

Topics for Today

- 1.) Summary
- 2.) Goods Market Equilibrium
- DD Curve
- 3.) The Marshall-Lerner Condition
- 4.) Asset Market Equilibrium
- AA Curve
- 5.) General Equilibrium in the Short-Run

Summary So Far

Goal: Develop a Model to Explain:
(E, Y, R, P)

As functions of:

- Govt. Policy (Monetary + Fiscal)
- Foreign Variables (Y^* , R^*)

1.) FX Mkt. Equil.

$$R = R^* + \frac{E^e - E}{E}$$

} E
given R, E^e

2.) Money Mkt. Equil.

$$\frac{M}{P} = L(Y, R)$$

} R
given P, Y

3.) Purchasing Power Parity

$$E = \frac{P}{P^*} = \frac{M}{M^*} \cdot \frac{L(Y^*, R^*)}{L(Y, R)}$$

} P and E^e
given Y

What About Y ? !

The DD-AA Model

Goal: Derive 2 relationships between E and Y that jointly determine overall macroeconomic equilibrium in open-economies, with all endogenous variables allowed to adjust (Y, R, E , and P in the LR).

DD-Curve: Combinations of E & Y consistent with goods mkt. equil.
Aggregate Demand = Aggregate Supply

AA-Curve: Combinations of E & Y consistent with asset mkt. equil.
(both fx and money mkt.)

Aggregate Demand

$$D(Y-T, \frac{EP^*}{P}) = C(Y-T) + I + G + CA(Y-T, \frac{EP^*}{P})$$

Note, for simplicity I, G, T, P^* are assumed exogenous.

Also, P is assumed fixed in the short-run.

1.) How does disposable income, $Y^d = Y - T$, affect D ?

- $Y \uparrow \Rightarrow C \uparrow$ (positive "marginal propensity" to consume)
- $Y \uparrow \Rightarrow CA \downarrow$ (imports $\uparrow$)

However, since imports are only part of overall consumption, we know $C \uparrow$ more than $CA \downarrow$, so overall $Y \uparrow \Rightarrow D \uparrow$

2.) How does E affect D ?

$$CA = X(q) - q \cdot M(q)$$

} Net Exports
measured in
terms of
domestic goods

Note, $q \uparrow \Rightarrow X \uparrow$

$q \uparrow \Rightarrow M \downarrow$

Dilemma; what happens to $q \cdot M(q)$ when q changes?

It depends on whether M falls more than q rises, i.e., it depends on the sensitivity (or elasticity) of imports and exports with respect to changes in the real ex. rate.

Marshall-Lerner Condition

$$CA = X(q) - q \cdot M(q)$$

$$\frac{\partial CA}{\partial q} = \frac{\partial X}{\partial q} - M - q \frac{\partial M}{\partial q}$$

$$= \frac{X}{q} \left(\frac{q}{X} \frac{\partial X}{\partial q} \right) - M - M \left(\frac{q}{M} \frac{\partial M}{\partial q} \right) -$$

Note,

$$\eta^* = \frac{q}{X} \frac{\partial X}{\partial q} = \frac{\frac{\Delta X}{X}}{\frac{\Delta q}{q}} \rightarrow \text{elasticity of foreign import demand}$$

$$\eta = - \frac{q}{M} \frac{\partial M}{\partial q} = \text{elasticity of domestic import demand}$$

Also, if trade is initially balanced, $\frac{X}{q} = M$
so that we have:

$$\frac{\partial CA}{\partial q} = M(\eta^* + \eta - 1)$$

~~Marshall-Lerner~~

If $\eta^* + \eta > 1$ then ex. rate depreciation
"improves" the Current Account

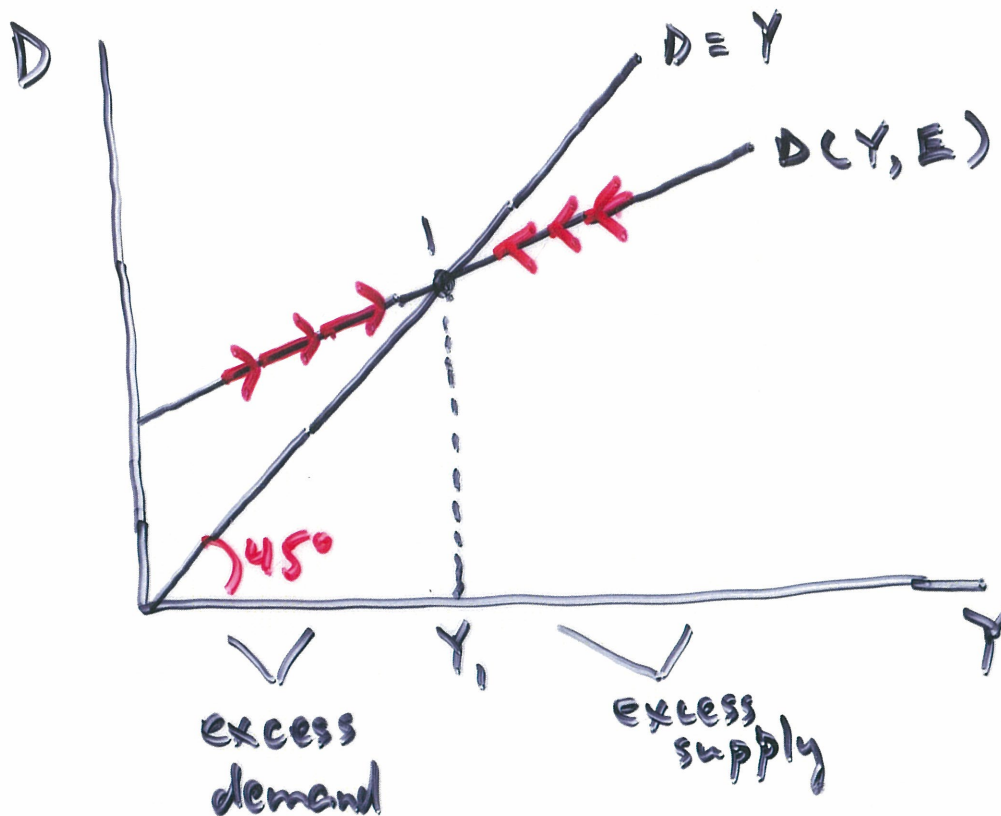
Marshall-Lerner Condition

Goods MKt. Equil.

