MACRO - ECO - Dornbusch, F & Startz (11 e)

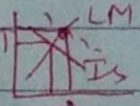
①

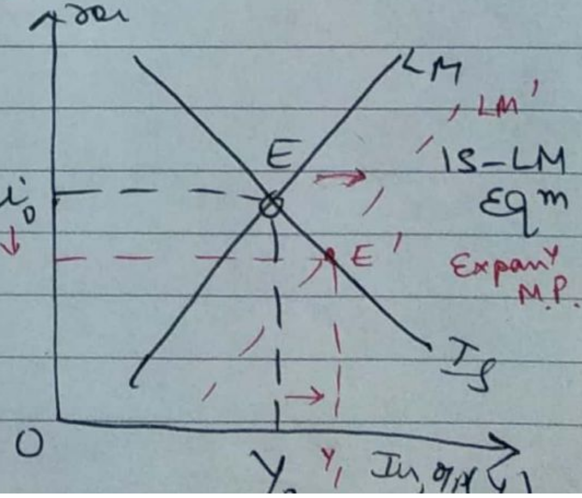
From the desk of (Chp 11): "Monetary & Fiscal Policy" DATE

In this chp, we use the IS-LM model to show how monetary & fiscal policy work. These are 2 main macro-eco. policy tools of the govt. Both can be used to stabilize the economy. Fiscal policy has it's initial impact in the gds mkt, and mon. policy has it's initial impact mainly in the assets markets. But because the gds & assets mkts are closely interconnected, both mon. & fiscal policies have effects on both the level of O/P & interest rates.

IS/LM We know that IS curve represents eqm in the gds mkt. The LM curve rep's eqm in the money mkt. The intersection of the 2 curves dets. O/P & int. rates in the SR, ie, for a given pc level. Expansionary mon. policy (ie ↑ M_s $(\frac{M}{P})$) moves the LM curve to the rt., raising inc. & lowering int. rates. Contractionary mon. policy (ie ↓ M_s, ie Y↓ roi↑) moves the LM curve to the left, lowering income & raising int. rates.

Expansionary fiscal policy (eg ↑ $\bar{G}$) moves IS curve to the rt., raising both inc. & int. rates. Contractionary F.P. (↓ $\bar{G}$) moves the IS curve to the left, lowering both income & int. rates.





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"Monetary Policy"

Mon. Policy is the policy of the central Bank)) Govt (& the monetary authorities) ((to control & regulate the (qty of) ss of money in the economy||, structure & level of roi and the exchange rate to achieve predefined macro-eco. objs|| The Govt uses both quantitative & qualitative msres to control the monetary system & the above monetary magnitudes.

The qtve msres include -

a) Open mkt operations
b) Bank rate
c) Cash reserve Ratio

The qltve msres include:

a) Credit rationing
b) Moral Suasion
c) Direct Controls.

- The CB controls MS mainly ~~thru open mkt operations.~~

((The C-Bank conducts(uses) mon. policy mainly thru open mkt operations. (tho' there are other msres also). Eg Bank rate & CRR

Working of open mkt operations :

→ Transmission mechanism

In this section, we will study the impact of monetary policy (via open mkt operations) on the level of inc. & O/P.

Example In an open mkt operation, the central bank of the economy buys)) govt securities bills &((bonds, in exchange for money, thus

* The asset mkts adjust immed. & roi ↓ bet E & E'.

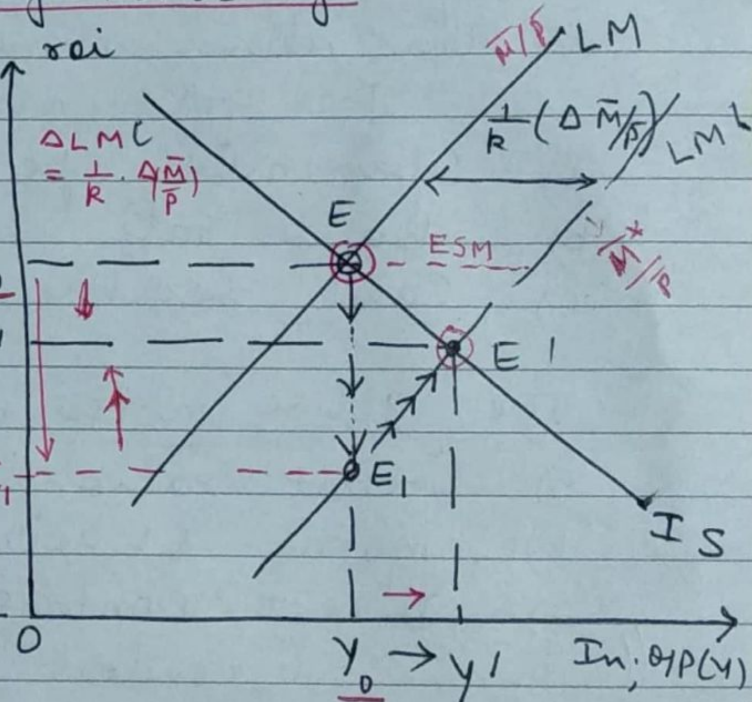
3

Buys bonds ↑ Stk of money | increasing the stock of money in circulation or the c. bank sells govt securities, bills & bonds in exchange for money paid by the purchasers of the bonds etc, thus reducing the stock of money in circulation.
Sells bonds ↓ Stk of m.

