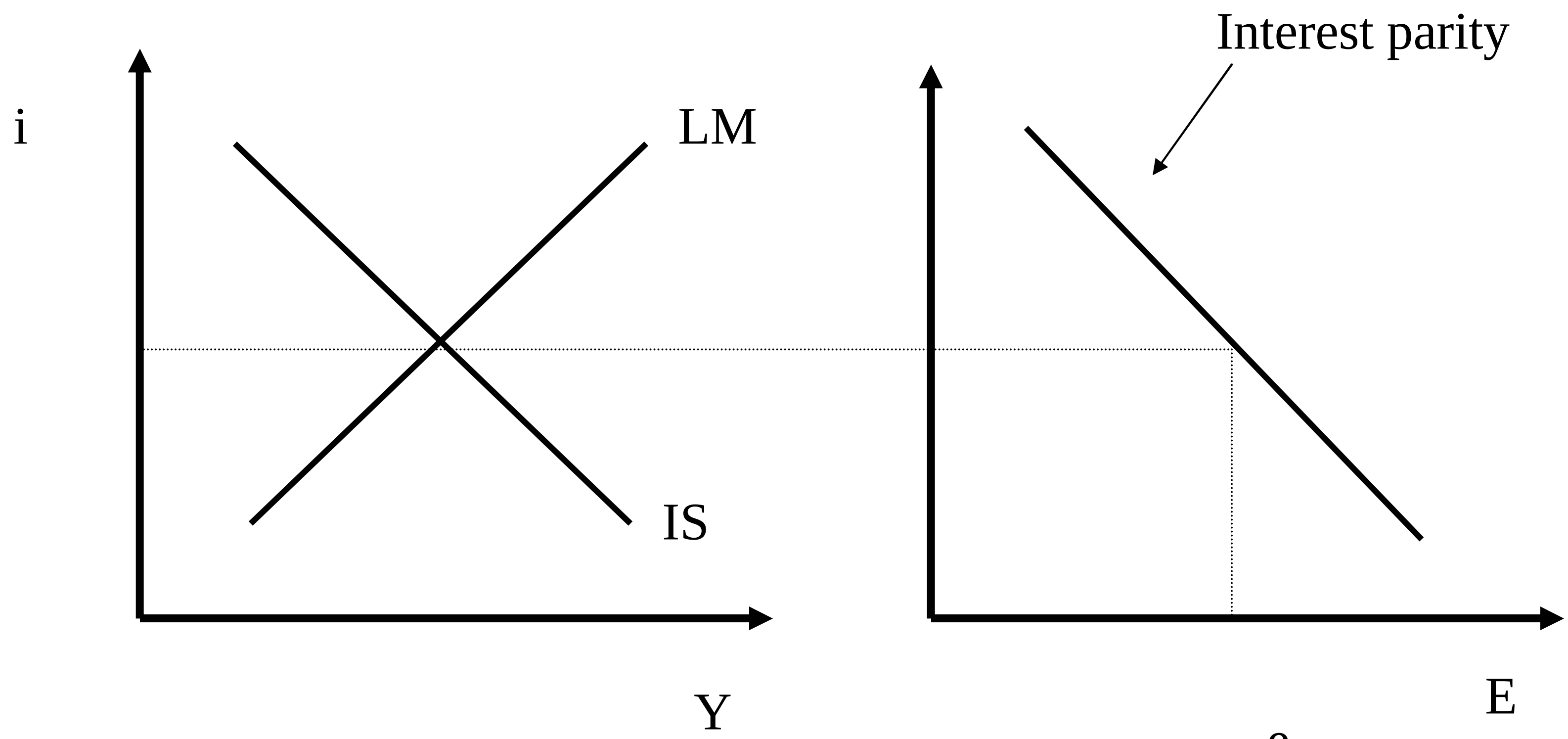
Lecture 16: Review

- Mundell-Fleming

- AD-AS

Mundell-Fleming

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



