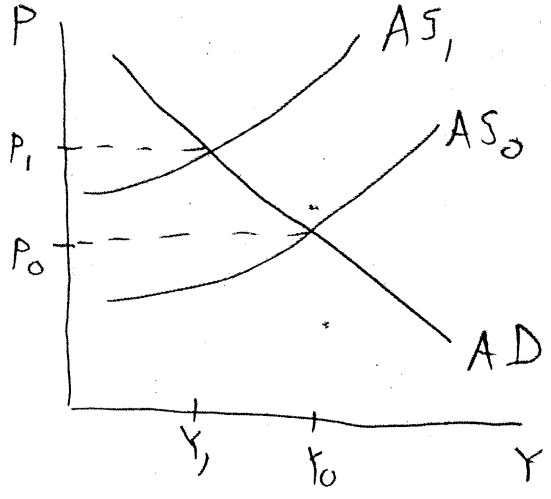
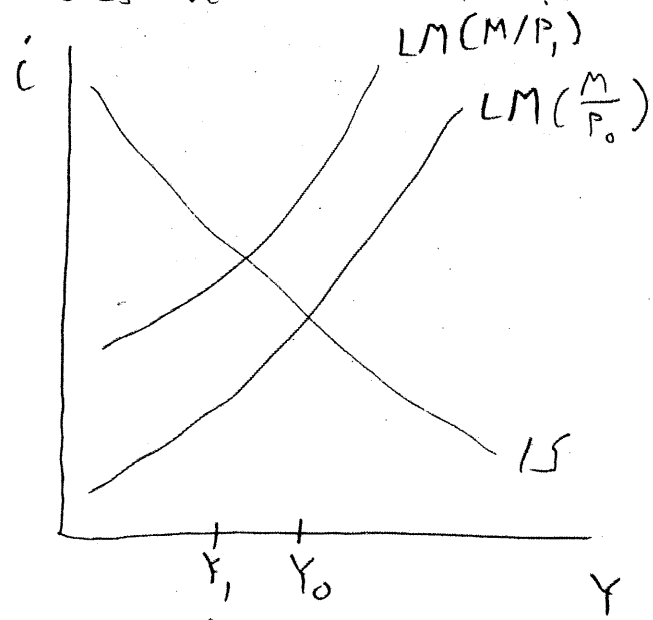
IS/MP Model

Problem: if central banks set i not M, IS/LM and AD curve in P/Y space does not describe our economy and can be misleading.

Example: effect of oil price hikes, which may shift AS curve up (raise P at given Y)

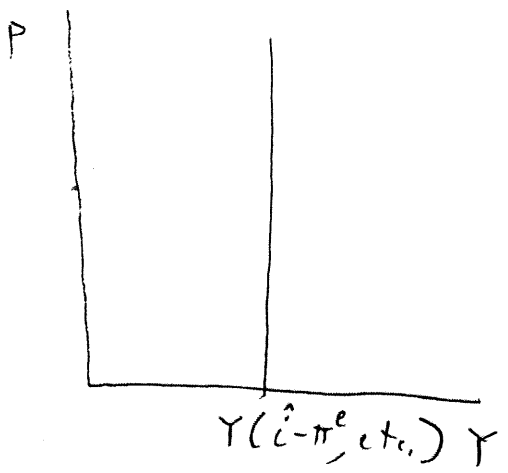
IF M Fixed, this causes a recession:





because $P\uparrow \rightarrow \frac{M}{P}\downarrow \rightarrow i\uparrow$

IF i Fixed, maybe no effect on Y, unless oil shock affects expenditure through other channels.



IS/MP Model (cont.)

What to do? Romer & some others recommend:

assume central bank follows an "interest rate rule":

$i = r(\pi, y) + \pi^e$ where $r(\pi, y)$ (or $r_\pi > 0$, $r_y > 0$, with $+$ $+$)

- i: target nominal rate
- $r(\pi, y)$: target real rate

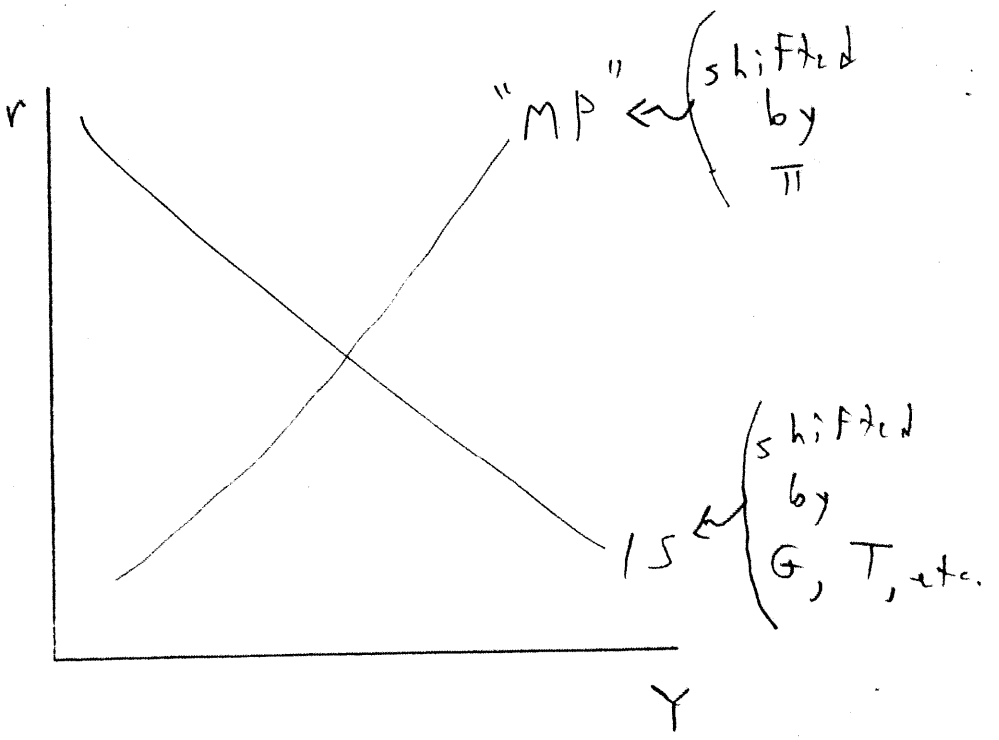
Note: if $\pi^e = \pi$ (which doesn't have to be true)