√ Effect of Expansionary M.P. → through open mkt op — C Bank purchases bonds

Fig shows the working of open mkt ~~operations~~ purchases of bonds by the c. bank.

$\frac{\bar{M}}{\bar{P}}$ The initial real money ss is $\bar{M}/\bar{P}$ giving us LM_1 curve. The initial eqm position is defined by E, where IS curve intersects the LM curve. ∴ Initial eqm level of inc is OY_0 and eqm roi is i_0.



Purch. Bonds Sup. central bank purchases bonds under

$\bar{M}$↑ it's open mkt operations. This will ↑ the nominal stock of money in the ecoY, say from $\bar{M}$ to $\bar{M}^*$. Given the pc level, $\bar{P}$, the real qty of

$\frac{\bar{M}}{\bar{P}}$↑s money supplied ↑es from $(\bar{M}/\bar{P})$ to $(\bar{M}^*/\bar{P})$. This causes LM curve to shift stwds from

Q Bonds ↓ LM to LM'. * [when the C. Bank purchases

S_B↓ bonds the qty of bonds avail. in the mkt

P_B↑ falls (D_B^c↑) leading to an ↑ in ~~their~~ bond pcs,

roi↓ or lower their yield — only at a lower int. rate

This causes LM curve to shift rightwards from LM to LM'. The asset mkts adjust immediately & roi declines from E to E_1. So the new eqm will be at pt E' with a lower interest rate & a higher level of income.

i ↓s
Y ↑s

Process of adjustment

Let's consider the process of adjustment to the monetary expansion. At the initial eqm pt E, the increase in money supply (due to purchase of bonds by the central Bank) creates an excess supply of money. ie D_{money} < supply of money. Public adjusts to this by trying to buy other assets eg Bonds. In the process, demand for bonds ↑s in the mkt ⇒ price of bonds ↑s ⇒ roi falls. ⇒ demand for money ↑s in the mkt & money mkt clears at E_1 where roi has fallen to i_1. As the money mkt adjusts very quickly, the ecoy moves from E to E_1.

ESM
D_B ↑
P_B ↑
i ↓
D_M ↑s
Till S_M = D_M & money mkt clears

At pt E_1, however, the gds mkt is not in eqm as pt E_1 is not on the IS curve. At E_1, there is EDGr. The lower interest rate i_1 has implication for the gds mkt. Lower interest rate stimulates planned Inv., which raises agg dd causing the inventories to run down (∵ AD > Y).

gds mkt not in eqm
EDG
i ↓
Inv ↑
AD ↑
Y ↑

Prodrs ↑ their o/p...

AD > Y

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EDM ⇒ $D_M > S_M$ ⇒ roi must ↑ to reduce D_M

(5)

Y ↑s So, output rises from Y_0 to Y' & with ↑ in
$T^c Dd_M$ ↑ output, transactions dd for money ↑s
i ↑ causing roi to ↑ from i_1 to i'. (The greater dd for money has to be checked by higher interest rates. (EDM ⇒ roi ↑s).

op hr & i lower The new eqm is established at pt E' where o/p is higher & roi lower compared to the initial eqm.

So, the ↑ in the money stock first causes interest rates to fall as the public adjusts its portfolio & then — as a result of the ↓ in interest rates — ↑s AD. (& hence income ↑s & then TS, D_M ↑ & so int rates ↑.) LM curve shifts rt

↑ in $\bar{M}$ ⇒ ↑ in $\frac{\bar{M}}{\bar{P}}$ ⇒ ⇒ Excess supply of money
ie $S_M > D_M$ ⇒ D_B ↑, P_B ↑, i↓
then D_m ↑s And eco^y reaches pt E_1, where money mkt clears.

At E_1, gds mkt not in eqm. Due to low i, Inv ↑s, AD ↑ & AD > Y, hence, Y ↑s, T.D_M ↑ & i ↑s till eco^y reaches pt E'.

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From the desk of Talk abt slope of the LMC   DATE ~~31~~ 39

It can be shown with the help of the figs that given the IS schedule a change in real money supply will have a greater effect on eqm income, steeper is the LM schedule.

We know slope of the LMC = $\frac{k}{h}$

k = sensitivity of dd for real balances to a change in income

h = sensitivity of dd for real balances to a change in the roi.

b) We consider 'h'. Let's take 2 figs, one with higher 'h' giving a flatter LMC & one with lower 'h' giving a steeper ".