$$\mathbf{E} = \frac{\mathbf{E}^e}{\mathbf{1+i-i^*}}$$

* Fiscal and Monetary policy

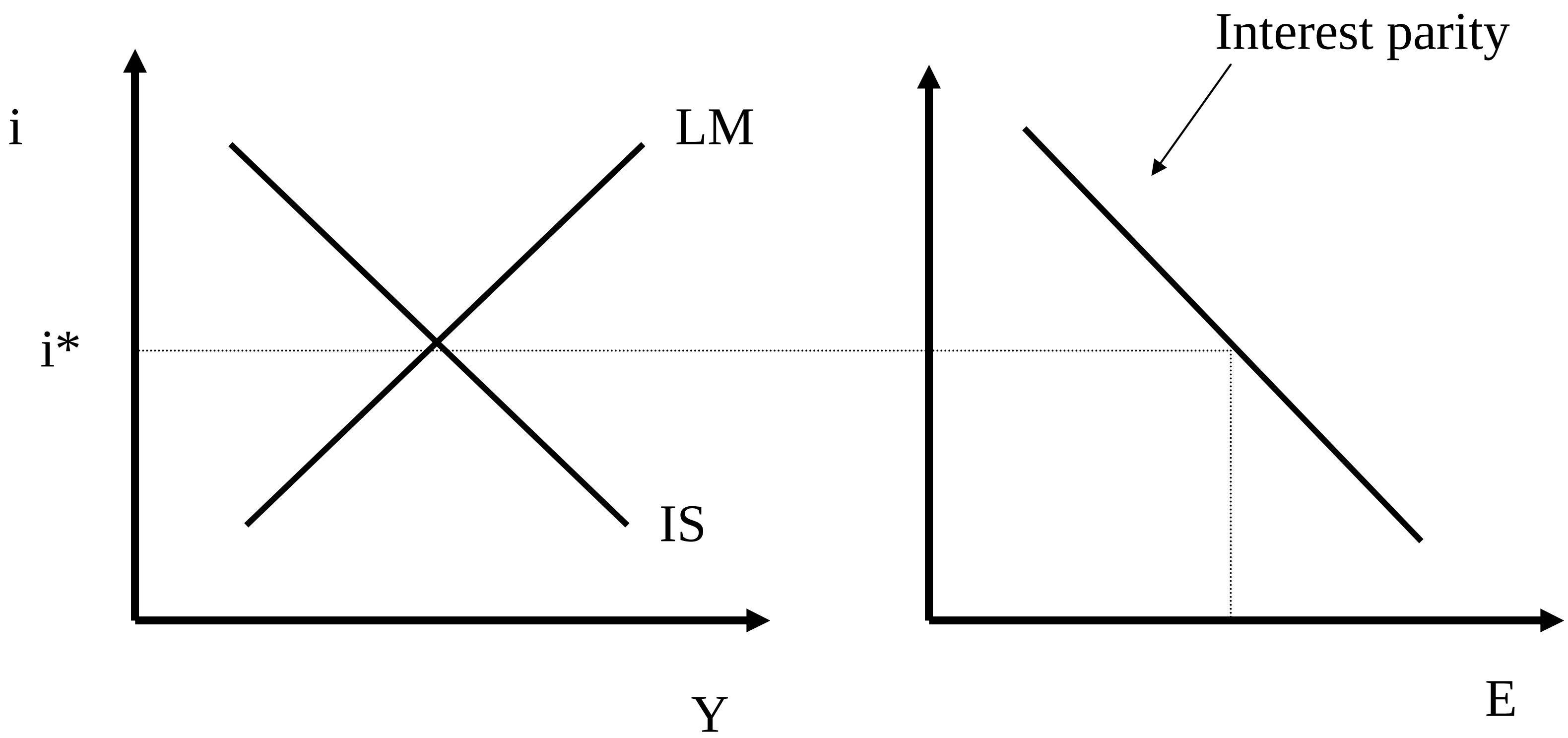
Fixed Exchange Rates (Credible)

