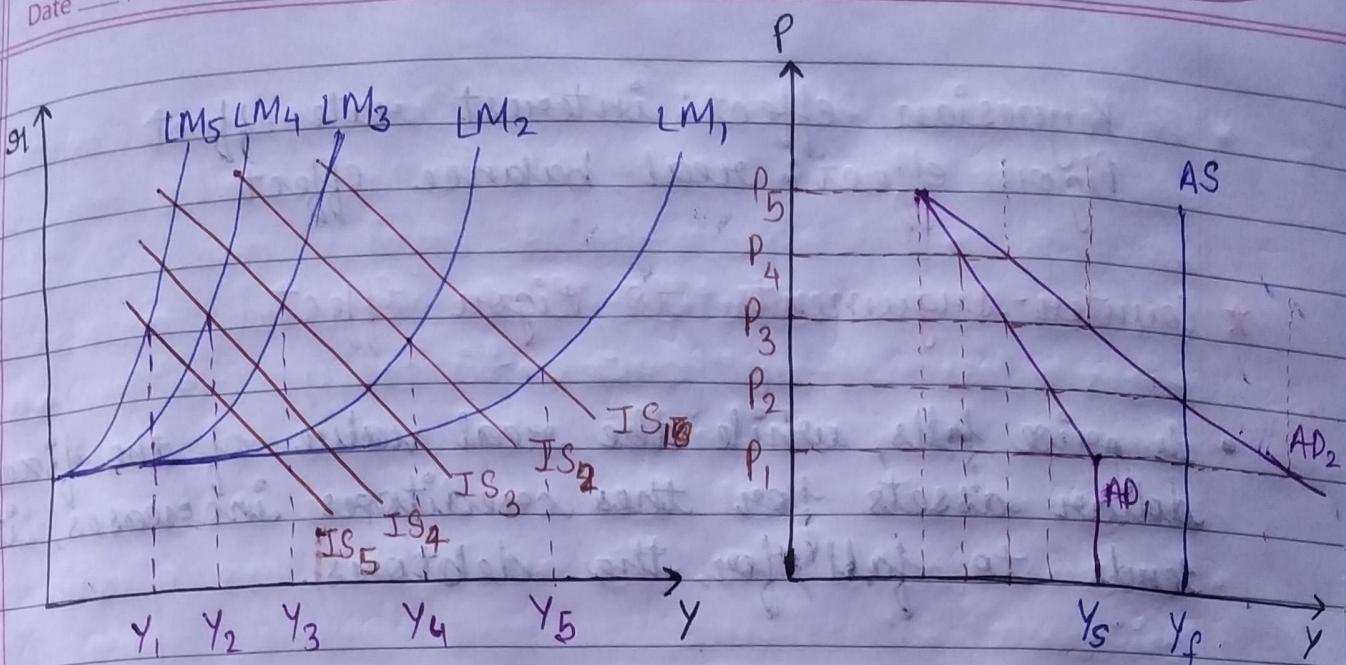
- The above barriers are faced by an economy ~~for~~ for cutting price & wages.
- Hence, one may go with the direct increase in money supply.

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* Wage-Price flexibility and the Pigou effect

- If the limit to the reduction in the interest rate by the liquidity trap is reached before the quantity of goods demanded can be raised to the full employment level or even if a reduction in the interest rate to zero is unable to raise the quantity of goods demanded to the full employment level, wage and price flexibility working through the Keynes effect is repudiated as the means of achieving full employment level of output.
- A decline in wages and prices exports its influence only through the interest rate.
- An attempt to counter the Keynesian argument and rehabilitate the classical theory's conclusion of automatic full employment through wage price flexibility is found in the Pigou effect or real balance effect.
- Lower prices cause the real value of the fixed dollar assets (money, savings deposit, bonds, etc.) to rise.
- If the price of a commodity decreases, then more of its quantity can be bought with the same amount of money than before. It can be thought as the value of money has increased.