this means $i = r(\pi, y) + \pi$

$$\frac{\partial i}{\partial \pi} = r_\pi + 1$$

central bank raises i more than one-to-one with π

If we graph IS in r/Y space,

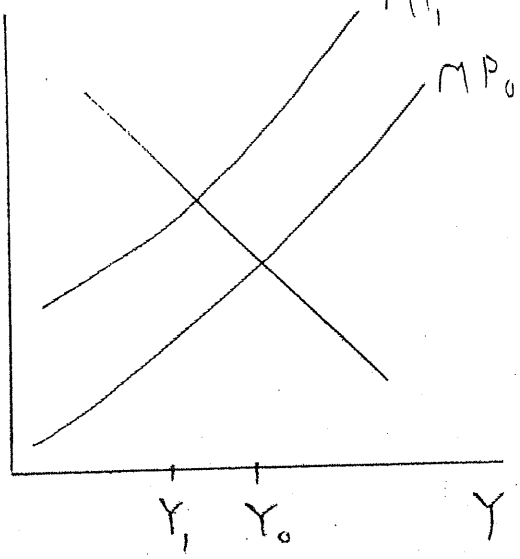


IS MP model (cont.)

AD curve From IS/MP

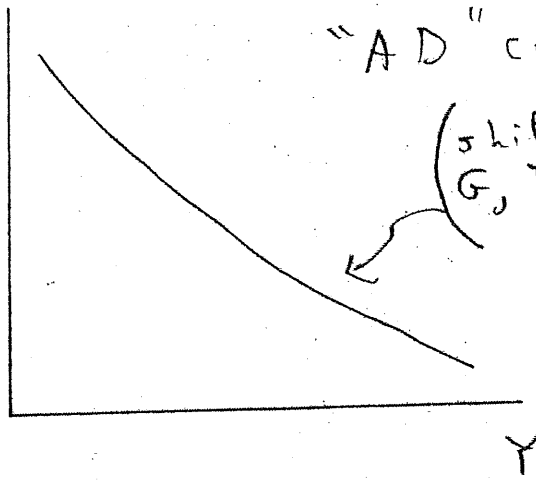
Not P vs. Y but
π vs. Y

IF π ↑, central bank raises r at any given Y
(recall $r(\overset{+}{\pi}, \overset{+}{Y})$



hence MP curve shifts up, Y falls

This creates a negative relation between π and Y!



Get $\frac{\partial Y}{\partial \pi}$ from equations:

$$Y = E(Y, r, G, T) \qquad r = r(Y, \pi)$$

$$\frac{\partial Y}{\partial \pi} = E_Y \frac{\partial Y}{\partial \pi} + E_r \frac{\partial r}{\partial \pi} \qquad \frac{\partial r}{\partial \pi} = r_Y \frac{\partial Y}{\partial \pi} + r_\pi$$

solve for $\frac{\partial Y}{\partial \pi}$ gives

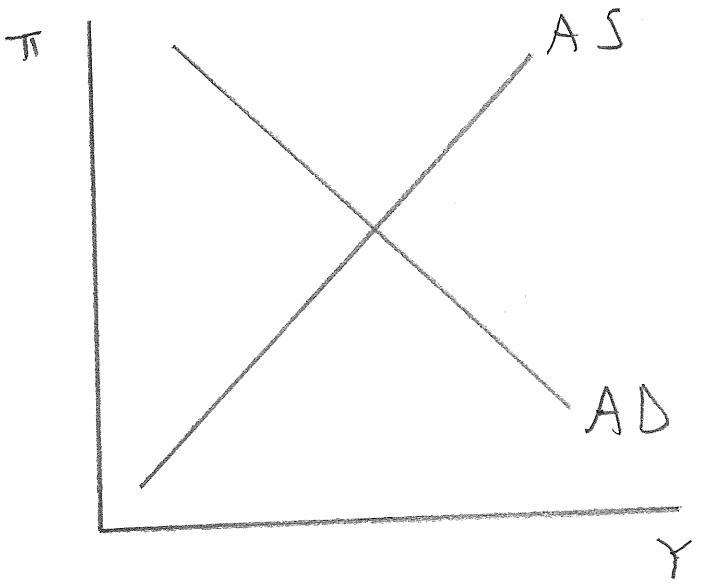
$$\frac{\partial Y}{\partial \pi} = \frac{r_\pi}{\frac{1-E_Y}{E_r} - r_Y} = \frac{+}{\frac{+}{-} - (+)} < 0 \quad (5.13)$$

IS/MP Model (cont.)

AD & AS

Using original Phillips curve, $\pi = \pi(\overset{+}{Y})$

so



Using expectations-augmented Phillips curve,

$$\pi = \pi^e + \alpha(Y - \bar{Y})$$

Curve is shifted by change in π^e