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

=> $$i = i^*$$

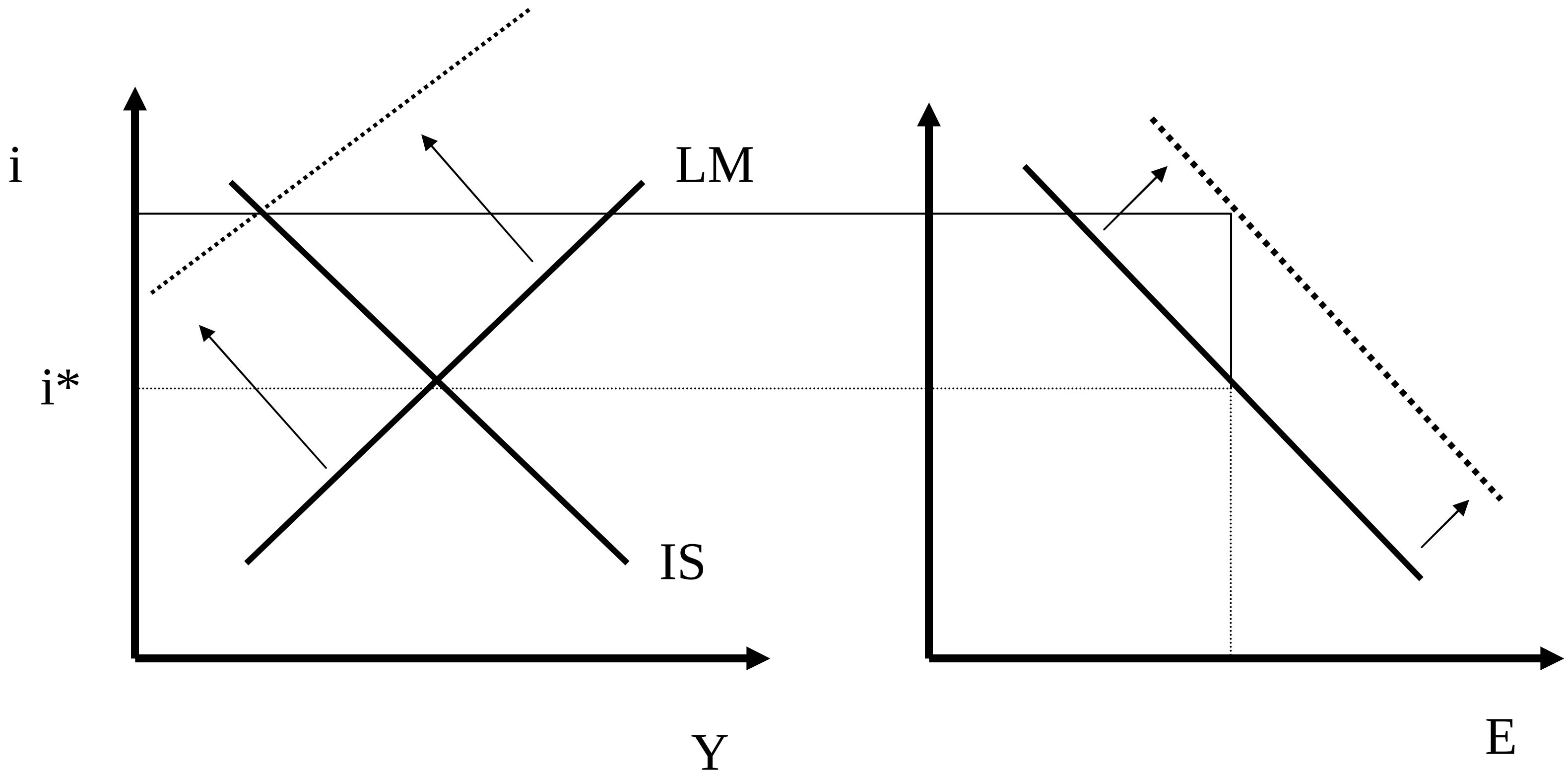
=> $$\frac{M}{P} = YL(i^*)$$

- 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:

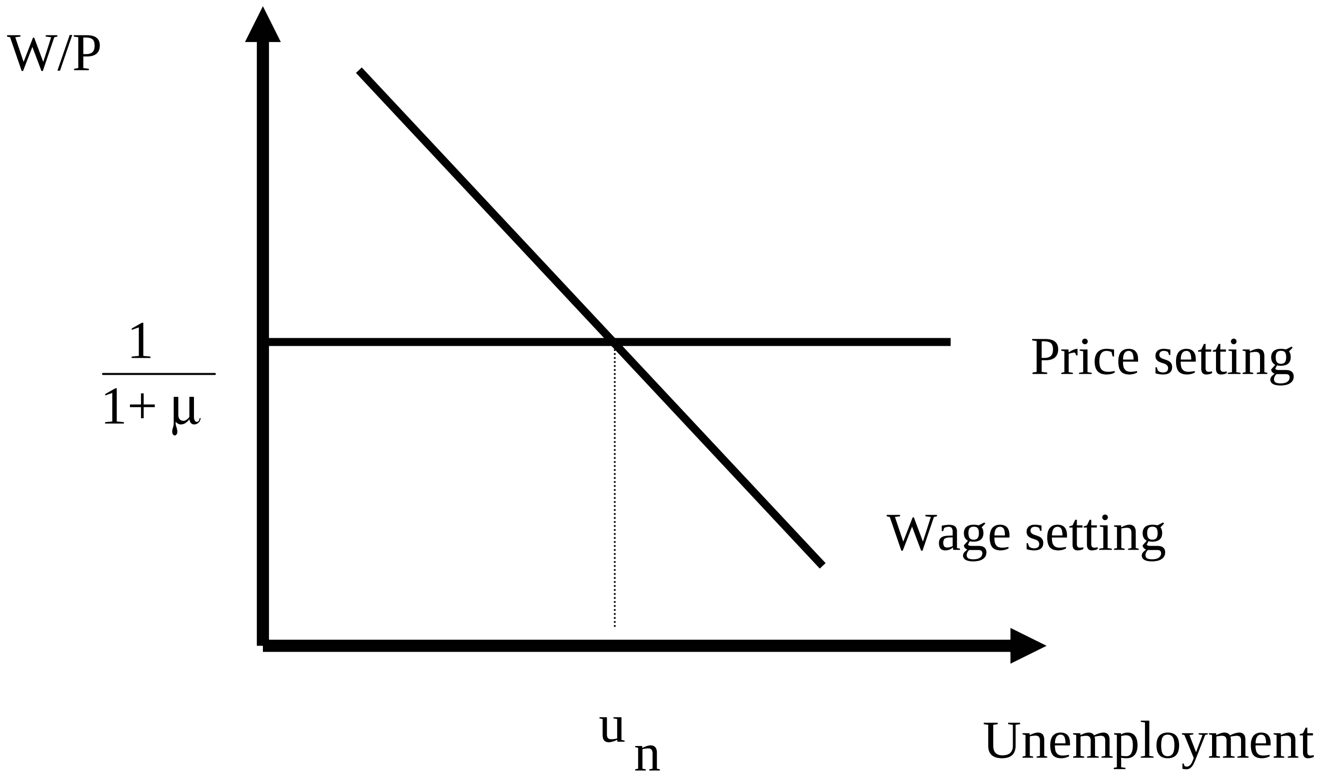
$$\frac{W}{P} = F(u,z)$$

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

=>

The natural rate of unemployment

