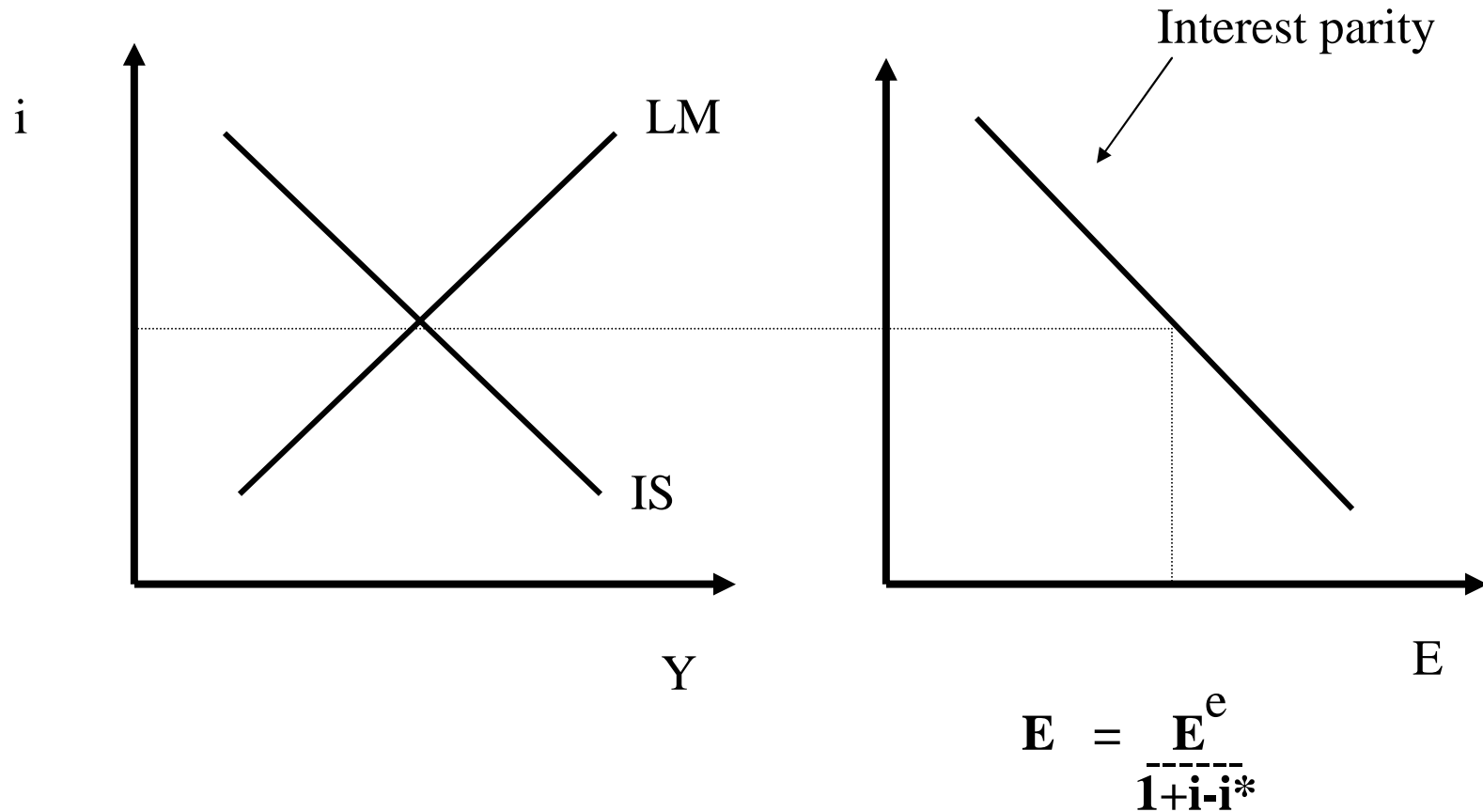


Lecture 16: Review

- Mundell-Fleming
- AD-AS

Mundell-Fleming

$$IS : Y = C(Y-T) + I(Y,i) + G + NX(Y,Y^*, E^e / (1+i-i^*))$$



* Fiscal and Monetary policy

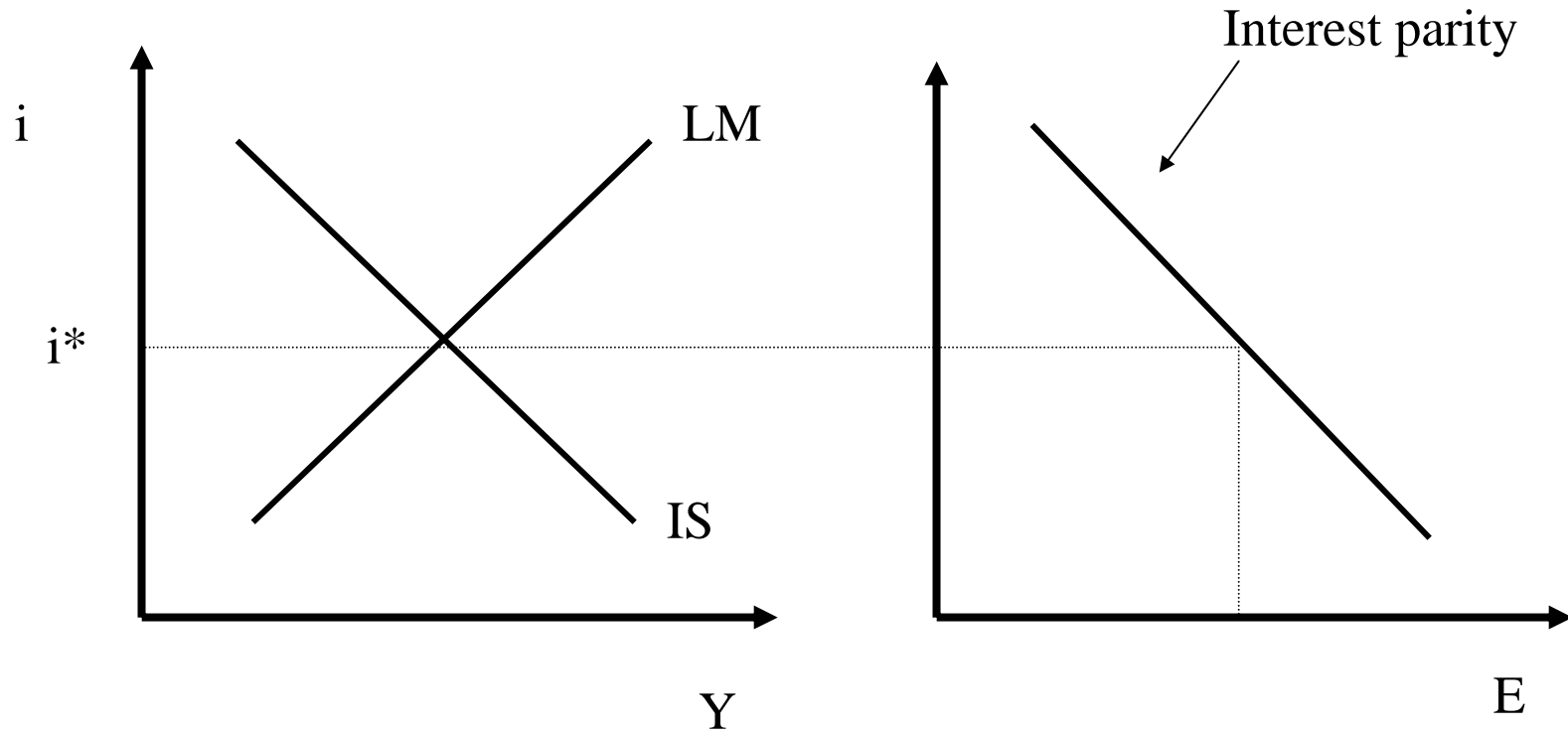
Fixed Exchange Rates (Credible)