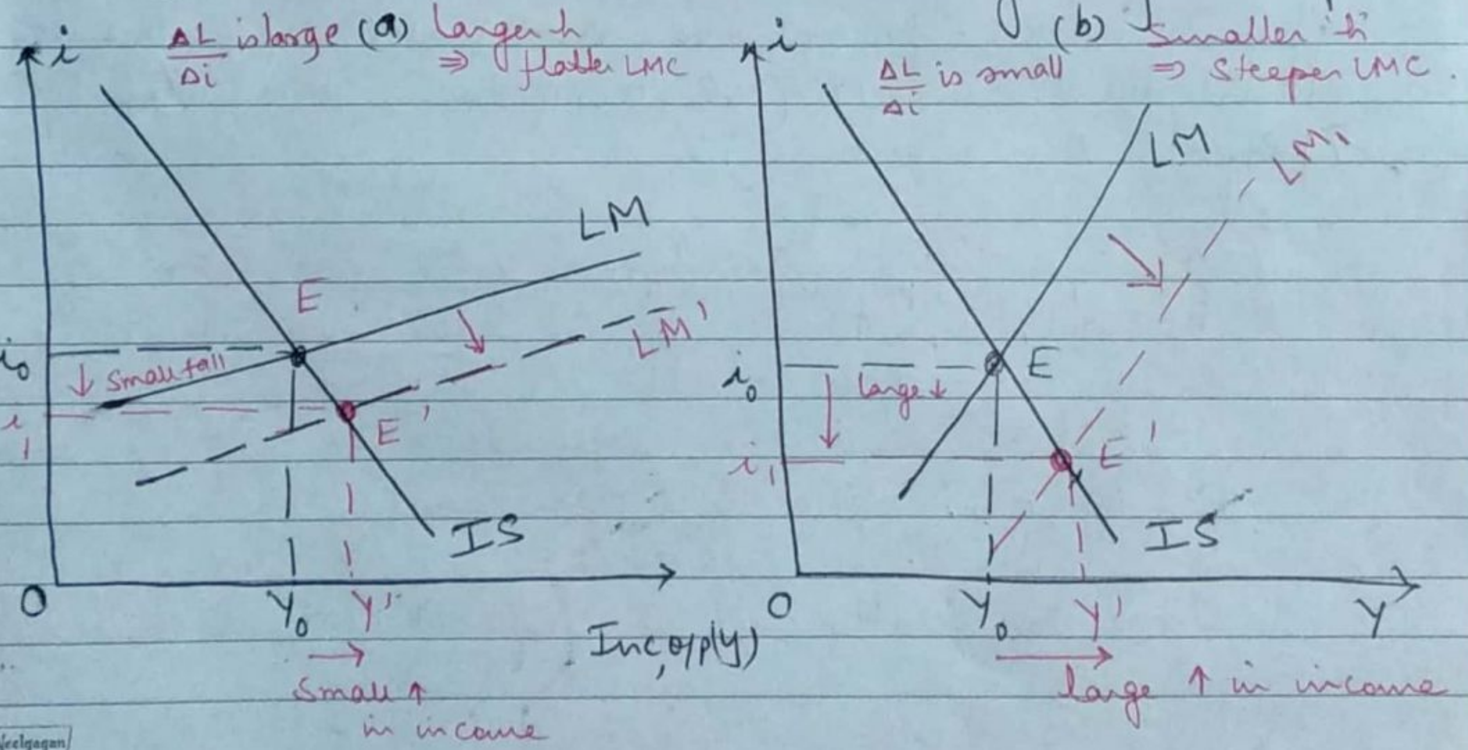

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Fig (a) shows, larger is h flatter the LMC, the smaller is the change in income. In this case, the dd for real balances is highly sensitive to interest rate changes (i.e 'h' is v. high) leading to a flat LM curve)) (If h is ∞, LMC is horizontal) LMC as h → ∞

A given change in the nominal money stk causes the LMC to shift from LM to LM'. & the asset portfolio is adjusted in the assets mkt with only a small fall in the roi from i_0 to i'. With only a marginal fall in the interest rates, invt spending doesn't ↑ much leading to ↑ in income only from Y_0 to Y'. So, in this case, the effects of an open mkt purchase on invt spending will be small (& also there will be small effect on income).

((As a result of Open mkt purchases of bonds, M ESM, people don't want to hold money, D_B ↑s, P_B ↑, roi ↓s but only 'small' fall in roi is needed to ↑ demand for money & eliminate ESM as dd for money is very sensitive to roi Δes. So, roi ↓s little, Inv ↑s little ⇒ small ↑ in income)

larger h ⇒ $\frac{\Delta L}{\Delta i}$ large

$\left(\frac{M}{P}\uparrow,\ ESM \Rightarrow S_m > D_m \Rightarrow i\downarrow \Rightarrow I\uparrow \Rightarrow Y\uparrow\right)$

(8) ~~8~~

Small h
ΔL is small
Δi
$\Rightarrow$ slope $\frac{k}{h}$ is large
$\Rightarrow$ steeper LMC

Now, consider fig (b); In this case the dd for real balances is not very sensitive to interest rate Δes (ie h is small), leading a very steep LMC. Here a given Δe in nominal money stock causes the LM curve to shift from LM to LM', leading to a substantial fall in the interest rates from i_0 to i'. Substantial fall in the r.o.i is needed to absorb excess ss of money ($\because$ dd for real balances is not very sensitive to the r.o.i (small h).)

(dd for money is not v. sensitive to a Δ in r.o.i, so large fall in i is needed ~~xxxx~~ ~~xxxx~~ to $\uparrow$ D_M so that $D_M = S_M$.

A large fall in interest rates $\uparrow$s investment spending a lot. ~~xx~~
$\Rightarrow$ Substantially large $\uparrow$ in income from Y_0 to Y'.

