Start scan

(49) (65) chp. 11 26

From the desk of "The composition of O/p & the Policy Mix" DATE (13)

Table summarizes the effects of expansionary mon. & fiscal policy on o/p & the int. rate, provided the ecoy is not in a liquidity trap or in the classical case. In the K. intermediate range, the policy makers can, in practice use either fiscal or mon. policy to affect the Level of income.

Table: Policy effects on Inc. & Int. rates

| Policy | Eqm inc. | | | Eqm int. rates | |
|---|---|---|---|---|---|
| Mon. expansion | + | Y ↑ | (LM shifts to the right) | — | ɹoi ↓ |
| Fiscal " | + | Y ↑ | (IS ---) | + | ɹoi ↑ |

There is a sharp diffce bet. the mon. & F. P, ~~is~~ ~~concerned~~ if we look at the effect of these policies on the components of agg dd ie Inv, Cn & govt spending.

effect on AD = C+I+G

Mon. policy operates by stimulating int - responsive components of agg dd, primarily Inv. spending. ↑ Ms, LM shifts to rt, ɹoi ↓, I ↑, Y ↑

I = f(i) Mon Policy reduces the ɹoi, ↑s Inv spending & thus AD, eqm o/p ↑s

F.P, by contrast, operates in a manner that depends on precisely what gds the govt buys or what taxes & transfers it ses. eg G exp. on defence, or a red n in corporate profits tax, sales tax etc.

(This'll ↑ Inv by firms) will ↑ Yd, ↑Cn

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AD → Y

Each policy affects the level of agg dd & causes an expansion in o/p, but the composition of the ↑ in o/p depends on the specific policy. An ↑ in govt spending ↑es $c^n$ spending (↑TR) along with govt purchases. An inc. tax cut has a direct effect on $c^n$ spending. An Inv. subsidy ↑es Inv. spending. All Expansionary fiscal policies will raise the int. rate if the qty of money is unused. (so there will be some crowding out effect).

↑G & ↑TR → ↑C
↓t → C↑
Inv. subsidy ↑I
Exp FP ri ↑

↑G → ↑$C^n$ & ↑ govt purchase
Inc tax cut : t↓ → yd↑ → ↑$C^n$
Inv subsidy — ↑s Inv.
] ri ↑s

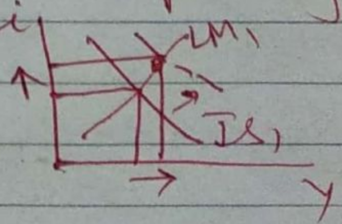
G↑, AD↑, Y↑, $D_m$↑, i↑, I↓, Y↓
↓
$Q_m$ unchanged i.e. $\frac{M}{P}$ unchanged

An expan FP can be implemented thru
(1) An ↑ in govt spending
(2) An inc tax cut
(3) An investment subsidy

These will raise int rates & reduce Inv. spending

i↑, I↓
yd↑, C↑, AD↑, Y↑, EDM, i↑, I↓

Let me now tell you abt an Inv subsidy



(57) (66) 27 (14)

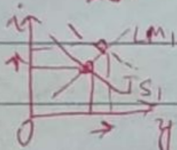
From the desk of

# " An Invt Subsidy "

DATE (14)

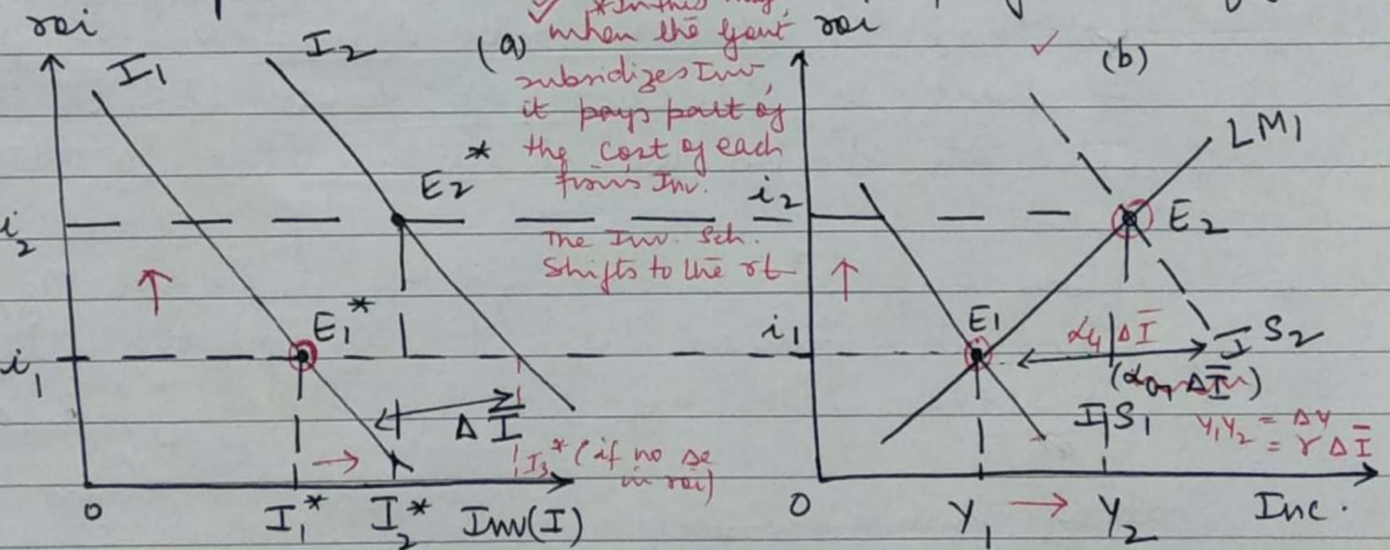
$(t\downarrow) - Y^d\uparrow, C\uparrow, A\uparrow, Y\uparrow$ I ↓s.

t↓ & ↑G raise roi & ↓I



Both an inc. tax cut & an ↑ in govt spending (↑g G) raise the int. rate & reduce Inv. spending. However, it is possible for the govt to raise Inv. spending thru an Inv-subsidy. In advanced economies, the govts. have been able to raise Inv. thru Inv. subsidies. Under such a strategy, when a firm ↑es it's inv. spending, the firm's tax payments are reduced.* This is explained with the help of the fig.

this is called subsidizing Inv thru Inv tax credit




Initially, the ecoY is in eqm at pt $E_1$ in fig (b). Eqm roi $= i_1$. At this roi, the level of Inv in the ecoY is $I_1^*$ (fig a). When the govt implements Inv. subsidy package, the Inv. curve shifts from $I_1$ to $I_2$. At each int rate, the firms decide to invest more. When Inv. spending rises, the agg dd ↑es. This causes IS curve to shift from $IS_1$ to $IS_2$

When Inv subsidy is given, I inv curve shifts to the rt

I ↑ → AD ↑ → IS c shifts to the right

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by an amt equal to ($\alpha_G \cdot \Delta\bar{I}$). The economy reaches the new eqm pt at $E_2$. Eqm inc $= Y_2$ & roi $= i_2$.