- If price level falls, the value of money, saving deposits, bonds rise.
- This would cause the owners of such assets to be less anxious to build up such assets. Because people will be able to get more commodities even in less amount of money.
- They tend to increase their consumption from their current incomes and decrease their savings.
- This would cause rightward shift in the IS curve.
- If the IS curve was passing through the liquidity trap stage or was so close to the axes, then it will shift towards right & now the full employment income can be attained.
- New AD curve can be derived towards the right of the previous one.
- Hence, full employment eq. income can be attained.
- A/c to Keynes, when price falls, investment demand rises. A/c to Pigeo, when price falls, investment demand rises.



- IS eqⁿ does not contain price. Still it shifts to the right because consumption demand is increasing.
- At P_5 , LM is LM_5 & IS is IS_5 & as price falls from P_5 to P_1 , LM curve shifts from LM_5 to LM_1 & IS curve shifts from IS_5 to IS_1 .
- A/c to Pigou, when price falls, not only LM, but IS curve will also shift towards right.

$AD_1 \rightarrow$ A/c to Keynes.

$AD_2 \rightarrow$ A/c to Pigou Effect.

- Price fall is not only a money market phenomena but it also affects the good market. ∴ It might be possible to achieve full employment income via price fall.

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Keynesian effect: interest rate effect

Pigou effect: real balance effect

* Counter-arguments to Pigou Effect

- As price falls, while the real value of the fixed dollar assets for the creditors increases, it tends to fall for the debtors.
- Those who deposit money in the banks are creditors or lenders. Those who buy govt. or corporate bonds are creditors or lenders.
- Those who take loan from a bank or sell bonds are the debtors or borrowers.
- If the real value of the money kept in bank increases, then the borrowers have to return more to the bank. The real value of the obligations to be made by the debtors will increase. They have to pay more money to the banks.
- ~~The~~ Debtors and creditors are the consumers in the goods market. The consumption expenditure of the creditors will increase ~~the~~ because the real value of their fixed dollar asset is increasing but corresponding the consumption expenditure from their income ~~at~~ on the part of the debtors will decrease.

- The rise in APC of the creditors can be upset by the fall in APC by the debtors.
- The rise in consumption of the creditors may be nullified by the fall in consumption of the debtors. This may lead to no change in consumption.
- If the debtor is the govt., i.e. the govt. is borrowing from the public by floating bonds. Then the govt. will have to pay higher returns to the public because of the higher real value of the fixed dollar assets.
- But the govt. may not reduce its expenditure because of the higher obligations it has to pay in order to take welfare measures.
- If the fixed dollar obligations are of the government, the increase in the real value of the government obligation may not lead to fall in government expenditure.
- ~~In such case,~~ In such case, the total consumption expenditure of the public will increase as the govt. has certain committed expenditures and moral obligations to spend which will prevent it from reducing govt. expenditure.

- How much fall in price is sufficient to achieve the rise in demand [10% fall (mild deflation) or 50% fall (hyper-deflation)].
Due to price elasticity of demand, demand rises less than proportionally with fall in price. ∵ For demand to increase substantially price must fall by a large amount i.e. hyper deflation. Demand is less elastic w.r.t price.
- Role of expectations
When price starts falling, people expect it to fall further in future & may postpone their demand. Instead, if the price is rising, people expect it to rise every other day, ∵ they buy the product in advance.
- In case, the people view the fall in price as temporary and hence, the rise in the real value of the fixed dollar assets may be conceived as temporary.
- The effect of the price fall on the private creditors and debtors may be cancelled out or ~~as~~ private debtors may realize greater pain, while private creditors may not increase their consumption demand if the fall in price is temporary.

- If demand is less elastic to price, then price fall may not be the solution to increase demand.
 - A/c to Keynesian effect, price fall has a bearing only on the market whereas a/c to Pigou effect, price fall has a bearing on both money market as well as goods market.
 - The application of the Keynes & the Pigou effect may differ from context to context & also on the time period. But in general, when price falls, demand rises.
- * Wage-Price flexibility and other effects
- Income - Redistribution effect
 - Wage and price deflation involves some redistribution of real income in favour of fixed-income groups.
 - When wages decrease, share of income going to fixed-income group will increase while that going to the labourers (daily wage earners) will decrease).
 - Fixed-income group includes interest, rent, pension earners or salaried government employees.