A change in h only changes the slope, not the position/shift of the LMC.

But a change in k changes both slope & the shift of the LMC ($\frac{1}{k} \Delta \left(\frac{\bar{M}}{P}\right)$)
& impact of shift is larger.

So when we talk abt slope of the LMC, we talk of 'h' only.

(9) $\frac{\bar{M}}{\bar{P}}\uparrow$, ESm, ie $S_m > D_m$, so need to $\uparrow$ D_m. Now $\because \frac{\Delta L}{\Delta Y}$ is large, need to $\uparrow$ inc by a very small amt $\Rightarrow$ MP multr will be smaller.

large k

Similarly, if the dd for money is very sensitive to income (ie k is large), a given increase in the money stock can be absorbed with a relatively small change in income & the monetary multiplier will be smaller. (large k $\Rightarrow \frac{1}{k}\Delta\left(\frac{\bar{M}}{\bar{P}}\right)$ is smaller $\Rightarrow$ multr is smaller)

Monetary Policy multiplier

$$\frac{\Delta Y}{\Delta\left(\frac{\bar{M}}{\bar{P}}\right)} = \gamma\frac{b}{h} = \frac{b\alpha_G}{h + kb\alpha_G}$$

(Smaller is h & k ($\frac{\Delta L}{\Delta Y}$), larger is the monetary multiplier ie larger is ΔY due to a change in $\bar{M}/\bar{P}$.)

Formula shows that larger is k, smaller wld be ΔY to a change in real money stk and smaller wld be the ~~monetary~~ MP multiplier.

Remember: Slope of LMC $= \frac{k}{h}$ and

Shift of the LMC $= \frac{1}{k}\Delta\left(\frac{\bar{M}}{\bar{P}}\right)$

So, slope & shift both depend on k.

& impact of shift in LMC is larger

From the desk of DATE

When we say that steeper is the LM curve, more effective is the MP we look at 'h' only. 'h' only affects slope of the LMC, not the position.

Hr h ⇒ lower slope ⇒ flatter LMC
⇒ small Δ in Y due to a Δ in $\bar{M}/\bar{P}$.

Lower h ⇒ higher slope ⇒ steeper LMC
⇒ large Δ in Y due to a $\Delta(\bar{M}/\bar{P})$.

k affects both slope & shift of the LM curve. And, the impact of shift is larger.

Larger k

Larger is k ⇒ Smaller is $\frac{1}{k}\Delta\left(\frac{\bar{M}}{\bar{P}}\right)$

Smaller is shift

⇒ smaller is the shift of the LM curve for a given money supply
⇒ smaller is the fall in the roi
⇒ smaller is the ↑ in Inv. & hence ↑ in income is also smaller
⇒ smaller monetary policy multiplier.

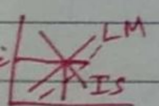
i↓, I↑, AD↑, Y↑ (11)

From the desk of "The Transmission Mechanism" DATE (6)

ESM, D_B↑, roi↓
↑M_S → roi↓ → Inv↑ → AD↑

The process by which an ↑ in money ss lowers the int. rates, which stimulates Inv. & thereby expands the agg dd for g & s is called the transmission mech^m. So it is a process by which changes in mon. policy affect agg dd for g & s.

Two steps in this trans. mech. are essential.



① An increase in real balances (or real money ss) generates a portfolio diseq^m ie, at the prevailing int. rate & level of income, people are holding more money than they want. This causes portfolio holders to attempt to reduce their money holdings by buying other assets thereby changing asset pcs & yields. In other words, the change in the money ss changes int. rates. ↑ in real money ss → portfolio diseq^m as there is excess ss of money, at int rate i_0 & Y_0, people are holding more money than they want → portfolio adjustments made to restore eq^m. People reduce their money holdings by buying other assets (bonds) → rapidly money mkt adjusts change in asset pcs & interest rates. Bond pcs rise & int. rates decline. Eco^Y moves from E to E_1.) Pt. E_1 is on LM_2 curve ⇒ money mkt is in eq^m.

ESM portfolio adjusts. → D_B↑, P_B↑ roi↓

② The 2nd stage of transmission process occurs when the Δe in int. rates affects

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↑roi → Δ AD

agg dd. At lower int. rate invt rises leading to incd agg dd. Existing inventories run down, O/P expands Ecoʸ moves from E_1 to E'.

In moving from E_1 to E', ↑ in O/P raises the T.S. dd for money, as greater dd has to be checked by a hr. int. rates (so 'i' also rises) ↑Y ↑DM ↑roi

→ O/P expands from Y_0 to Y'.

→ Eqm is finally restored at E' where IS curve intersects LM', Eqm level of inc = Y' & $i = i'$.

Foll: table provides a Summary of the stages in the trans mechm.