Observe that altho' int rates have ↑ed from $i_1$ to $i_2$ in (b) the level of Inv. in the economy has also ↑ed from $I_1^*$ to $I_2^*$. The ↑ in the roi does reduce the impact of Inv. subsidy but does not completely reverse it. there is an ↑ in ~~income~~ (Inv). This is an example, in wh. both Cn induced by hr. inc, & Inv. rise as a consequence of expansy F.P. *

At the hr roi Inv. is still hr ($I_2^*$) than it was initially ($I_1^*$)

Both Cn. & Inv rise as a result of Inv subsidy.

[When the govt. subsidizes Inv, it pays part of the cost of each firm's Inv. It shifts the I sut curve to the rt]

[In b, ISC shifts by an amt of the multr' times the ↑ in auton. Inv. brought abt by the subsidy.] ie $\alpha_G \Delta\bar{I}$

T~~able~~ Summarizes

* Thus, an Inv subsidy raises int. rates, income, Cn & Investment

i, Income, Cn & Inv ] ↑

{ roi ↑es income ↑es Cn & Inv ↑es } as a result of Inv subsidy (Cn ↑es ∵ of hr. income).

∴ $C = f(Y)$ (+)

From the desk of DATE

# Alternative fiscal policies & their impact on the int. rate, $C^n$, Inv. & income (GDP).

We have seen that an expansionary fiscal policy can be implemented thru

a) An ↑ in Govt spending (↑ $\bar{G}$)
b) An inc. tax cut ("↓ t")
c) An Invt subsidy (2b ↑s Inv & income)

↑ in income

Altho' there are 3 altne fiscal policies all of them aim at ↑g the level of income (ie GDP). All the 3 policies cause an ↑ in int. rates & an ↑ in $C^n$. However, it is only an Inv. subsidy, wh. causes an ↑ in Invt when an expansionary fiscal policy is implemented. In case of an red govt spending or redn in inc. taxes, there is a crowding out effect & Invt actually falls. The 3 altne policies & their impact on int. rates, $C^n$ level, Inv. & inc. are summarized in the (fig) table.

↑ roi
↑ $C^n$
Inv. subsidy ↑ Inv →
In (a) & (b) Inv ↓ ∵ of crowding out eff

$\uparrow \Delta Y = \frac{-cY_0}{1-c(1-t)}$ at ↓

| | Interest rate | Consm | Invt | GDP |
|---|---|---|---|---|
| Inc. tax cut | + roi ↑ | + $C^n$ ↑ | − I ↓ | + Y ↑ |
| Govt spending (Multr = γ) | + " | + " | − " | + " |
| Invt subsidy | + roi ↑ | + $C^n$ ↑ | + I ↑ | + Y ↑ |

↑ ↑

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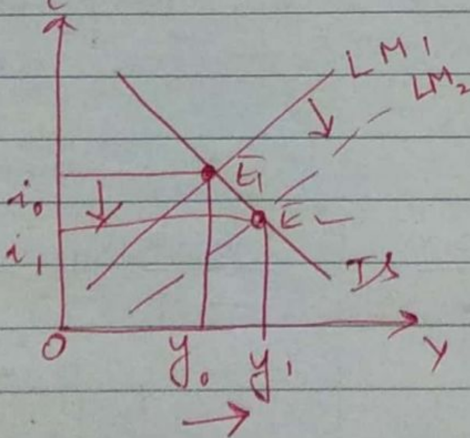
In case the ecoʸ is not operating in the Pure Keyⁿ range of the LM curve (the liq. trap) nor in the classical range of the LM curve (where LMC is vertical), policy makers (i.e Govt) can use either the mon. policy or the fiscal policy to influence the level of income. The mon. policy operates by influencing the interest sensitive Inv. leading to ~~Inc~~ red income levels. However, a fiscal policy operates thru the 3 difft altnes discussed above. Each has it's effect on Cⁿ, roi, Inv & inc. ((Both expanʸ mon. policy & expanʸ fiscal policy cause an ↑ in the eqm level of inc. However, an expansʸ mon. policy results in a fall in int. rates, but an expansʸ F. P. causes a rise in the int rate leading to a crowding out effect.