- A little bit of it even in “flexible” exchange rates systems; “commitment” to E rather than M

$$\Rightarrow \quad i = i^*$$

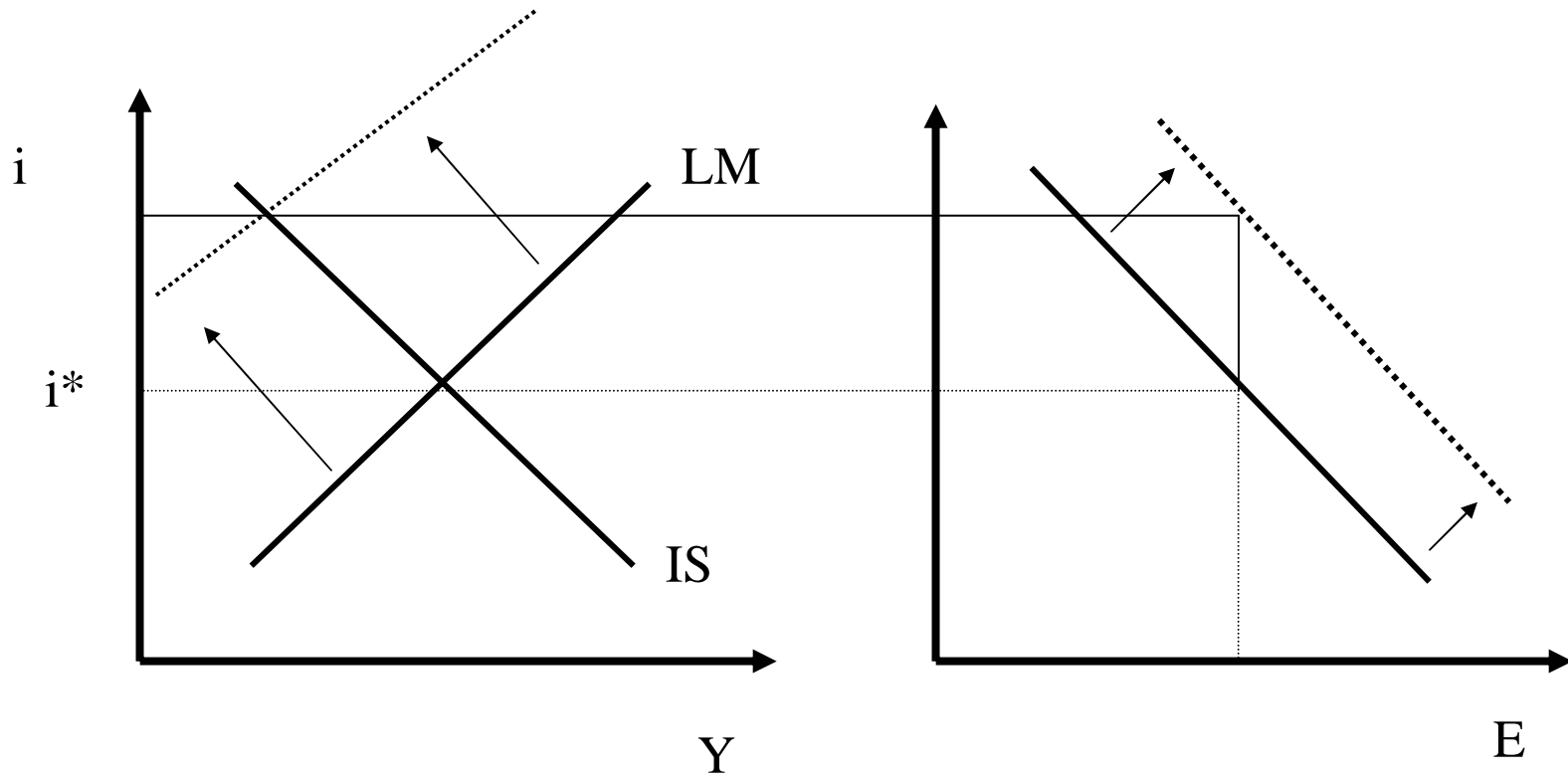
$$\Rightarrow \quad \frac{M}{P} = YL(i^*)$$

- Central Bank gives up monetary policy



- Fiscal and Monetary policy
- Capital controls; imperfect capital flows

Exchange Rate Crises



Note: There is a shift in the IS as well... but this is small, especially in the short run

Building the Aggregate Supply

- The labor market
- Simple markup pricing
- Long run (Natural rate: Aggregate demand factors don't matter for Y)
- Short run
 - Impact: Same as before but P also change (partial)
 - Dynamics (go toward Natural rate)