Table: The Transmission Mechanism

(1) →	(2) →	(3) →	(4) →
Change in real money supply	Portfolio adjust-ments lead to a Δe in asset pces & int rates (E to E_1)	Spending or AD adjusts to changes in int rates	O/P adjusts to the Δe in agg dd. (E_1 to E')

Critical Links $\Delta M^s \to \Delta Y$

There are 2 critical links bet the Δe in real bals (ie real money stk) & the ultimate effect on inc. ① The Δe in real bals, by bringing abt portfolio diseqn, must lead to a Δe in int. rates ($\Delta M_s \to \Delta$ roi)

② That Δe in int rates must Δe agg dd. (Δ roi → ΔAD)

Thru these 2 linkages Δes in the real money stk affect the level of o/p in the economy ie transmn mech. works thru these 2 linkages: i.e.

$\Delta M_S \to \Delta$ in P_B & roi $\xrightarrow{\Delta i} \Delta AD \to \Delta O/P$.

If any of these linkages is broken ie if portfolio imbalances do not lead to a significant change in rate of interest or if spending (AD) does not respond to changes in the roi, the link between money & output does not exist.

Let us see the effectiveness of Monetary policy in 2 extreme cases. The first is the Liquidity Trap.

The Liquidity Trap

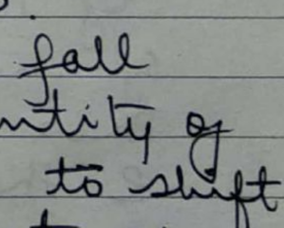
The liq. trap is a situation in which the public is prepared, to hold whatever amount of money is supplied at a given rate of interest. They don't want to hold bonds. This implies that the LM curve is horizontal & that changes in the quantity of money do not shift it. In that case the MP carried out through open market operations has no effect on either the interest rate or level of income. In the Liq. Trap, MP is powerless to affect the interest rate. It means that in Liq trap, the first link between the change in money supply & change in income/output is broken. The roi doesn't change as a result of increase in the money supply.

Explanation: Acc. to IS-LM model an increase in Ms results in excess cash balances which is used to buy bonds, so $D_B \uparrow$s & $P_B \uparrow$s, leading to a fall in the interest rates.

However, if the interest rates have already fallen to very low levels, they are expected to rise. It means that since bonds prices are very high, they are expected to fall. In such a situation individuals believe that buying bonds would lead to a capital loss & as a result they only want to hold cash. Cash is the most convenient to use in transactions.

So if the interest rates fall very low, increases in the quantity of money will not induce anyone to shift to bonds & thereby reduce the rate of interest on bonds further. An increase in the money supply would have no effect on the roi or income — the economy wld be in a L. trap where MP doesn't work.

The LM curve, in this case, is horizontal & changes in the quantity of money do not shift it.



2nd link will be broken if foll: happens →

(44)

(15)

Δ roi → ΔI → ΔAD
or
Step (3) AD adjusts to Δg int rates

From the desk of "After liquidity Trap" ✓ DATE

✓ Bank's reluctance to Lend

Look at the transmission mechanism. According to the step (3), Inv. spending shd ↑ in response to lower interest rates. Firms that plan to ↑ their investment spending typically borrow from banks to finance their spending.

roi ↓ Inv ↑

But despite monetary policy actions banks are extremely reluctant to lend & as a result invt spending does not respond despite the fall in the roi. They preferred to lend to the govt, by buying it's securities such as Treasury Bills which is more safe than lending to pvt firms))

If banks will not lend to firms than an imp. part of the transmission mechanism between a central bank's open mkt purchase & an ↑ in Agg. dd & O/p is put out of action

((If banks do not lend to the ~~govt~~ firms, Then link bet Central Banks open mkt purchase & ↑ in AD & O/p is broken & trans mechm will not work))

So 2nd link is broken. ↓i ↛ ↑I

Δi → ΔI → ΔAD.

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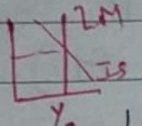
"2nd Extreme Case"

From the desk of (The classical case) i.e the effectiveness of the Monetary policy in the classical range

DATE 18/



Another extreme case is of the vertical LM curve. According to the classical school of thought the dd for real balances is interest-inelastic i.e the dd for money is completely unresponsive to interest rate changes. In such a situ, the LM curve becomes vertical & this range of the LM curve is called the classical range.

$\frac{\Delta L}{\Delta i} \to 0$ i.e $h \to 0$

We know that the LM curve is given by the eqn: (It represents eqm in the money mkt)

At each pt on the LM, $\frac{\bar{M}}{P} = L$.

ss of money $\frac{\bar{M}}{P}$ = dd for money (L) ↓ $L = kY$

$$\frac{\bar{M}}{P} = kY - hi$$

Given the real money ss $= \frac{\bar{M}}{P}$,

when $h = 0$, we get

$$\frac{\bar{M}}{P} = kY$$

(So, here $L = kY$ only as $h=0$) —(1)

or, $\frac{\bar{M}}{P.k} = Y$, we get a unique level of income wh. ⇒s that LM curve will be vertical at that level of income.

The vertical LM curve is called the classical case. In this case, corresp to a given money ss, there is a unique level of income that exists in the economy & LM curve is vertical at that level of income. This is called the classical case because in the classical qty theory of money, nominal inc. depends only on the qty of money in the eco. When LM curve is vertical, M.P. ~~cannot~~ affects the level of income, it is most ~~in~~effective.