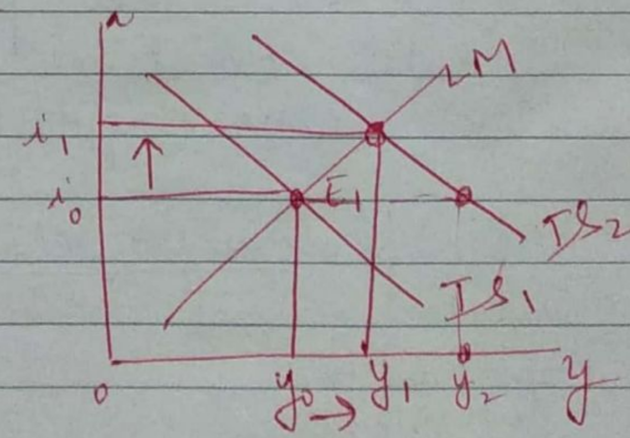
↑ in income

MP → ↓ roi

FP → ↑ roi

∴ crowding out effect




$\uparrow \frac{\overline{M}}{P}$, ESM, $D_m < S_m$,

to $\uparrow D_m$, $i$ must $\downarrow$,

I ↑, Y ↑ . $D_m$ ↑, EDM, i ↑, I ↓, AD ↓ Y ↑

# "The Policy Mix"

Now we know that

↑Ms → ↓roi & ↑Y

1. An ↑ in money ss will shift the LM c to the rt, lowering the roi & raising the level of inc

ExFP → ↑roi ↑Ys

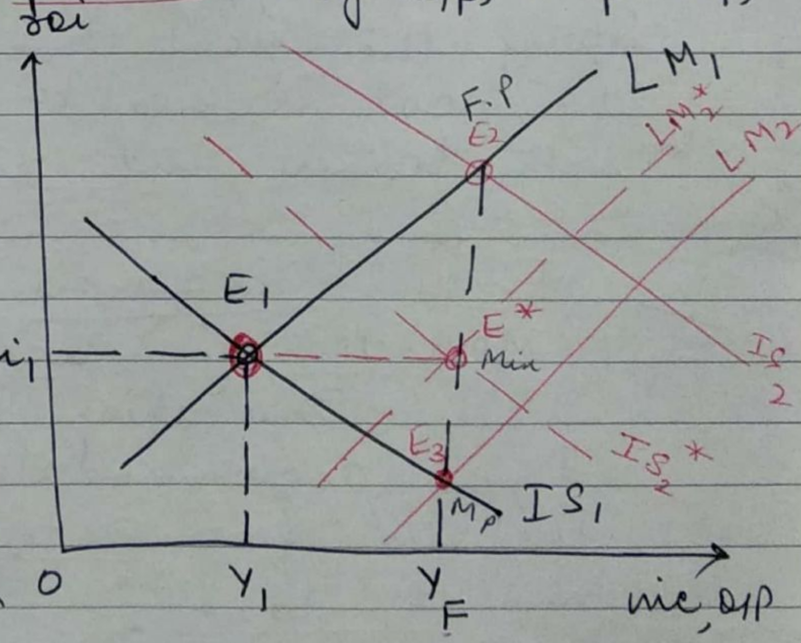
2. An expanY F.P. will shift the IS c to the right, raising both the roi & the level of inc.

when we speak of the (("policy mix")) (The term) we ((refers to the combined action of Mon & F.P. to achieve the desired macro-eco. objs.

Sup. the economy is initially working at less than full empt level of O/p, ie pt $E_1$, where $IS_1$ & $LM_1$ Cs intersect, detg an eqm level of inc '$Y_1$'. Obj. is to attain the full empt level of O/P, $Y_F$ ($Y_F > Y_1$).

<FE

Obj $Y_f$




The policy makers have the foll: options to move the ecoY from $Y_1$ to $Y_F$.

I) Implement a pure F.P. — In such a case large fiscal expansion will cause only the IS curve to move from $IS_1$ to $IS_2$ & attain eqm at $E_2$, where $IS_2$ & $LM_1$ intersect detg the

need large fiscal Exp.

full empt level of inc, $Y_F$. The eco$^y$ moves to a hr income $Y_F$ but at a hr int. rate $E_2Y_F$. So if the govt. chooses a fiscal expan, the eco$^y$ will move to $E_2$ with hr inc. & hr. int rates

hr inc & hr rr

II Implement a Pure Mon. Policy —

In such a case a large mon. expansion will cause the LM curve to move from $LM_1$ to $LM_2$ & attain eqm at $E_3$ detg the full emp. level of inc, $Y_F$. Here, the eco$^y$ moves to a hr. income $Y_F$ but at a lower int rate $E_3Y_F$. So if the govt chooses a mon. expansion the eco$^y$ moves to full empt level of inc. with lower int rates at Pt. $E_3$. The lr rr in case of MP means that Inv is hr at $E_3$ than at $E_2$ (except if the IS C was shifted by an Inv. subsidy). (∵ Inv subs. leads to ↑ in I also)

Hr inc lower rr

Inv is hr

III Fiscal Expansion with Accommodating Mon. Policy (ie use of a Fiscal – Mon. Policy Mix)

In this, the govt uses both F.P. & an accommodating mon. Policy to move the eco$^y$ from $E_1$ to $E^*$. The IS curve shifts from $IS_1$ to $IS_2^*$ and LM curve from $LM_1$ to $LM_2^*$. This is an intermediate position when cpd with option 1 & 2)) ∵ next Pg.

Generally, policy makers prefer to use policy options that not only help the economy to attain full empt but also make contribution towards attainment of other macro-eco. objs. (or solve other policy problems).

Numericals

Q1) Clan 1999[ Consm $C = 100 + 0.9Y_d$
Inv. $I = 600 - 30i$
Gont exp. $G = 300$
Tax $T = \frac{1}{3}Y$
Full Emp level of inc ($Y_f$) $= 2500$
Dd for real bals $M^d = 0.4Y - 50i = L$
nom. money ss $M = 1040$
Pc. level $P = 2$

Note: Don't De the fraction $\frac{1}{3}$ in T into decimal

i) Derive IS & LM eqns & Compute eqm levels of inc & int rate.
ii) Compute the De reqd in the level of Govt exp to achieve the full emp level of inc.
iii) Explain the De in the position & slope of the IS & LM Cs if the MPC Des to 0.6

Ans: (i) To get IS eqn : $Y = C + I + G$

$$Y = 100 + 0.9\left(Y - \frac{1}{3}Y\right) + 600 - 30i + 300$$

$$Y = 1000 + 0.6Y - 30i$$

$$\Rightarrow \boxed{Y = 2500 - 75i} \quad \text{-- IS.}$$

Dd for real bal = ss of real money bal.

To get LM eqn: ~~M = L~~ $L = M/P$

$$\Rightarrow 0.4Y - 50i = \frac{1040}{2}$$

$$0.4Y - 50i = 520 \Rightarrow \boxed{Y = 1300 + 125i}$$

-- LM

$Eq^m$: $2500 - 75i = 1300 + 125i \Rightarrow 1200 = 200i$

$i = 6\%$ $\Rightarrow \boxed{i = 6\%}$

$Eq^m$ inc. $\cancel{Y = 1000 + 0.6Y - 30i}$

$\cancel{= 1000 + 0.6Y - 30(6)}$

If $i = 6\%$, $Y = 2500 - 75i$ (IS)

$Y = 2050$ $Y = 2500 - 75(6)$

$\boxed{Y = 2050}$.

