CH 16: GENERAL EQUILIBRIUM

- EQ. IN ALL MARKETS TOGETHER

  GOODS, MONEY, LABOUR.

- COMBINE IS-LM to get Aggregate Demand curve.
- Use labour market results to get Aggregate Supply curve.

- Solution of AD-AS solves for eq^m in all markets.

Why do we care?

- New endogenous variable is Price Level (P). AD-AS solves for Y and P together.
- Helps us think about inflation and its relation to unemployment.

Aggregate Supply

- captures effect of Y on P.

From Ch15 we know

$$W = P^e F(u, z)$$

$$P = (1+\mu) W$$

$$\Rightarrow P = (1+\mu) P^e F(u, z)$$

- price level depends on expected price level and unemployment rate.

convert u to Y [we want (P, Y) relationship]

$$u = \frac{U}{L} = 1 - \frac{N}{L}$$

if $Y = N$ is our simple production function

$$u = 1 - \frac{N}{L} = 1 - \frac{Y}{L}$$

$\Rightarrow$ AS curve $P = P^e(1+\mu) F\left(1 - \frac{Y}{L}, z\right)$

Two characteristics of AS curves

① Higher expected price level leads to higher actual price level.
(one for one relation. Try doubling P^e)

Why?

② An $\uparrow$ in $Y \Rightarrow \uparrow$ in P

Why?

4 steps : be careful

a) $\uparrow$ in $Y \Rightarrow \uparrow$ in N

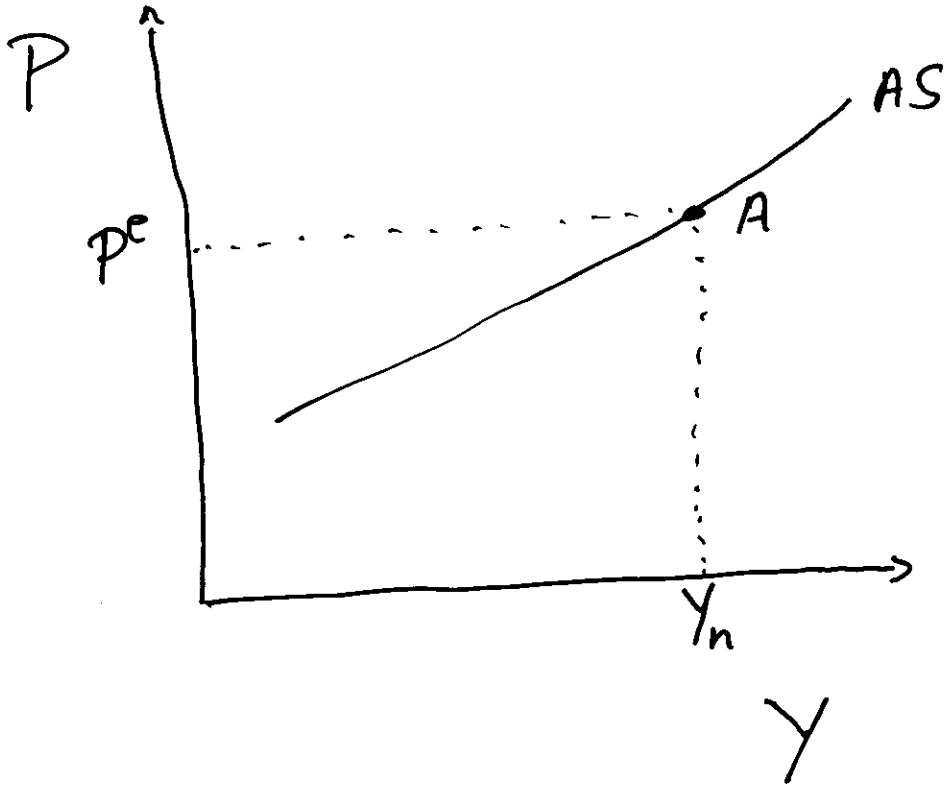
b) $\uparrow$ in $N \Rightarrow \downarrow$ in u (unemployment rate)

c) $\downarrow$ in $u \Rightarrow \uparrow$ in W (better bargaining power)

d) $\uparrow$ in $W \Rightarrow \uparrow$ in costs $\Rightarrow \uparrow$ in P
(given markup)

Lets plot AS curve

as $Y \uparrow$ $P \uparrow$ $\Rightarrow$ upward sloping curve



— Draw AS for a given P^e.

if $P = P^e \Rightarrow Y = Y_n$

if $P \lesssim P^e \Rightarrow Y < Y_n$ etc.