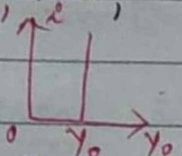
$\left.\begin{array}{l} M^d = kPY \\ PY = \frac{M^d}{k} \end{array}\right)$

In eqm, $M = M^d$

$M = kPY$

(17)

From eqⁿ ①, Now, $\bar{M} = k(\bar{P}.Y)$ where $\bar{M}$ = nominal money ss

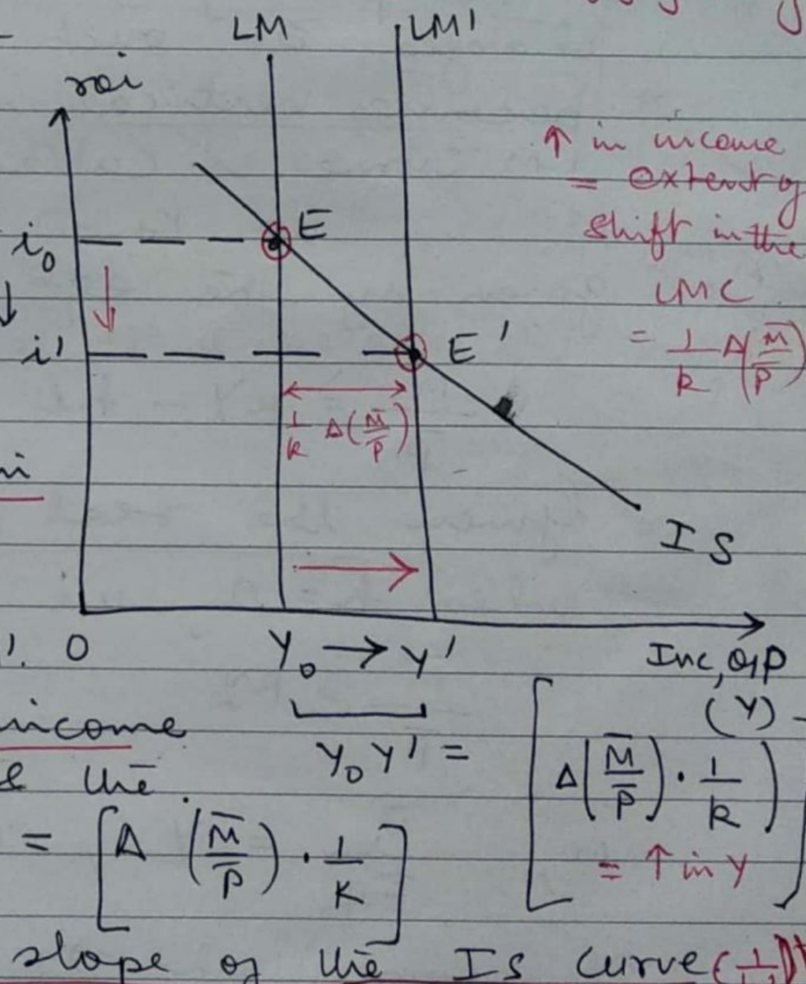


$\bar{P}Y$ = nominal GDP (ie price × O/P)

The above eqⁿ represents the classical qty theory of money, wh. states that nominal GDP ($P \times Y$), depends only on the qty of money ($\bar{M}$).

✓ or the level of nominal inc. is detd solely by the qty of money.

When the LM curve is vertical, a given change in the qty of money has a maximal effect on the level of income. This is shown in fig.



↑ in income = extent of shift in the LMC $= \frac{1}{k}\Delta\left(\frac{M}{P}\right)$

When there is ↑ in money as equal to $\Delta(\bar{M}/\bar{P})$, the LMC shifts from LM to LM'. The eqm level of income ↑es from Y_0 to Y' & the ↑ in inc Y_0Y' is $= \left[\Delta\left(\frac{\bar{M}}{\bar{P}}\right) \cdot \frac{1}{K}\right]$

$\Delta Y = \frac{1}{k}\Delta\left(\frac{\bar{M}}{\bar{P}}\right)$

$Y_0Y' = \left[\Delta\left(\frac{\bar{M}}{\bar{P}}\right) \cdot \frac{1}{k}\right) = \uparrow$ in Y$\Big]$

irrespve of the slope of the IS curve $\left(\frac{1}{bd_n}\right)$

This is ∵ the money expansion must be met by a ($k\,\Delta Y$) increase in the "transactions" dd for money. Hence, ΔY must be equal to $\left[\Delta\left(\frac{\bar{M}}{\bar{P}}\right)\left(\frac{1}{k}\right)\right]$

$h = 0$ is ie d_{money} insensitive to Δ in roi

((✓ ↑ in $\frac{\bar{M}}{\bar{P}}$, ESM ($S_m > D_m$), i has to fall a lot to ↑ D_m, Inv ↑s a lot, Y ↑s a lot

Upward Sloping LM Curve

48

From the desk of

18

DATE (11)

Q1) Numerical illustration of effectiveness of mon. policy in the intermediate range

Intermediate range

Given $L = 0.2Y - 4i$ $\Rightarrow k = 0.2$, $h = 4$

$\bar{M} = 150$

$C = 100 + 0.8Y$ $c = 0.8$

$I = 150 - 6i$ $b = 6$

Det. the IS-LM eqns. Det. the eqm level of income & the roi. Sup the money ss res from 150 to 170. Derive the new LM_2 eqn. Det. the new eqm roi & income. Support your answer with the help of diagrams.