(ii) We now det. the $\Delta$e reqd in the level of govt exp to achieve the full Emp level of inc ($Y_F = 2500$) $\Delta Y$ is given, need to find $\Delta G$.
$= (450)$

We know that $\frac{\Delta Y}{\Delta G} = \frac{h\alpha_G}{h + b.\alpha_G.k}$ = fiscal Policy multr

where $\alpha_G = \frac{1}{1 - c(1-t)} = \frac{1}{1 - 0.9(1 - \frac{1}{3})}$

$\alpha_G = 2.5$ $= \frac{1}{\left[1 - \left(\frac{9}{10} \cdot \frac{2}{3}\right)\right]} = \frac{1}{1 - 3/5} = \frac{5}{2} = 2.5$

Given $L = kY - hi$ ; $I = \bar{I} - bi$ , $h = 50$, $b = 30$

& $k = 0.4$

Substg value $\frac{\Delta Y}{\Delta G} = \frac{50 \times 2.5}{50 + 30(2.5)(0.4)} = 1.5625$

$\Delta Y = \gamma \, \Delta G$

(59)

From the desk of DATE (21)

So, $Y_F = 2500$, $Y^* = 2050$

$\therefore \Delta Y = Y_F - Y^* = 2500 - 2050 = \boxed{450}$

$\Delta Y = 450$
$\gamma = 1.5625$
$\Delta G = 288$

$\therefore \Delta G = \dfrac{450}{1.5625} = \boxed{288}$

$\dfrac{\Delta Y}{\Delta G} = \gamma = 1.5625 \Rightarrow \dfrac{450}{\Delta G} = 1.5625$

so the govt wld need to incur an add'l exp. of 288 to attain the full emp. eqm level of inc.

We now cross check our answer. govt incr exp. by 288

The new IS curve eqn -- $IS_2$

$Y = C + I + G + \Delta G$

$Y = 100 + 0.9\left[Y - \frac{1}{3}Y\right] + 600 - 30i + 300 + 288$

$Y = 1288 + 0.6Y - 30i$

$0.4Y = 1288 - 30i$

$IS_2$ $\boxed{Y = 3220 - 75i}$ -- $IS_2$

Same LM Eqn: $Y = 1300 + 125i$

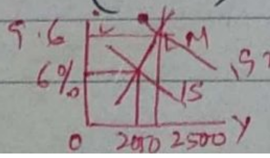
Equating $IS_2$ & LM Eqns, we obtain

$3220 - 75i = 1300 + 125i$

$1920 = 200i$

$i = 9.6\%$ when $i = 9.6\%$

$Y = 1300 + 125(9.6) = 2500$. (wh is $Y_F$ only).




$IS_2$ shd intersect LM curve at $Y_f = 2500$.

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~~MPC ses to c = 0.6.~~

(iii) slope of the IS curve $= \dfrac{1}{\alpha_G \cdot b}$ $\left\{ \begin{array}{l} \alpha_G = 2.5 \\ b = 30 \end{array} \right.$

$= \dfrac{1}{2.5 \times 30} = \dfrac{1}{75} = 0.0133$

Eqn of IS curve is $(IS_1)$

$Y = 2500 - 75i$

$75i = 2500 - Y$

$$\boxed{i = \frac{2500}{75} - \frac{1}{75}Y}$$

Slope $= \dfrac{\Delta i}{\Delta Y} = \dfrac{1}{b\alpha_G} = \dfrac{1}{75}$

Slope of $IS_2$ curve $= \dfrac{1}{\alpha_G \cdot b}$

→ slope will remain same as there is a ||el shift of IS curve

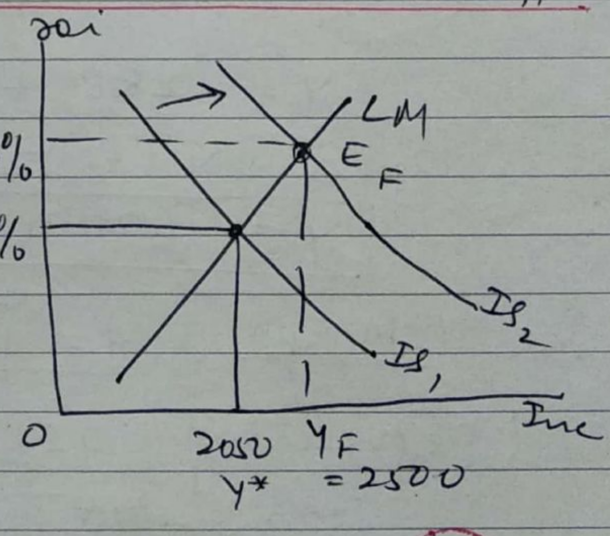
(with $\Delta G = 288$. compute $IS_2$)

Eqn of $IS_2$ is →

NO Need $Y = 3220 - 75i$

$75i = 3220 - Y$

$$\boxed{i = \frac{3220}{75} - \frac{1}{75}Y}$$




Slope of the LM curve is $= \dfrac{k}{h} = \dfrac{0.4}{50} = .008$

$MPC = c = 3/5$ we now explain ses in the slope of the IS & LM Cs when MPC (= C) ses to 0.6 or 3/5

Position of ISC will be ∴ ISC shifts by $\alpha_G \Delta \bar{G} = \frac{5}{3} \times 288 = 5 \times 96 = 480$

From the desk of ~~when mpc = c = 0.6~~, (61) DATE (3)

$$\alpha_G = \frac{1}{1 - c(1-t)} = \frac{1}{1 - \frac{3}{5}\left(1 - \frac{1}{3}\right)} = \alpha_G^* = \frac{5}{3}$$

Slope of IS* Curve $= \frac{1}{\alpha_G^* \cdot b} = \frac{1}{(5/3) \cdot 30} = \frac{1}{50}$

$= 0.02$

Slope of ISC ↑ Steeper

When MPC falls from 0.9 to 0.6, the slope of the IS C ↑es from 1/75 to 1/50. This will make IS* curve more steeper.

Slope ↑es from 1/75 to 1/50 -- Steeper IS curve

Q2 2001 Slope of the LM curve will not change (k/h)

~~Even~~ position of LMC will not be as a result of ↓ in c ∵ Shift $= \frac{1}{k} \Delta\left(\frac{\bar{M}}{P}\right)$

Use of both Policies – monetary Accom. CLASS

$C = 100 + 0.8 Y_d$

$I = 150 - 6i$

$G = 100$

$T = 0.25 Y$

$M_d = 0.2Y - 2i$ dd for real bal.

$M_s = 300$ (nom. money s)

$P = 2$

(i) Compute eqm inc & rai.

(ii) Sup govt purchases are ↑ed from 100 to 150 & Ms is ↑ed from 300 to 350. What is the mag. of the shift in IS & LM curves? What are new eqm levels of inc & the rai?