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

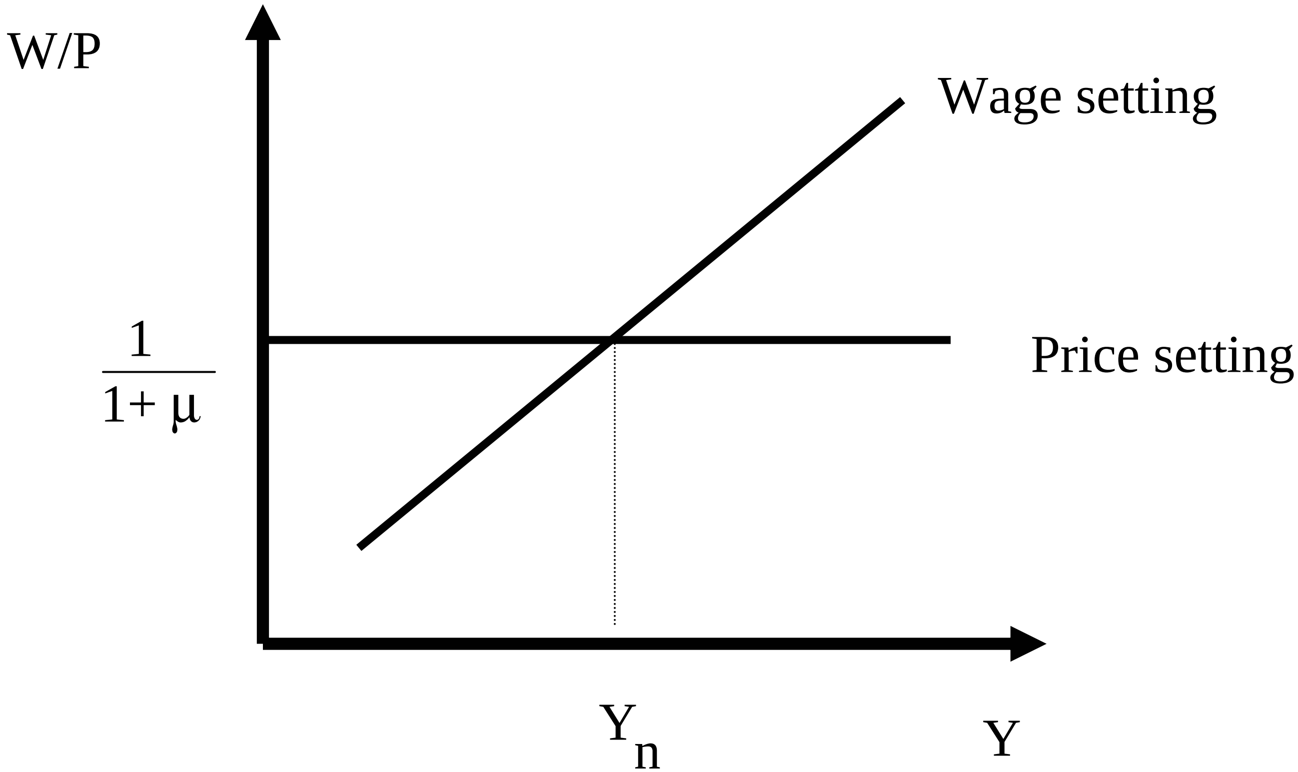


z, markup

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

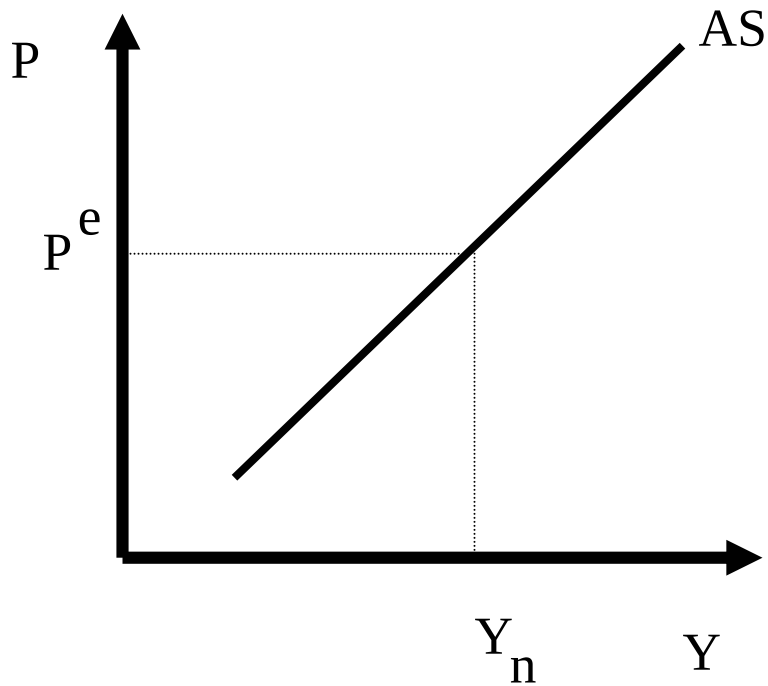