Why?

- if $Y < Y_n$, cannot ask for higher wages so wages fall $\Rightarrow$ costs fall $\Rightarrow$ P falls below expected level.

Aggregat Demand Curve

Why and how does a change in P affect output, Y?

- Take simple IS-LM relations from Ch 6.

$$IS: \quad Y = C(Y-T) + I(Y, i) + G$$

$$LM: \quad \frac{M}{P} = Y\,L(i)$$

if $P \uparrow$ and M is constant $\frac{M}{P} \downarrow$

real money supply contracts

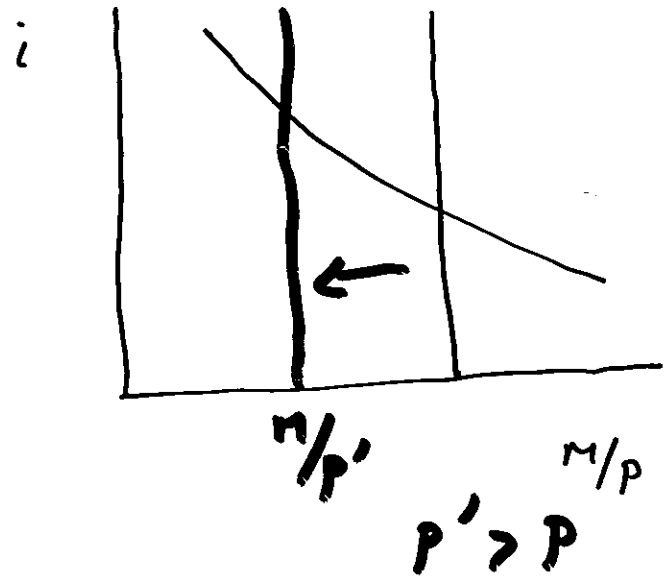
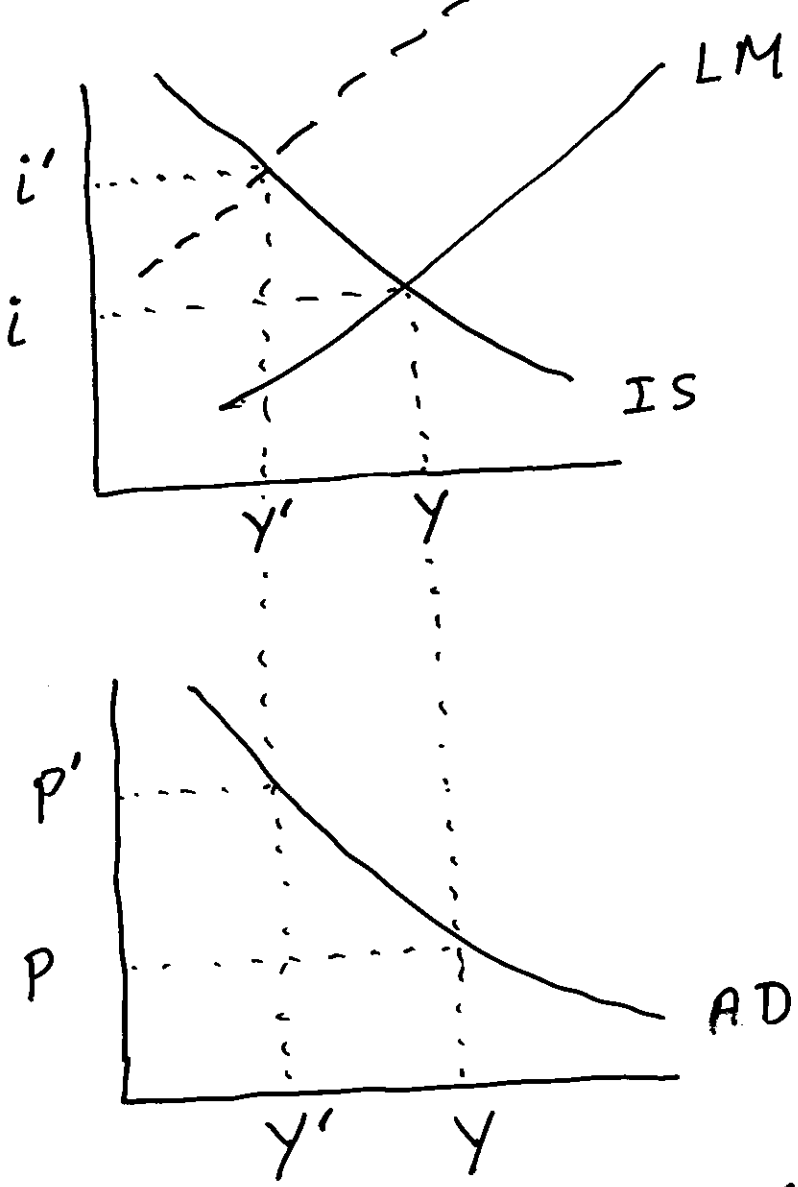