(iii) For the initial ~~val~~ mon & fiscal values derive the eqn of the ADC. (need P & Y)

? ADC

$\downarrow Y = \gamma \bar{A} + \frac{\gamma b}{h} \bar{M}/P \uparrow$

To get IS C –

Ans (i) $Y = C + I + G$

$Y = 100 + 0.8(Y - 0.25Y) + 150 - 6i + 100$

IS $\boxed{Y = 875 - 15i}$ – – $IS_1$

LM Eqⁿ: $L = M/P$

$0.2Y - 2i = \frac{300}{2}$ $(\because P = 2)$

LM $\boxed{Y = 750 + 10i}$ – – LM

In Eqᵐ, IS = LM

$\Rightarrow 750 + 10i = 875 - 15i$

eqᵐ $i_1 = 5\%$ $Y = 800$

$125 = 25i$

$\boxed{i_1 = 5\%}$

$Y = 750 + 10(5) = \boxed{800}$

(ii) Govt purchases ↑ from 100 to 150 $(\Delta G = 50)$

$IS_2$ New $IS_2$ will be the eqⁿ –

$Y = C + I + G + \Delta G$

$Y = 100 + 0.8(Y - 0.25Y) + 150 - 6i + 100 + 50$

$IS_2$ $\Rightarrow \boxed{Y = 1000 - 15i}$ – – $IS_2$

shift ‖el by $\alpha_G \Delta G$

$IS_2$ & $IS_1$ have same slope

slope same shift ‖el

$IS_2$ is ‖el to $IS_1$

The mag. of the shift of the IS curve is –

by $1000 - 875 = 125$

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From the desk of  DATE (4)

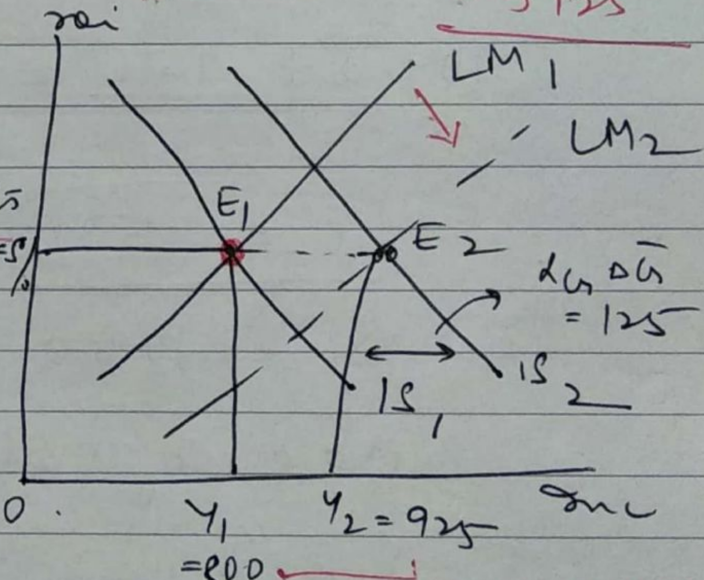
$1000 - 875 = 125$  check: shift $\alpha_G \Delta G = 2.5 \times 50 = 125$

$$\alpha_G = \frac{1}{1-c(1-t)} = \frac{1}{1-0.8(1-0.25)} = \frac{1}{0.4} = \frac{10}{4} = \boxed{2.5}$$

$\alpha_y = 2.5$
$\Delta G = 50$

$\boxed{\alpha_G . \Delta G} = 2.5 \times 50 = \boxed{125}$  ISC shifts by 125

Shown →




when money ss res from 300 to 350, the LM C shifts ~~leftwards~~ rightwards

New $LM_2$ →

$0.2Y - 2i = \frac{350}{2}$  M = 350

$LM_2 \Rightarrow \boxed{Y = 875 + 10i}$ -- $LM_2$

Magnitude of the shift of the LM C

$LM_1$ has the eqn: $Y = 750 + 10i$

$LM_2$ " " $Y = 875 + 10i$

$LM_2$ is //el to $LM_1$

Mag. of shift of the LMC $= 875 - 750 = 125$

check we can use formula $\left(\frac{1}{K}\right)\left(\frac{\Delta \bar{M}}{\bar{P}}\right)$ to det. the mag. of the shift of the LMC

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$\frac{1}{K}\left(\frac{\Delta \bar{M}}{P}\right) = \frac{1}{0.2}\left(\frac{50}{2}\right)$ (64)

$\left(\frac{\Delta \bar{M}}{\bar{P}}\right) = \frac{50}{2}$ ; $K = 0.2$

$\therefore$ shift $= \frac{1}{0.2}(25)$

$\therefore \frac{25}{0.2} = 125$

The new eqm inc & roi 'll be detd using $IS_2$ & $LM_2$

$1000 + 15i = 875 + 10i$

$i = 5\%$ ; $Y = 925$

$i = 5\%$ — roi is same. At this roi, $\Delta$inc $= 125$

& $Y = 1000 - 15(5) = 925$. $= \alpha_G \Delta \bar{G}$

Mag. of shift of the IS C is = " " " LM C.

& Both the shifts are ||el shifts.

$\therefore$ The roi remains at 5% & eqm inc. ↑es by 125 ie from 800 to 925. This means that monetary accommodation of FE (Fiscal Expansion) is there. No crowding out of pvt Inv. is there $\because$ roi remains unchanged

Both policies are being used to ↑ Y.

$\Delta Y = \alpha_G \Delta \bar{G}$ : No crowding out

From the desk of ~~Ideas~~ Mapo 65

DATE 5

2005 Q/ Tale $C = 200 + 0.75\,Y_d$

Test $I = 296 - 16i$

$G = 340$

Do $T = 0.2Y$

Transfer payts $TR = 80$

Real dd for money $L = 0.2Y - 8i$

Real money ss $\overline{M}/\overline{P} = 200$

(i) Write down the eqns for the IS & LM Cs. Cal. the eqm levels of inc. & the roi. What wld be the budget surplus corresp$^g$ to this level of inc.

(ii) How much is the ↑ in money ss reqd to ↑ the eqm inc. by 100?