$W = P^e F(1 - Y/L, z)$

$P = (1 + \mu) W$

=>

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

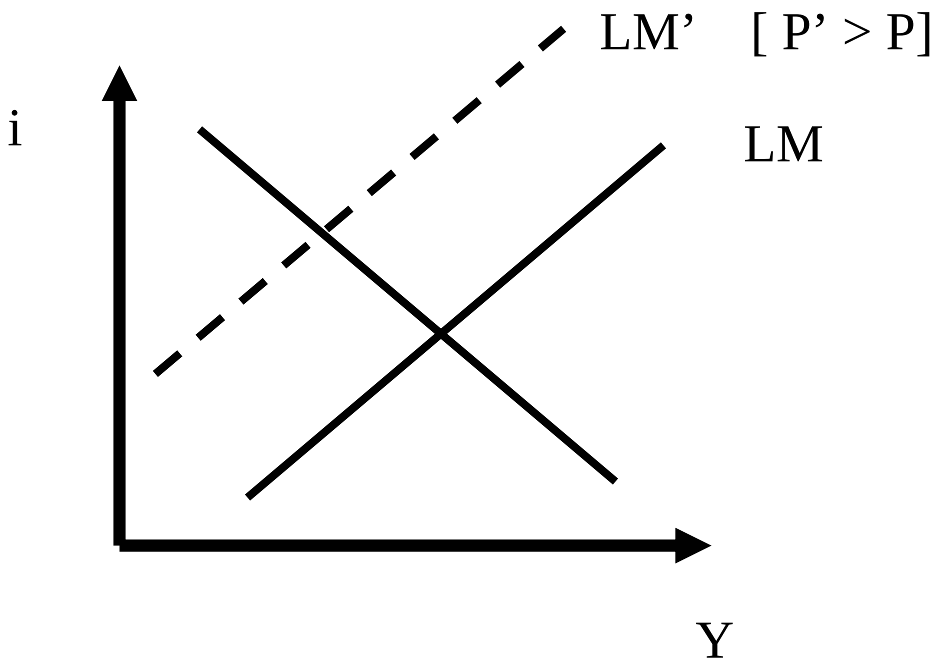
$$\mathbf{P = P^e (1+\mu)\, F(1-Y/L, z)}$$