Ans. Equate L = M to det. the LM eqn. dd for real B^S = M^S

$\Rightarrow$ $0.2Y - 4i = 150$

$0.2Y = 150 + 4i$

LMC: $Y = 750 + 20i$ --- LM_1 eqn.

Y = AD on IS curve: Equate $Y = C + I$ to det. the IS eqn.

$Y = 100 + 0.8Y + 150 - 6i$

$0.2Y = 250 - 6i$

ISC: $Y = 1250 - 30i$ --- IS eqn

To det. eqm level of inc & roi, solve IS & LM_1 eqns. In eqm, IS = LM_1

$\Rightarrow$ $1250 - 30i = 750 + 20i$

$500 = 50i$ $\Rightarrow$ $i_1 = 10\%$

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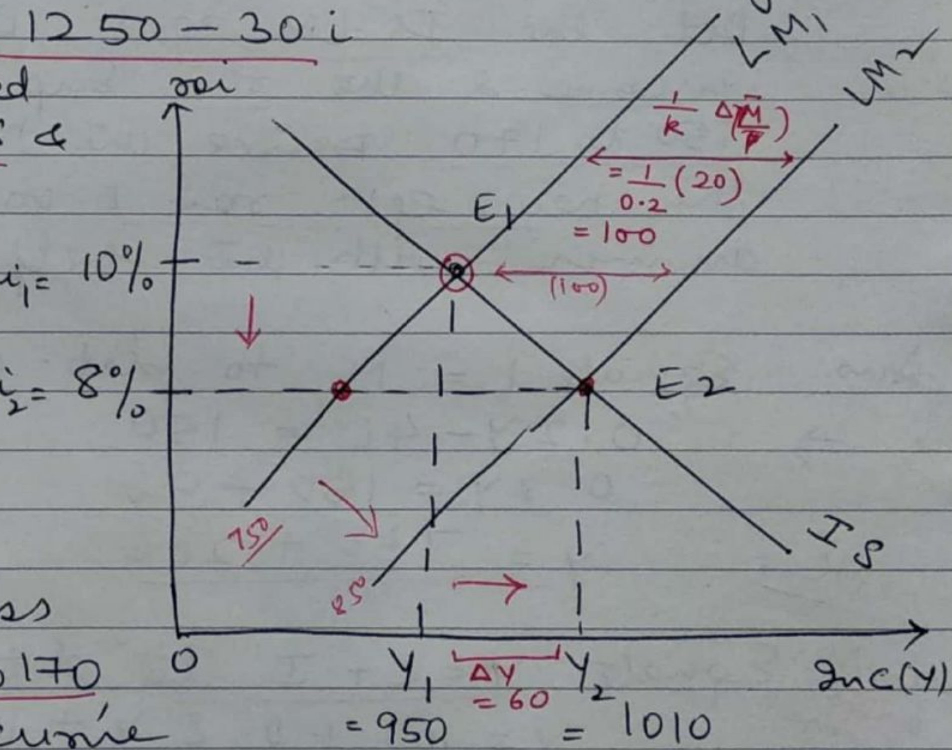
$i_1 = 10\%$, $Y = 950$

when $i_1 = 10\%$, $Y_1 = 1250 - 30(10) = 950$

The curve shown as LM, in the fig is repd by $Y = 750 + 20i$

The curve shown as IS_1 is repd by
$$Y = 1250 - 30i$$

Eqm is attained at E_1 where IS & LM, intersect, detg the eqm int. rate $i_1 = 10\%$ & eqm level of inc $Y_1 = 950$.



(now $\bar{M} = 170$)

To derive new LMC

when the money ss rises from 150 to 170, the new LM_2 curve is repd by

$$0.2Y - 4i = 170$$
$$0.2Y = 170 + 4i$$

new LMC $\rightarrow$ $Y = 850 + 20i$ --- LM_2 ('X' intercept (intercept has risen) when $i = 0$, $Y = 850$.)

The IS eqn is: $Y = 1250 - 30i$

IS.

(

The new eqm is at E_2. To det. the new Y & roi, solve IS & LM_2 eqns.

$$Y = 850 + 20i \quad -- \quad LM_2$$
$$Y = 1250 - 30i \quad -- \quad IS$$

In eqm, $IS = LM_2$,

$$\Rightarrow 850 + 20i = 1250 - 30i$$
$$\Rightarrow 50i = 400$$

$i_2 = 8\%$ $\Rightarrow i_2 = 8\%$.

$Y_2 = 1010$ when $i_2 = 8\%$, $Y_2 = 1250 - 30(8) = 1010$.

$\Delta Y = 60$ Thus, expansion in money ss of 20 has been able to ↑ the inc. from 950 to 1010. The eqm roi has fallen from 10% to 8%.