TRY iii Extent of crowding out of inc, if G res by 50

Ans (i) IS curve Eqn: $Y = C + I + G$

$Y = 200 + 0.75(Y - 0.2Y + 80) + 296 - 16i + 340$

$Y = 836 + 0.6Y + 60 - 16i$

$Y = 896 + 0.6Y - 16i$

$0.4Y = 896 - 16i$

IS$_1$ $\boxed{Y = 2240 - 40i}$ -- IS. eqn

LM curve Eqn: $L = \overline{M}/\overline{P}$

$0.2Y - 8i = 200$

$\boxed{Y = 1000 + 40i}$ --- LMC

LM$_1$

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If G ↑s by 50, what is the extent of crowding out
$\Delta G = 50$, shift of ISC $= \alpha_G \Delta G = \frac{1}{1-c(1-t)} \Delta G$

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$= (2.5)(50) = \underline{125}$

Find $IS_2$: $Y = C + I + G + \Delta G$. Equate $LM_1 = IS_2$ & find $i$ & $Y$.
then find $\Delta$ in income

Equating IS with LM ..

$$2240 - 40i = 1000 + 40i$$

$$1240 = 80i$$

$$\boxed{i = 15.5\%}$$

$i = 15.5\%$

$\Rightarrow$ Eqm Inc. is:

$$Y = 1000 + 40(15.5)$$

$$= \boxed{1620}$$

$Y = 1620$

$IS_2: Y = \cancel{1865}\ 2365 - 40i$

$LM_1: Y = 1000 + 40i$

$2365 - 40i = 1000 + 40i$

$\cancel{1865 - 1000 = 80i}$

$\cancel{865 = 80i}$

$\cancel{i = \frac{1865}{80}}$

$Y_2 = 1685$

$\Rightarrow$ partial crowding out

$\Delta Y < 125$

Budget surplus: $tY - \bar{G} - \bar{TR}$

Rev − Exp = Taxes − $(\bar{G} + \bar{TR})$
$= ty - \bar{G} - \bar{TR}$

$$= 0.2(1620) - 340 - 80$$

$$= 324 - 340 - 80 = -96$$

$\Rightarrow$ $\boxed{\text{Budget deft} = 96}$

(ii) $\Delta$e in money ss reqd to ↑ the inc. by 100. (Now, given $\Delta Y = 100$, need $\Delta M_s$) - concerned with

~~Ans~~: now, $\frac{\Delta Y}{\Delta \bar{M}/P} = \frac{b\alpha_G}{h + b \cdot \alpha_G \cdot k}$ — MP multr.

Real Ms

Given $b = 16$ (from Inv fn)

$$\alpha_G = \frac{1}{1-c(1-t)} = \frac{1}{1-0.75(1-0.2)} = 2.5$$

$h = 8$, $K = 0.2$, $\Delta Y = 100$, $b = 16$

$I = \bar{I} - bi$
$= 296 - 16i$
$\Rightarrow b = 16$

$L = kY - hi$
$= 0.2Y - 8i$
$\Rightarrow k = 0.2$
& $h = 8$

$\frac{100}{\Delta(\bar{M}/P)} = \frac{40}{16}$
$\Rightarrow \Delta\left(\frac{\bar{M}}{P}\right) = \frac{1600}{40} = 40$

Substg the values:

$$\frac{100}{\Delta(\bar{M}/P)} = \frac{16 \times 2.5}{8 + 16(2.5)0.2}$$

$$\frac{100}{\Delta(\bar{M}/P)} = \frac{40}{16} \Rightarrow \Delta\left(\frac{\bar{M}}{P}\right) = \frac{1600}{40} = 40$$

$= \frac{16 \times 100}{40} = 40$ $= \Delta \bar{M}$

$\Delta M = 40$

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13.4

(67)

From the desk of

DATE (6)

2006 Imp. good

$C = 90 + 0.8Y_d$

$I = 160 - 6i$ $(I = 160 - 6i)$

$G = 40$

$T = 50$ (Auton. taxes)

Real dd for money : $M^d = 0.2Y - 4i$

nominal money ss : $M^S = 300$

Price : $P = 3$

(i) compute the mon. & fiscal policy multipliers

Solⁿ IS eqⁿ : $Y = C + I + G$

$Y = 90 + 0.8Y_d + 160 - 6i + 40$

$Y = 290 + 0.8(Y - 50) - 6i$

$IS_1 \rightarrow$ $\Rightarrow Y = 1250 - 30i$

needed for part (ii)

LM Eqⁿ : $M^d = L = \frac{\bar{M}}{P}$ ie

$\Rightarrow 0.2Y - 4i = \frac{300}{3}$

$\Rightarrow 0.2Y - 4i = 100$ $\Rightarrow 0.2Y = 100 + 4i$

$Y = \frac{100}{0.2} + \frac{4}{.2}i$

$LM_1 \rightarrow$ $\Rightarrow Y = 500 + 20i$ — — LM

Equate IS = LM : $1250 - 30i = 500 + 20i$

$\Rightarrow i = 15\%$

$i = 15\%$, $Y = 800$ & $Y = 1250 - 30(15) = 800$

Monetary Multr : $= \frac{\partial Y}{\partial (M/P)} = \frac{\alpha_G \cdot b}{h + b \cdot k \cdot \alpha_G}$

$c = 0.8$

$\alpha_G = 5$

$\alpha_G = \frac{1}{1 - c} = \frac{1}{1 - 0.8} = 5$ {t not included ∵ there is no propl inc Tax}

Neelgagan

(68)

Monetary multr = 3

$$\frac{\partial Y}{\partial (M/P)} = \frac{5 \times 6}{4 + (6 \times 0.2 \times 5)} = \frac{30}{10} = 3$$

Here, $b = 6$, $\alpha_G = 5$, $k = 0.2$, $h = 4$

Fiscal Policy Multiplier

$$\gamma = \frac{\Delta Y}{\Delta G} = \frac{\alpha_G \cdot h}{h + b \cdot k \cdot \alpha_G}$$

FP multr $\gamma = 2$

$$\frac{\Delta Y}{\Delta G} = \frac{5 \times 4}{4 + (6 \times 0.2 \times 5)} = \frac{20}{10} = 2.$$

(ii) If the full empt level of inc is 950, what is the (a) ↑ in the nominal money ss reqd to achieve full empt and
(b) ↑ in Govt exp. reqd to achieve full empt?