- The share of the total that goes to wage recipients will decrease, and the share going to recipients of interest, rents and pensions will increase. As the real value of the fixed income will increase, when price deflation occurs.
- The impact of the price fall on the income distribution flows is not very clear.
- When inflation occurs, poor population is affected more worse than the rich population, ~~some is~~ If the wage is not inflation indexed, poor will not loose their income if they are wage earners. But if the poors are earning some fixed income from any source, then if there is iflation, their real income will decrease.
- In contrast to the above case, deflation is better for poor population.
- To the extent, the redistribution of the income is favour of the lower income groups, some rise in consumption is expected.
- The MPC of the poor is greater than that of the rich. If the income redistribution is in favour of the poor, the consumption will rise.

- Whereas, the MPS of the rich is greater than that of the poor, if the income ~~redistribution~~ redistribution is in favour of the rich, the consumption will fall.

Tax and Transfer-Payment Effects

- Wage-price declines due to tax effect may be expected to favourably affect ~~some~~ consumption.

~~income rate~~
Progressive tax structure: Tax increases with income. (Tax \propto Income)

~~Proportional tax structure:~~

Regressive income tax structure: Tax rate decreases with increase in income, Tax rate is inversely proportional to income.

Proportional income tax structure: Tax rate is constant irrespective of income.

- In ~~proportion~~ progressive income tax structure, the rich population pay more amount of tax than the poor population.

- With the progressive income tax, deflation automatically shifts the taxpayers into lower brackets and reduces the fraction of their real income that is paid in income taxes.

- * Even if the tax rate is same for rich & poor people, the amount of tax payed by the rich

people is much more than the poor, as their income is much higher.

- And in the case of progressive tax structure, the rich people ^{pay} much more than the poor, both in terms of fraction of income & amount of tax.
- Tax rate: Fraction of income payed as tax.
Constant or Lumpsum tax system: The whole population pays the same amount of tax irrespective of their income.
- When there is inflation, the income of the taxpayers will rise, and following the progressive tax structure, the people will have to pay at a higher tax rate. ∴ their disposable income will decrease.
- Instead, when there is deflation, tax rate will decrease, ∴ disposable income will rise. This increases both disposable income & consumption as consumption is a direct func' of disposable income.
- As some transfer payments are in fixed dollar terms, a price fall raises the real income of the recipients. As price falls, purchasing power of the people will rise & their consumption will rise.

- Counter argument
We are going for price deflation as a solution to recession, i.e. to increase demand which in turn will increase a/c to keynesian and Pigou effect.
- Decreasing price increases the real money supply which ultimately lead to increase in income via keynesian or Pigou effect, ∴ increase in real money supply is necessary for the economy to realise higher demand.
- Instead of wage-price cut, there can be directly fiscal expansion, which could serve the same purpose.
- Wage & price cut invites huge resistance from the population & also causes distress. Better solution is to directly increase the nominal value of money supply i.e. expansionary monetary policy.
- Price effect causes favourable tax effect & favourable transfer payment effect which increases ~~#~~ demand.
- The govt. can directly go for tax & transfer effect or expansionary fiscal policy. i.e. govt. can directly reduce the taxes & increase the public expenditure.

- Expansionary fiscal measure: Increasing transfer payments and reducing taxes.
- IS curve can shift towards right due to price fall or expansionary fiscal measure.
- Foreign Trade Effects:
- If the price level of an economy falls with the price level of other economies remaining unchanged, the exports by that economy will become cheaper while the imports will become dearer or expensive.
- A decline in a country's prices related to the level of prices in other countries encourages exports and discourages imports.
- This increases the net export component of the aggregate spending,

$$X - M = \text{Net foreign trade}$$

will increase.