Diagram for money market. What about LM curve?

LM shifts left because P was held constant when we drew LM.

Derivation of AD curve



When P ↑ ⇒ real money balances fall
⇒ interest rate ↑ (from i to i')
⇒ Investment ↓ ⇒ Z = C+I+G ↓ ⇒ Y ↓
so AD is downward sloping relationship.

So equation for AD summarized as

$$Y = Y\left(\frac{M}{P}, G, T\right)$$
$$\quad\;\; + \quad + \quad -$$

- ↑ in M (open market purchase by central bank)
  ⇒ LM curve shifts right ⇒ AD curve shifts right.

→ ↑ in G or ↓ in T ⇒ IS shifts right
⇒ AD shifts right.

Movements in Y and Prices

- Assume $P_t^e = P_{t-1}$, Agents look backwards to form expectations

⇒ AS: $P_t = P_{t-1}(1+\mu) F\left(1 - \frac{Y}{L}, z\right)$

AD: $Y_t = Y\left(\frac{M}{P_t}, G, T\right)$

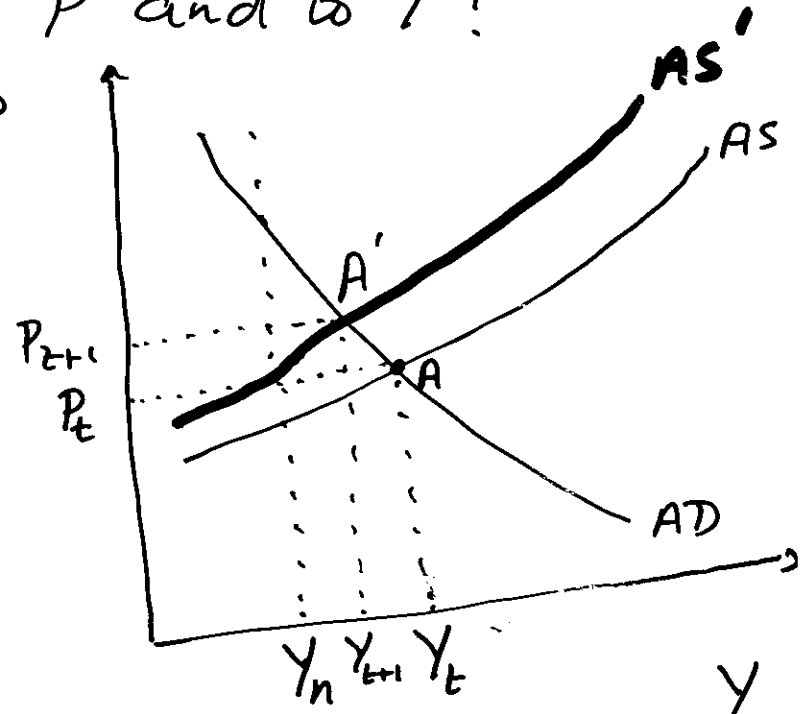
- Suppose $Y_t \neq Y_n$

will economy return to Y_n if left to itself?