1st find initial eqm value of Inc, $Y_0$ so find IS & LM curves

Soln: The economy wld like to move from present inc 800 to 950 ($Y_f$). Given $\Delta Y$, find $\Delta\left(\frac{M}{P}\right)$

$r_1 = 15\%$
$Y_1 = 800$

a) The ↑ in nominal money ss needed to achieve full empt will be

$\Delta Y = Y_f - Y^* = 150.$
ie $950 - 800 = 150$

MP multr $= \frac{\Delta Y}{\Delta M/\bar{P}} = 3$ (Calculated above)

$$\frac{150}{\Delta M/3} = 3$$

$\frac{150}{\Delta\left(\frac{M}{P}\right)} = 3$

$\Rightarrow \Delta\left(\frac{M}{P}\right) = \frac{150}{3}$

$$150 = \frac{\Delta M}{3} \cdot 3 \Rightarrow \boxed{\Delta M = 150.}$$

$\Delta M = 150$

$\Rightarrow \Delta \bar{M} = 150$

$\left(\Delta \bar{M} = \frac{150}{3} \times 3\right)$

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From the desk of DATE (7)

Impact of ↑ in Govt exp: need $\Delta G$, $\Delta Y = 150$

$\gamma = \frac{\Delta Y}{\Delta G} = 2$ ⇒ $\frac{150}{\Delta G} = 2$ ⇒ $\Delta G = \frac{150}{2} = 75$

$\Delta Y = 150$

$\Delta G = 75$

$2 \cdot \Delta G = 150 \Rightarrow \boxed{\Delta G = 75}$.

Thus, when G rises by 75 (from 40 to 115), the eqm level of nat. inc. rises from 800 to 950.

(iii) what'll be the effect of (a) & (b) on the roi?

get LM curve & new one

Soln: Effect of an ↑ in the nom. money ss by Rs150 on the roi →

To get Eqn of LM Curve: $\underset{(L)}{0.2Y - 4i} = \underset{(M/\bar{P})}{\frac{300}{3}} + \underset{\Delta(M/\bar{P})}{\frac{150}{3}}$

(M + ΔM) 300 + 150

orig'l real ms

change in real money ss.

$\Rightarrow 0.2Y - 4i = \frac{450}{3}$

$0.2Y = 150 + 4i$

new LM C

$\boxed{Y = 750 + 20i}$ -- new LM Eqn.

Equating with initial IS C

Initial IS eqn is $Y = 1250 - 30i$

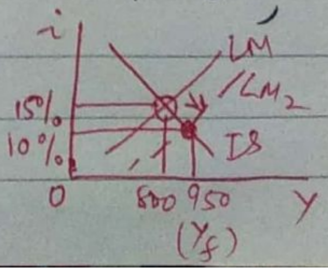
$\boxed{IS = LM} \Rightarrow 1250 - 30i = 750 + 20i$

$50i = 500$

$\boxed{i = 10\%}$

$i = 10\%$

Hence, due to ↑ in the money ss by 150, the roi falls from 15% to 10%.




$Y = 750 + 20i$

$Y = 750 + 20(10) = \underline{950}$

Neelgagan

Effect of an ↑ in Govt exp. by Rs 75 on the roi →

get Eqn of the IS curve: $Y = C + I + G + \Delta G$. $\rightarrow (\Delta G)$

$$Y = 90 + 0.8Y_d + 160 - 6i + \underbrace{40 + 75}_{115}$$

$$Y = 90 + 0.8(Y - 50) + 160 - 6i + 40 + 75$$

$IS_2$ $\Rightarrow \boxed{Y = 1625 - 30i}$ --- IS.

Equate LM & new IS eqn

$$\Rightarrow 1625 - 30i = 500 + 20i \quad \text{LM (initial equation)}$$

roi ↑es

$$50i = 1125$$

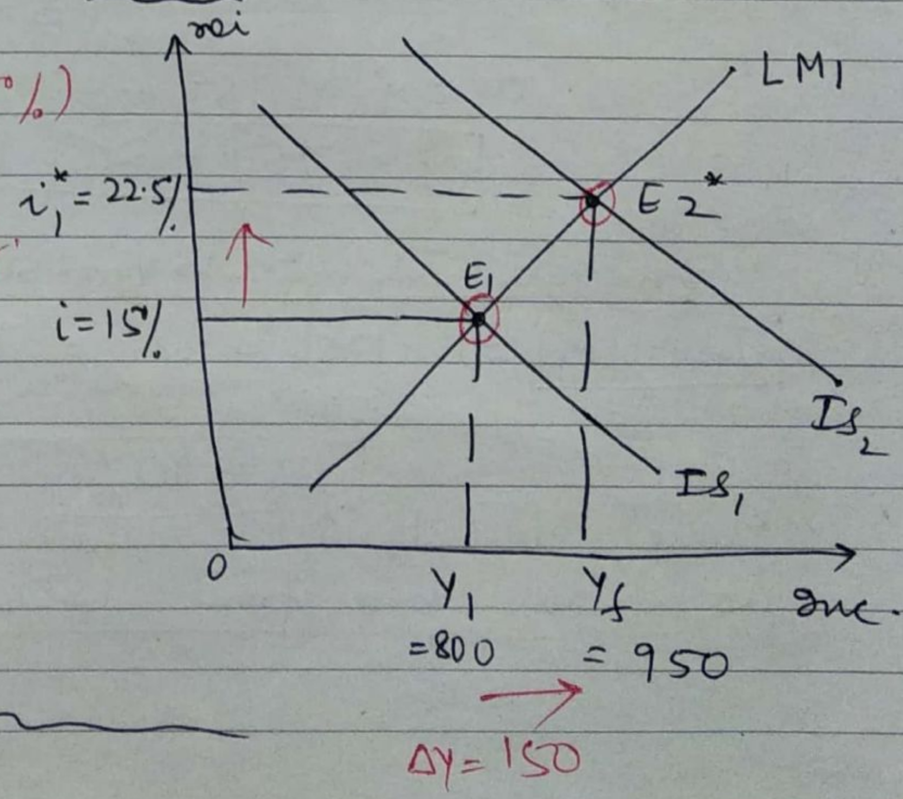
$i = 22.5\%$ $\Rightarrow \boxed{i = 22.5\%}$

Hence, due an ↑ in G by Rs 75, the roi ↑es from 15% to 22.5%.

when $i = 22.5\%$,

$$Y = 1625 - 30(22.5\%)$$

$$Y = 1625 - 675 = 950 = Y_f$$



18/4

From the desk of Class

DATE (8)

Q 2000)

$C = 85 + 0.75Y_d$

$I = 200 - 10i$

$G = 250$

$T = 40 + 0.25Y$ — both lumpsum tax & propo taxes are there

$TR = 2500$

Real Bal^s: $M_d = 0.2Y - 20i$

Nominal money is $M = 1800$

$P = 3$.