Aggregate Demand

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

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



AD: $\mathbf{Y = Y(M/P, G, T)}$

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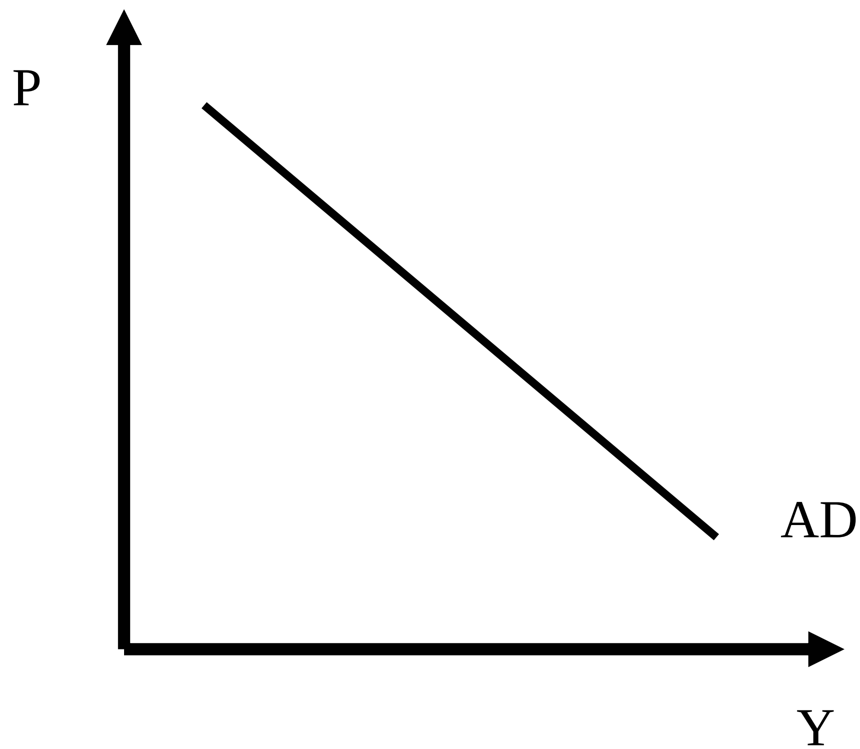
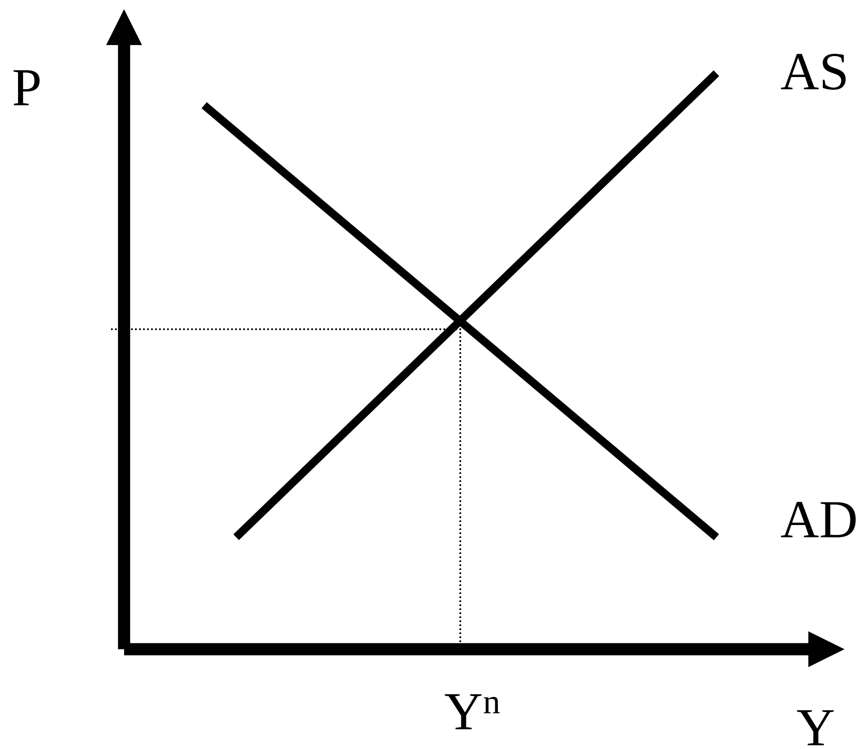


AD-AS: Canonical Shocks



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

$$\pi(t) = (P(t)-P(t-1))/P(t-1)$$

- Then

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

but

$$\ln(1+x) \approx x \qquad \text{if x is “small”}$$

Let also assume that

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

The Phillips Curve

* The price level vs The inflation rate

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

$\approx>$

$$\boldsymbol{\pi(t) = \pi^e(t) + (\mu+z) - \alpha\, u(t)}$$

The Phillips Curve and The Natural Rate of Unemployment

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

$$\Rightarrow$$

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

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