ie., assume μ, L, Z, G, M, T

are all constant.

what happens to P and to Y?



At point A all markets are in equilibrium.

$Y_t > Y_n$

$\Rightarrow P_t > P_t^e = P_{t-1}$

Next quarter in t+1:

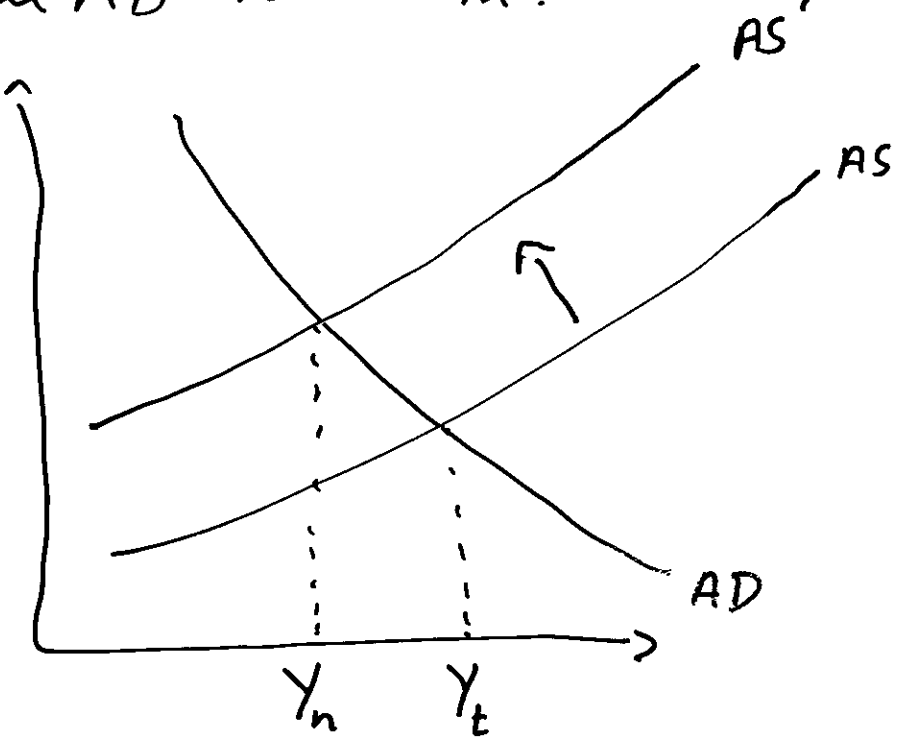
$P_{t+1}^e = P_t > P_t^e = P_{t-1}$

Since $P_{t+1}^e > P_t^e \Rightarrow$ AS curve shifts leftwards to AS'.

$\uparrow$ in $P^e \Rightarrow \uparrow$ in W $\Rightarrow \uparrow$ in costs $\Rightarrow \uparrow$ in P (for any level of Y)

$\Rightarrow$ in t+1 P$\uparrow$ and Y$\downarrow$ [closer to Y_n]

In the long run AS must be such that intersection with AD is at Y_n.



- When $Y_t = Y_n$ no shifts in AS curve.

  Why? $P_t = P_t^e = P_{t-1}$

  prices don't change so P^e doesn't change

  $\Rightarrow$ no more shifts.

  $\Rightarrow$ Long Run Equilibrium.

- In short run Y can be more or less than Y_n. Not in long run.