- A rise in the $(X - M)$ will shift the IS function to the right.
- But this effect is not uniform for all economies across the globe. It depends on whether the country can export its goods whether its goods and services are

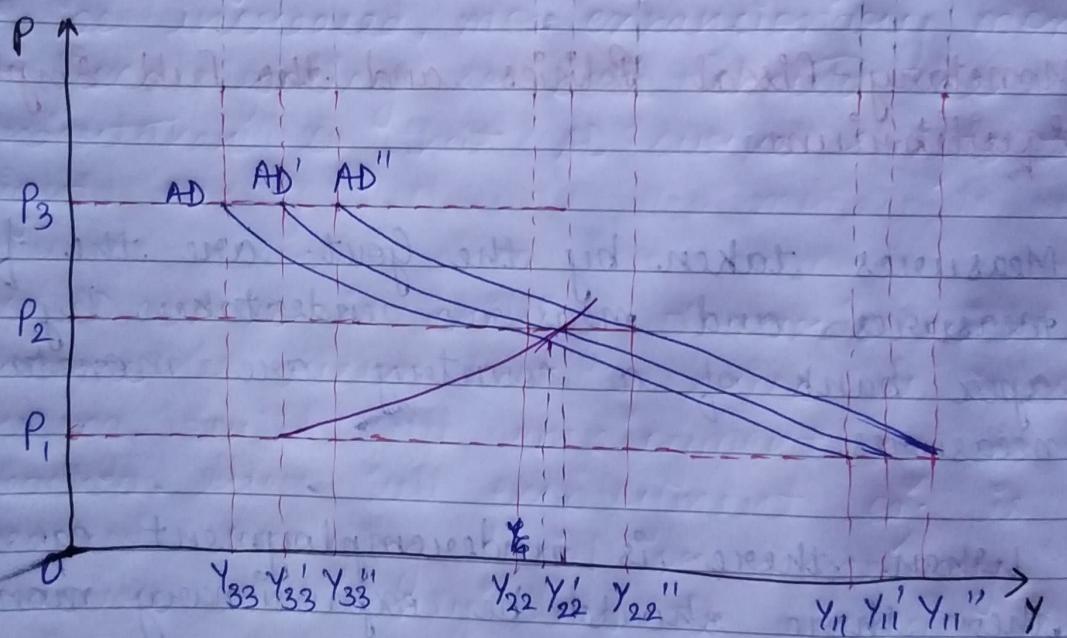
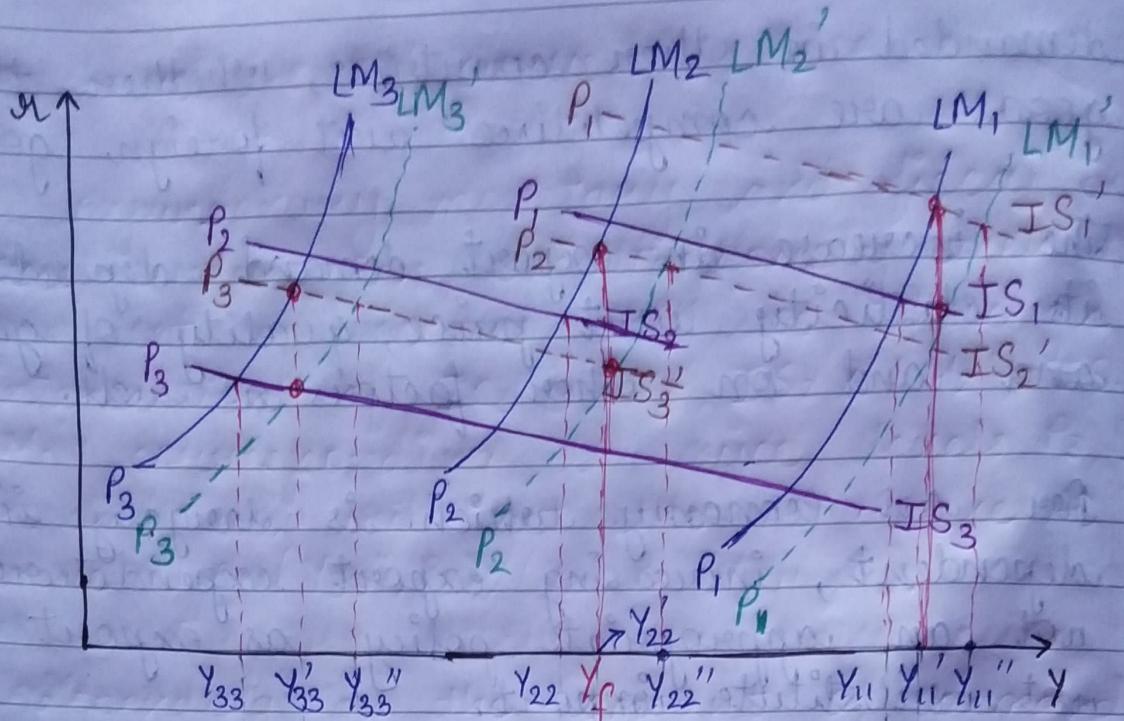
demanded in other countries, whether the goods are competitive w.r.t foreign goods.