Wage Determination

- Bargaining and efficiency wages

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

Real wages
Nominal wage setting

Bargaining power
Fear of unemployment

Unemployment insurance
Hiring rate (reallocation)
Bargaining

Price Determination

- Production function (simple)

$$Y = N$$

\Rightarrow

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

The Natural Rate of Unemployment

- “Long Run” $P = P^e$
- The wage and price setting relationships:

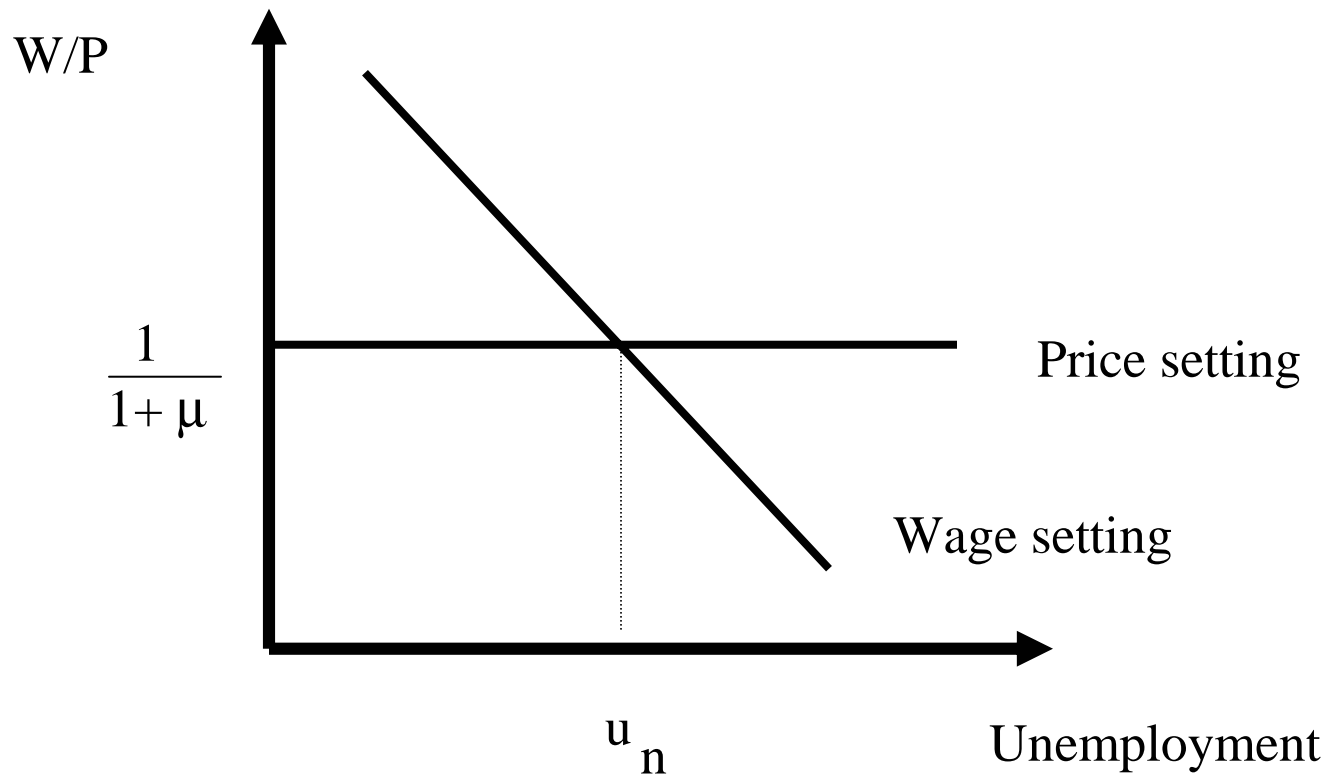
$$\frac{W}{P} = F(u,z)$$