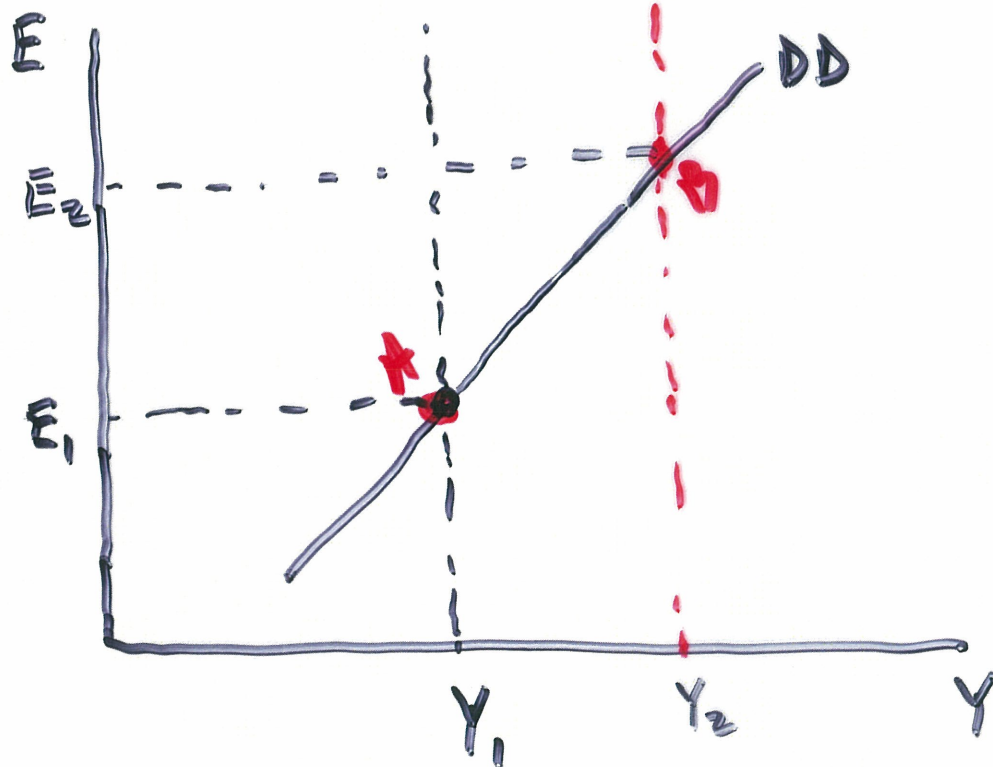
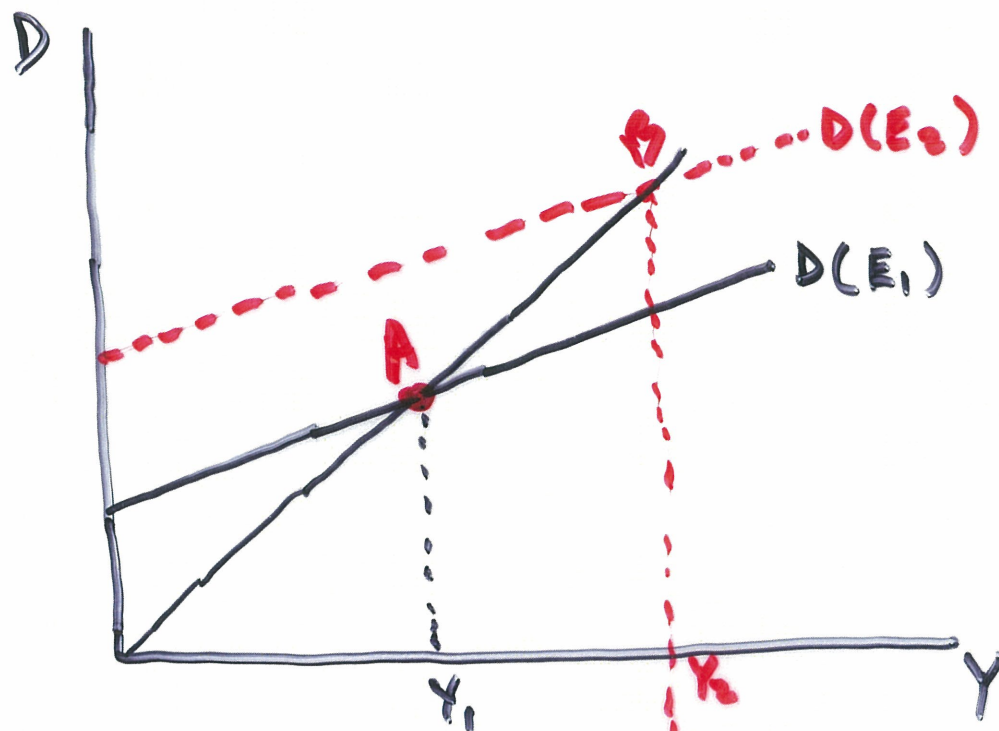
$$Y = D(Y, E)$$