(i) Eq^m Levels of mi & rei

sol. IS eq^n: $Y = C + I + G$

$Y = 85 + 0.75Y_d + 200 - 10i + 250$

$= 85 + 0.75(\underbrace{Y - 40 - 0.25Y}_{Y-(40+0.25Y)} + \underbrace{2500}_{TR})$

$+ 200 - 10i + 250$

IS

$\Rightarrow \boxed{Y = 5440 - 22.85i}$ -- IS.

For LM Eq^n: $L = M/P$

$0.2Y - 20i = 1800/3$

LM

$\Rightarrow \boxed{Y = 3000 + 100i}$ -- LM

For Eq^m: IS = LM

$\Rightarrow 5440 - 22.85i = 3000 + 100i$

$i = 19.86\%$

$\Rightarrow \boxed{i = 19.86\%}$

$Y = 4986.1$

$\Rightarrow Y = 3000 + 100(19.86) = \boxed{4986.1}$

USE given 6

(ii) Fiscal Policy multr: $\Delta G = 60$, find $\Delta Y$

Ans. $\gamma = \frac{\Delta Y}{\Delta G} = \frac{h\alpha_G}{h + b \cdot k \cdot \alpha_G}$

$$\alpha_G = \frac{1}{1 - c(1-t)}$$

$$= \frac{1}{1 - 0.75(1 - 0.25)}$$

only t

$$= \boxed{2.285}$$

& $h = 20$; $b = 10$, $k = 0.2$

$$\therefore \frac{\Delta Y}{\Delta G} = \frac{2.285 \times 20}{20 + (10 \times 2.285 \times 0.2)} = \frac{45.7}{24.56}$$

$\gamma = \frac{\Delta Y}{\Delta G} = 1.86$

$\therefore \Delta Y = 1.86 \, \Delta G$

$$= 1.86 \times 60 = \boxed{111.60}$$

(iii) ↑ By how much wld eqm inc. $\Delta e$ if g res by 60?

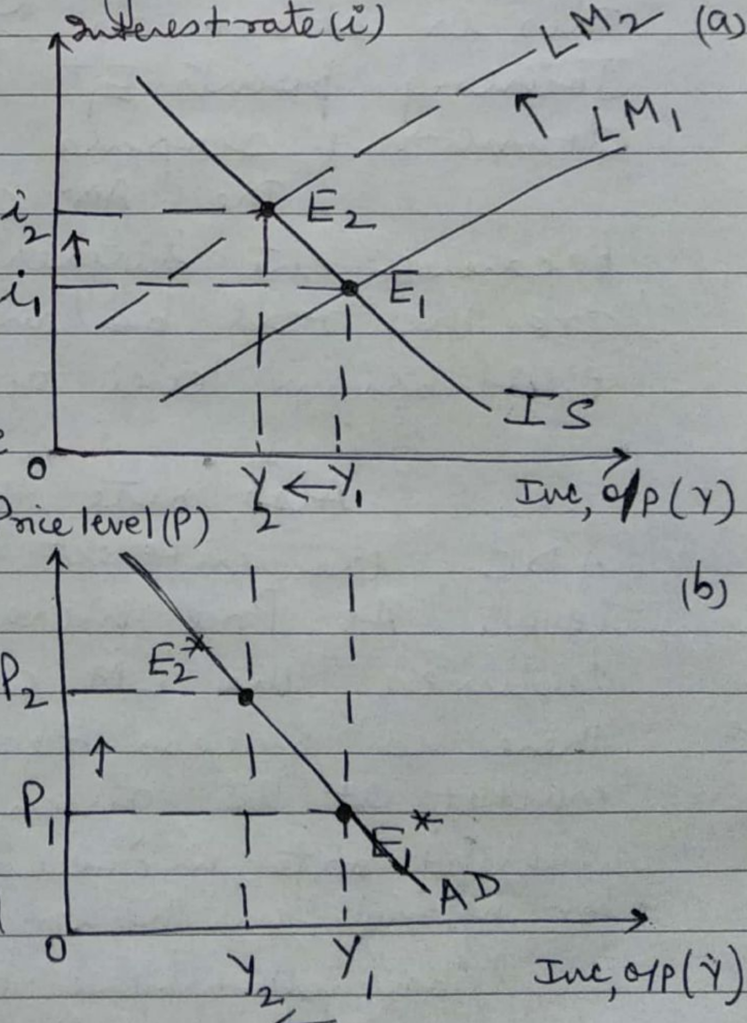
Soln above

From the desk of " Derivation of the Aggregate Demand curve using IS-LM Model" DATE

An AD curve shows the relationship bet. price levels & output (ie income) when there is a simultaneous equilibrium in the money & the goods market. Autonomous spending ($\bar{A}$) & the nominal money supply ($\bar{M}$) are held constant & the prices are allowed to vary.

Let's see how the AD curve can be derived using the IS-LM model.

Suppose price level in the economy is $P_1$. The real money supply in the economy is ($\bar{M}/P_1$) & given that the LM curve is $LM_1$. The intersection of the IS curve & $LM_1$ curve gives us the equilibrium in the goods & the money market, determining the equilibrium level of income, $Y_1$. Thus when the price level in the economy is $P_1$, the equil. level of income is $Y_1$.



This combination of price level & income is shown in fig (b) as point $E_1^*$.

Let the nominal money supply be held constant at $\overline{M}$. Sup. the price level increases from $P_1$ to $P_2$. This will cause a decline in the real money supply to $\overline{M}/P_2$ and cause the LM curve shift leftward from $LM_1$ to $LM_2$. The new equilibrium position is attained at $E_2$ where IS & $LM_2$ intersect. The new equilibrium level of income is $Y_2$. $(Y_2 < Y_1)$. This is shown as point $E_2^*$ in fig (b). Joining points $E_1^*$ and $E_2^*$ we derive the downward sloping AD curve.

The AD curve is downward sloping because the higher the price level, the lower are the real balances $(M/P)$ & lower is the equilibrium level of spending (= output = income).

Also, note that as we move up on the ADC, the interest rate increases with the price level. As Price increases real money ss $(\overline{M}/P)$ declines, the LM curve shifts to the left, there is excess demand for money in the market at the given rate of interest ($i_1$) & the interest rate increases (to $i_2$) to remove excess demand for money in the market & bring back the equilibrium where again $D_M = S_M$.