$$\frac{P}{W} = 1 + \mu$$

=>

The natural rate of unemployment

$$F(u,z) = \frac{1}{1 + \mu}$$

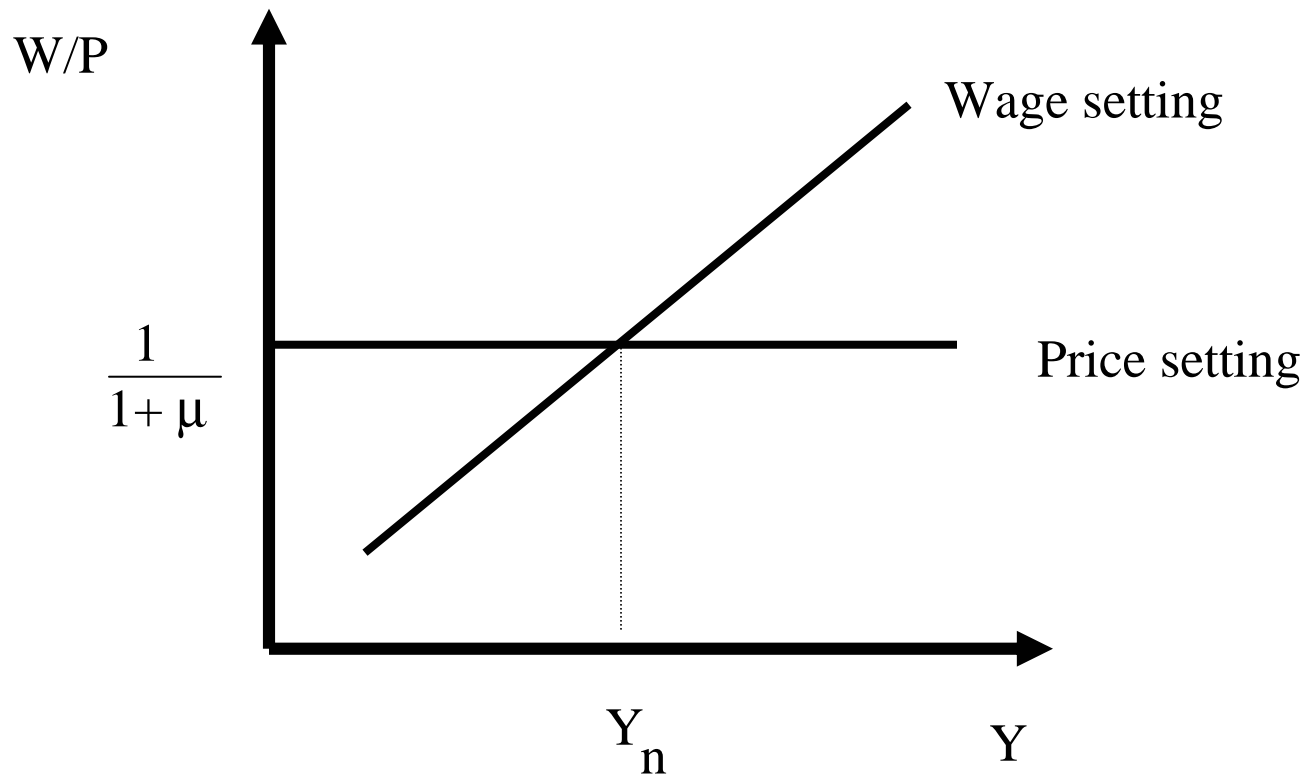


z , markup

From u_n to Y_n

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

$$F(1 - Y_n/L, z) = \frac{1}{1 + \mu}$$



z , markup

Aggregate Supply

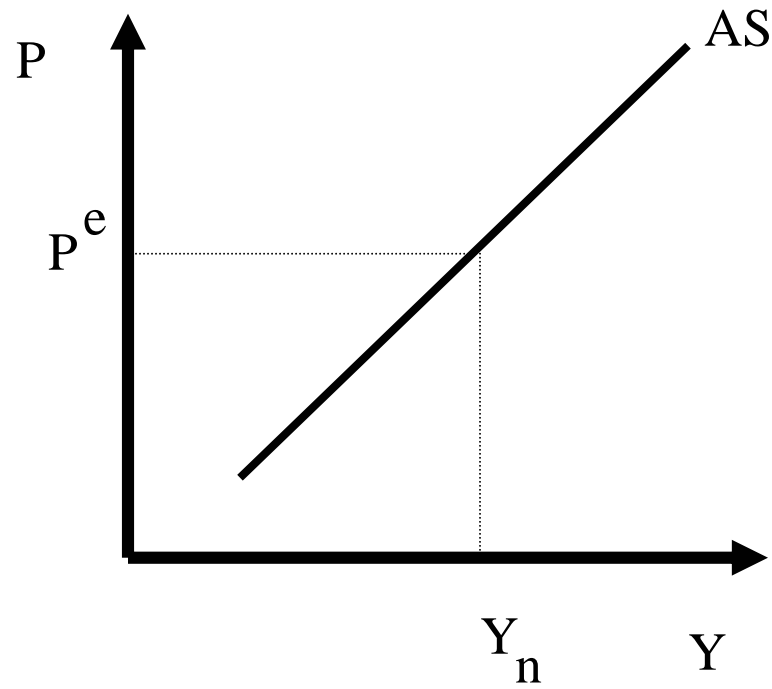
$$W = P^e F(1-Y/L, z)$$

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

\Rightarrow

$$\mathbf{P = P^e (1 + \mu) F(1-Y/L, z)}$$

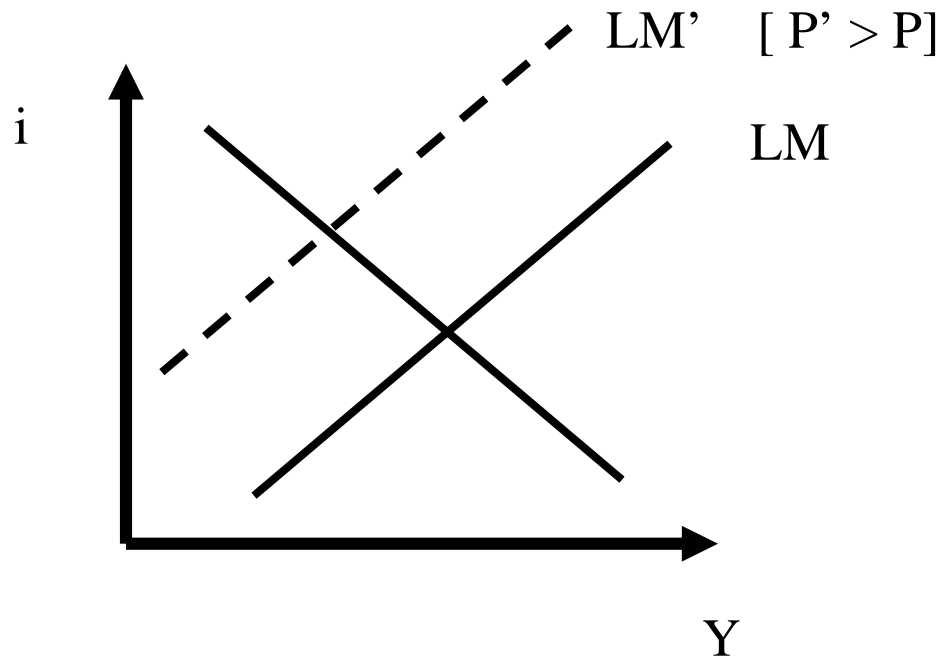
$$P = P^e (1 + \mu) F(1 - Y/L, z)$$