✓
Agg.
Supply

✓
Agg.
Demand



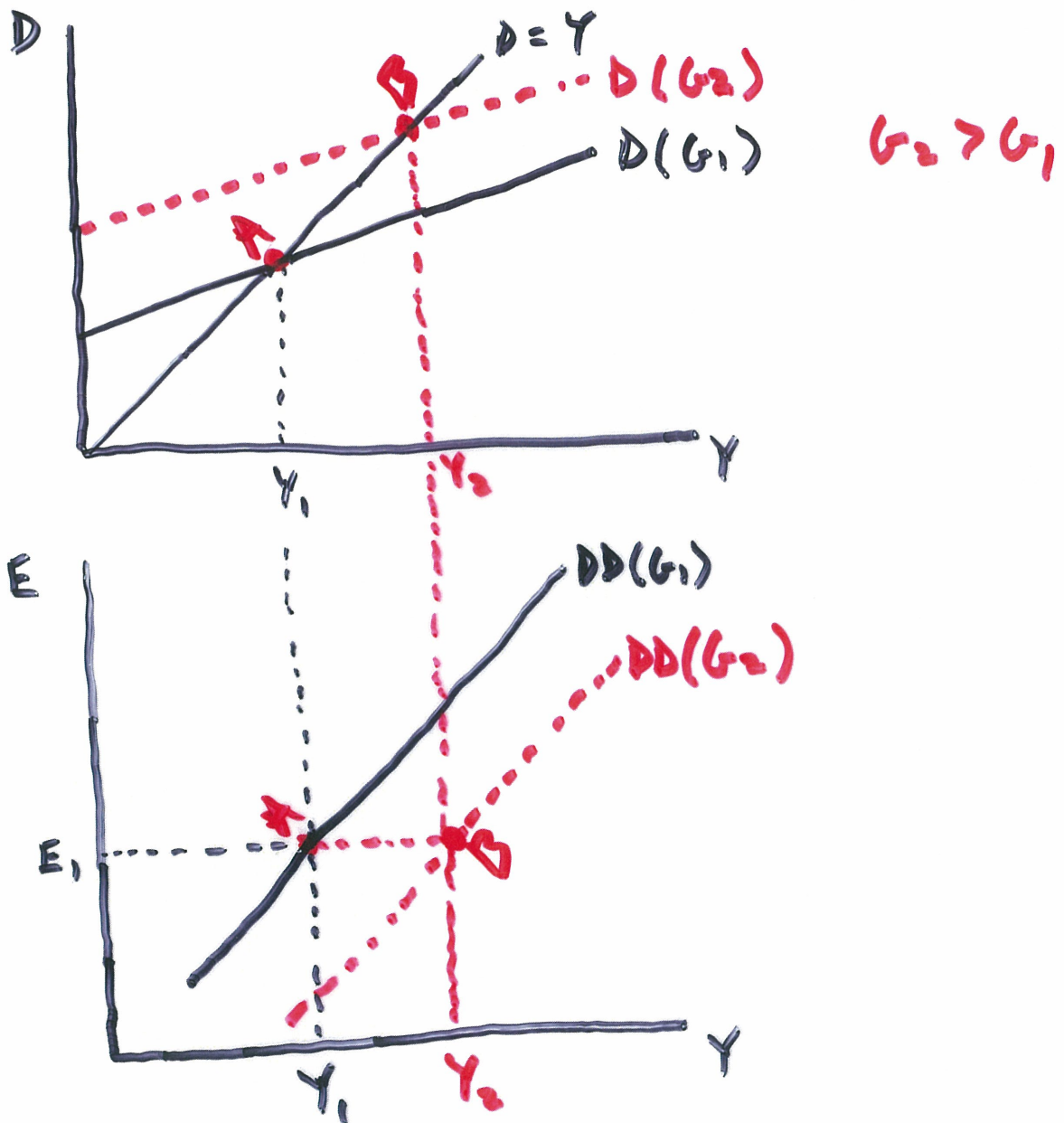
DD - Curve



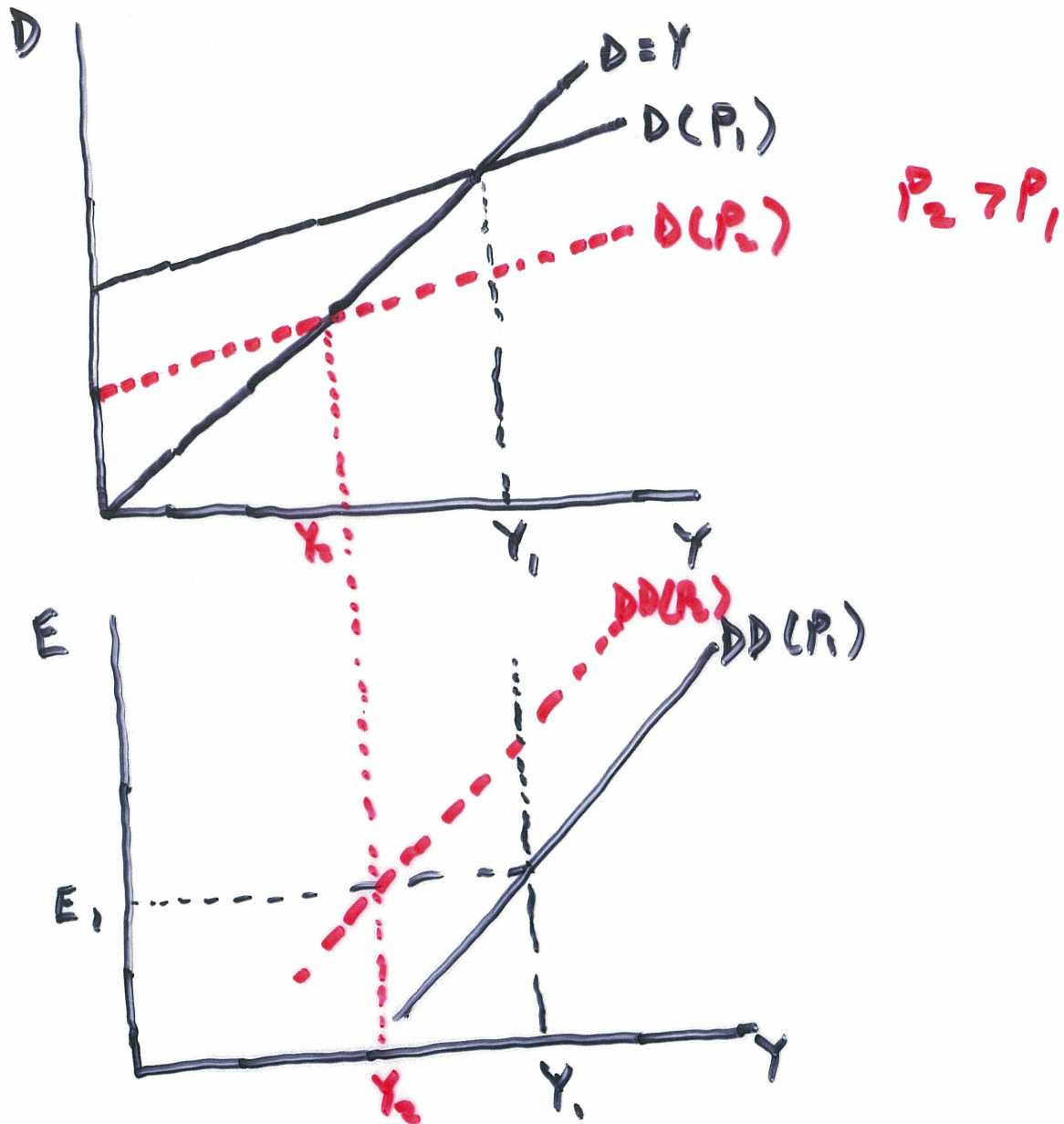
Note: DD is flatter when CA is more sensitive to ex. rate changes,