(The ↑ in income (60) < shift of the LM curve (100))

This is what happens in the intermed range

Q2: Numerical illustn of effectiveness of Mon. policy in the classical range (vertical LMC)

Given $L = 0.2Y$* *(Here, h = 0)

$M = 200$ [$L = kY - hi$ So here $h = 0$]

$C = 100 + 0.8Y$

$I = 140 - 5i$

Det the IS & LM_1 eqns. Det the eqm level of inc & roi. Sup the money ss res from

$L = kY$

In Eqm, $\frac{\bar{M}}{P} = L = kY$

(21)

$\Rightarrow \frac{\bar{M}}{P \cdot k} = Y$

200 to 220. Derive the new LM_2 eqn. Det. the new eqm level of int rate & inc. Show graphically. Comment on the magnitude of the shift of the LM C & the se in inc. level

Ans Equate $L = M$ to det. LM eqn.

$0.2Y = 200$

$\boxed{Y = 1000}$ --- LM_1 eqn

(given $\bar{M}/P$, unique level of inc $\forall$ h=0)

Equate $Y = C + I$ to det. IS eqn

$Y = 100 + 0.8Y + 140 - 5i$

$0.2Y = 240 - 5i$

$\boxed{Y = 1200 - 25i}$ --- IS

In Eqm IS = LM_1

$\Rightarrow$ $1200 - 25i = 1000$

$200 = 25i$

$i_1 = 8\%$

$i_1 = 8\%$
$Y_1 = 1000$

when $i_1 = 8\%$, $Y_1 = 1200 - 25(8) = 1000$.

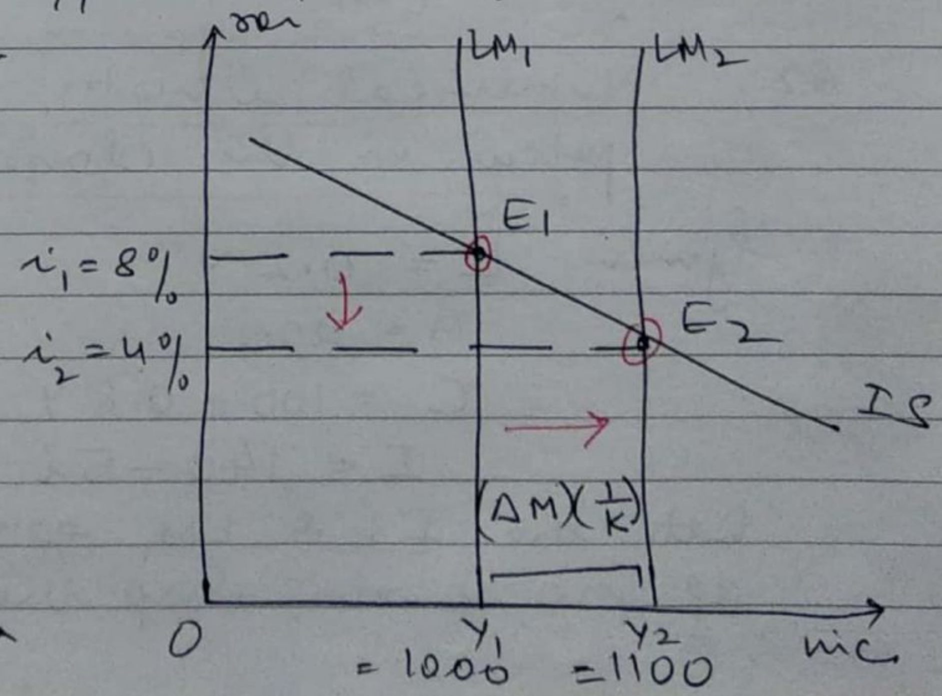
The curve LM_1 is rep'd by $Y = 1000$. It's vertical

IS curve is repd by $Y = 1200 - 25i$

Eqm at E_1.

Eqm roi = 8%

eqm inc = $Y_1 = 1000$.



when the money ss ↑es from 200 to 220, the LM_2 curve is repd by

$0.2Y = 220$

$\boxed{Y = 1100}$ -- LM_2 Eqⁿ

IS eqⁿ : $\boxed{Y = 1200 - 25i}$

-- new Eqᵐ at E_2.

In Eqᵐ IS = LM_2,

⇒ → $Y = 1100$ is LM_2 Eqⁿ

→ $Y = 1200 - 25i$ -- IS.

⇒ $1100 = 1200 - 25i$

$i_2 = 4\%$

$i_2 = 4\%$
$Y_2 = 1100$

when $i_2 = 4\%$, $Y_2 = 1200 - 25(4) = 1100$.

Thus, the expansion in money ss of 20 has been able to ↑ the inc. from 1000 to 1100. The Eqᵐ roi has ↓ed from 8% to 4%.

gvt has ↑ed

The ↑ in money ss of 20 causes the LM curve to shift rtwd by

(k=0.2)

$$\left[\Delta\bar{M}\left(\frac{1}{k}\right)\right] = \left[20 \cdot \left(\frac{1}{0.2}\right)\right] = 100$$

(Pisnr there)

The ↑ in inc $Y_1Y_2 = 1100 - 1000 = 100$

Thus, the ↑ in inc (=100) is equal to the rtwd shift of the LM curve (=100)

In Keynⁿ range, the Mon. policy is totally ineffve.

⇒ ↑ in Ms leads to no ↑ in income & no Δ in roi.

$L = kY - hi$

$L = kY -$