- The increase in export demand depends on its elasticity w.r.t price, quality of good and on other factors as well.
- For an economy which is largely import dependent, increasing export expenditure is not an appropriate policy as export will not substitute import.

* Monetary-Fiscal Policies and the Full Employment Equilibrium

- Measures taken by the Govt. are the fiscal measures and measures undertaken by the apex bank of a country are monetary measures.
- When there is underemployment eq. income, then there should be expansionary monetary and fiscal policy.
- If full employment eq. income is not achieved automatically then some measures have to be taken namely monetary and fiscal measures. Here, the AS curve is upward to the right. Shifts in the AD curve produced by shifts in the LM and IS curves affect not only the output level but also the price level.

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$LM_3 \rightarrow P_3, LM_2 \rightarrow P_2, LM_1 \rightarrow P_1, P_3 > P_2 > P_1$
 $IS_3 \rightarrow P_3, IS_2 \rightarrow P_2, IS_1 \rightarrow P_1$

- As price falls from P_3 to P_1 , LM curve shifts from LM_3 to LM_2 to LM_1 & IS curve shifts from IS_3 to IS_2 to IS_1 .

Initially corresponding to $P_3, P_2 \& P_1$ we get incomes through the intersection of LM_3 & IS_3 and so on.

\therefore we get the AD curve AD .

$(Y_{11}, P_1), (Y_{22}, P_2) \& (Y_{33}, P_3)$.

If there is expansionary monetary measure, nominal money supply will inc. and so will the real money supply. LM curves will shift towards right.

LM_3 to LM'_3 , LM_2 to LM'_2 & LM_1 to LM'_1 for prices $P_3, P_2 \& P_1$ respectively.

Now we will get diff. income levels ~~corresponding~~ corresponding to intersection of $LM'_3 \& IS_3$, $LM'_2 \& IS_2$, $LM'_1 \& IS_1$. \therefore we will get the AD curve AD_2 .

The same income levels can be achieved via expansionary fiscal policies i.e. shifting of IS curve towards right. $\therefore IS_3$ will become IS'_3 , IS_2 will become IS'_2 & IS_1 will become IS'_1 . And the new income will be at intersection of $IS'_3 \& LM_3$, $IS'_2 \& LM_2$, $IS'_1 \& LM_1$, which are the same as before i.e. Y_{33}', Y_{22}' & Y_{11}' .

And we get the AD' curve $(Y_{33}', P_3), (Y_{22}', P_2) \& (Y_{11}', P_1)$.

\therefore If only fiscal or only monetary measure is undertaken, then we can get the same

AD curve i.e. AD' curve.

- If expansionary monetary and fiscal policies are undertaken simultaneously then the new set of incomes will be through intersection of IS_3' & LM_3' , IS_2' & LM_2' , IS_1' & LM_1' corresponding to price levels P_3 , P_2 & P_1 . and we will get the AD curve AD'' curve i.e. (Y_{33}'', P_3) , (Y_{22}'', P_2) , (Y_{11}'', P_1) .
- Depending on the amount of demand to be increased, more expansionary monetary or fiscal policy or both should be undertaken so that AD curve shifts toward right.
- As AD curve is shifting towards right, eq. income is rising but eq. price is also rising until full employment eq. is reached. After full employment eq. is reached, applying fiscal or monetary measure will only lead to increase in price.
- The positions of the IS and LM curves are affected by the changes in the price level, to trace the process by which monetary and fiscal policies raise the level of output, allowance must be made for the changes in the price level that may occur as a result of these policies.