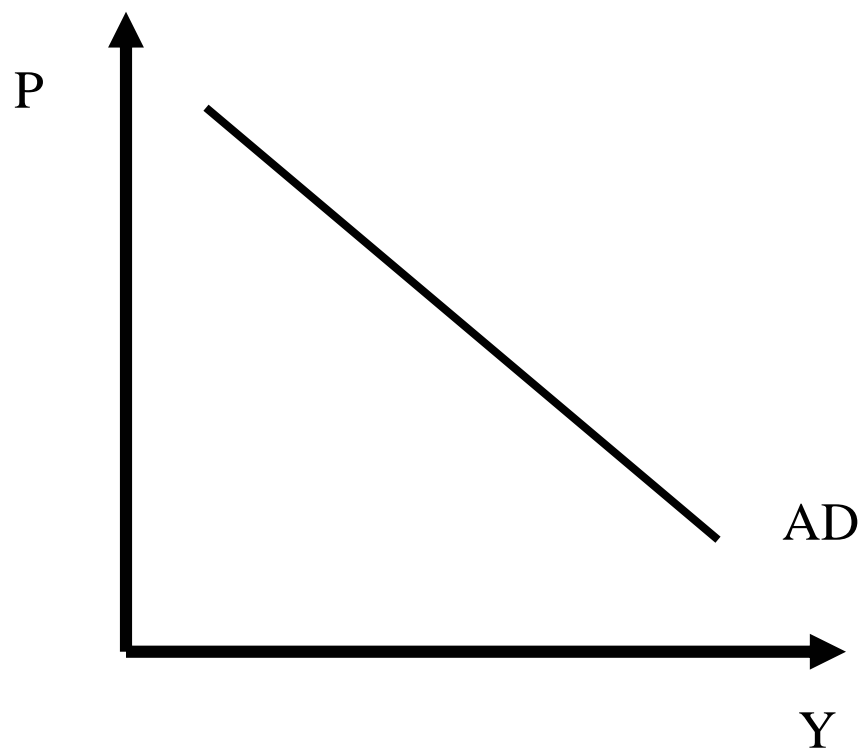
Aggregate Demand

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

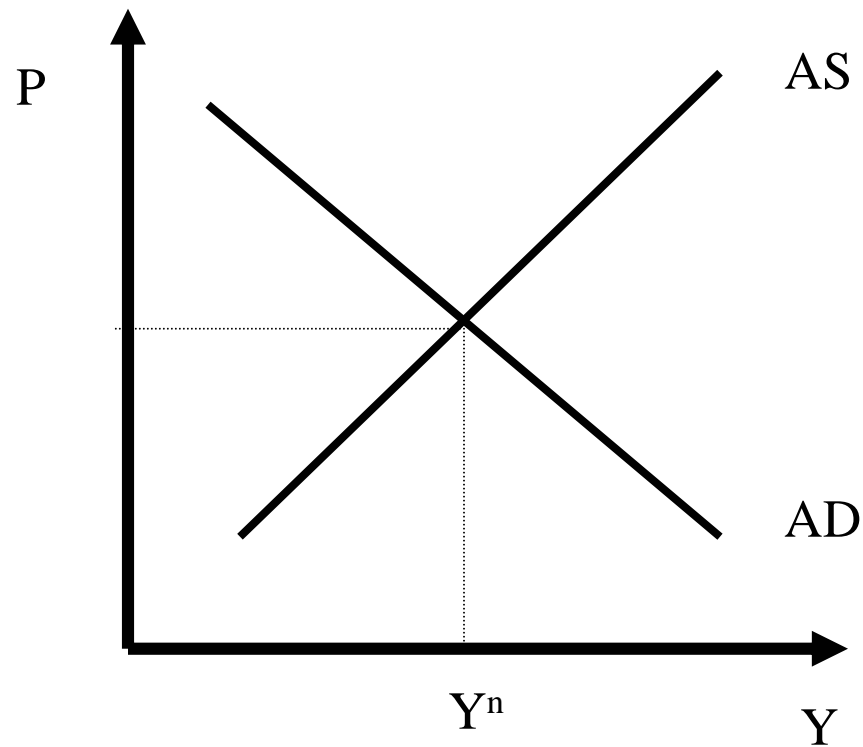
$$\text{LM: } \frac{M}{P} = Y L(i)$$



AD: $Y = Y(M/P, G, T)$
 + + -



AD-AS: Canonical Shocks



Monetary expansion; fiscal expansion; oil shock

From AS to the Phillips Curve

* The price level vs The inflation rate

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

Note that:

$$P(t)/P(t-1) = 1 + (P(t)-P(t-1))/P(t-1)$$

$$P^e(t)/P(t-1) = 1 + (P^e(t)-P(t-1))/P(t-1)$$

Let

$$\boldsymbol{\pi(t)} = (P(t)-P(t-1))/P(t-1)$$

- Then

$$(1+\pi(t)) = (1+\pi^e(t)) (1+\mu) F(u(t), z)$$

but

$$\ln(1+x) \approx x \quad \text{if } x \text{ is "small"}$$

Let also assume that

$$\ln(F(u(t), z)) = z - \alpha u(t)$$

The Phillips Curve

* The price level vs The inflation rate

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

$\approx \Rightarrow$

$$\pi(t) = \pi^e(t) + (\mu + z) - \alpha u(t)$$

The Phillips Curve and The Natural Rate of Unemployment

$$\pi^e(t) = \pi(t)$$

\Rightarrow

$$u_n = \frac{(\mu + z)}{\alpha}$$

$$\pi(t) = \pi^e(t) - \alpha (u(t) - u_n)$$