Shifts in the DD Curve

① Expansionary Fiscal Policy ($G \uparrow, T \downarrow$)

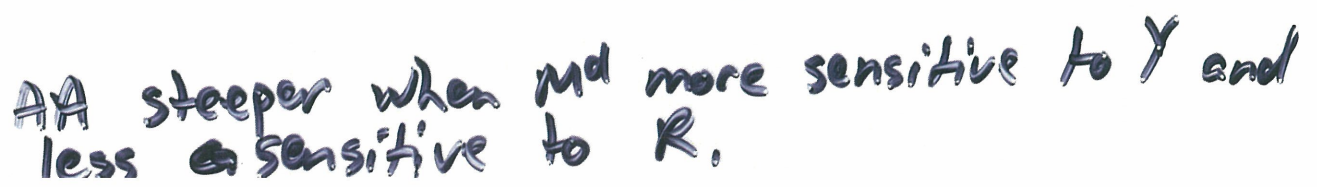


② Increase in the Domestic Price Level ($P \uparrow$)



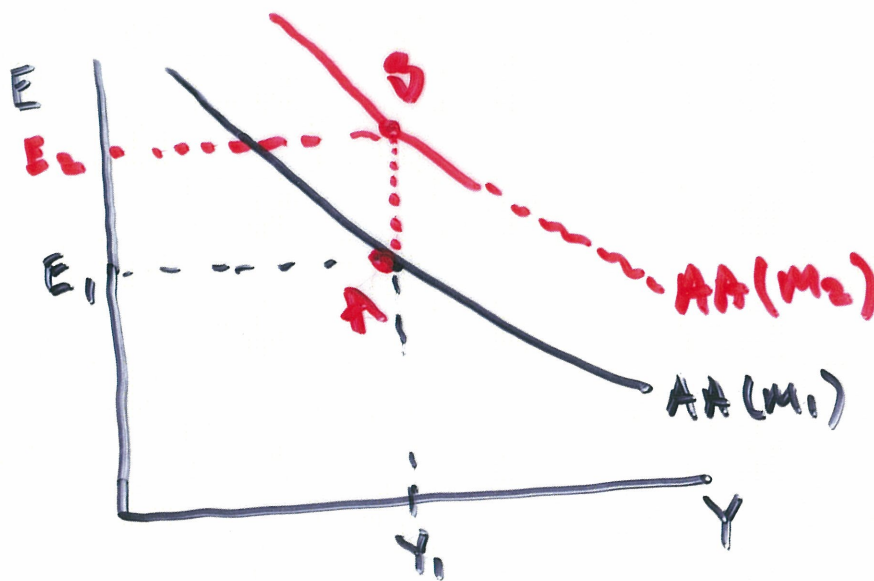
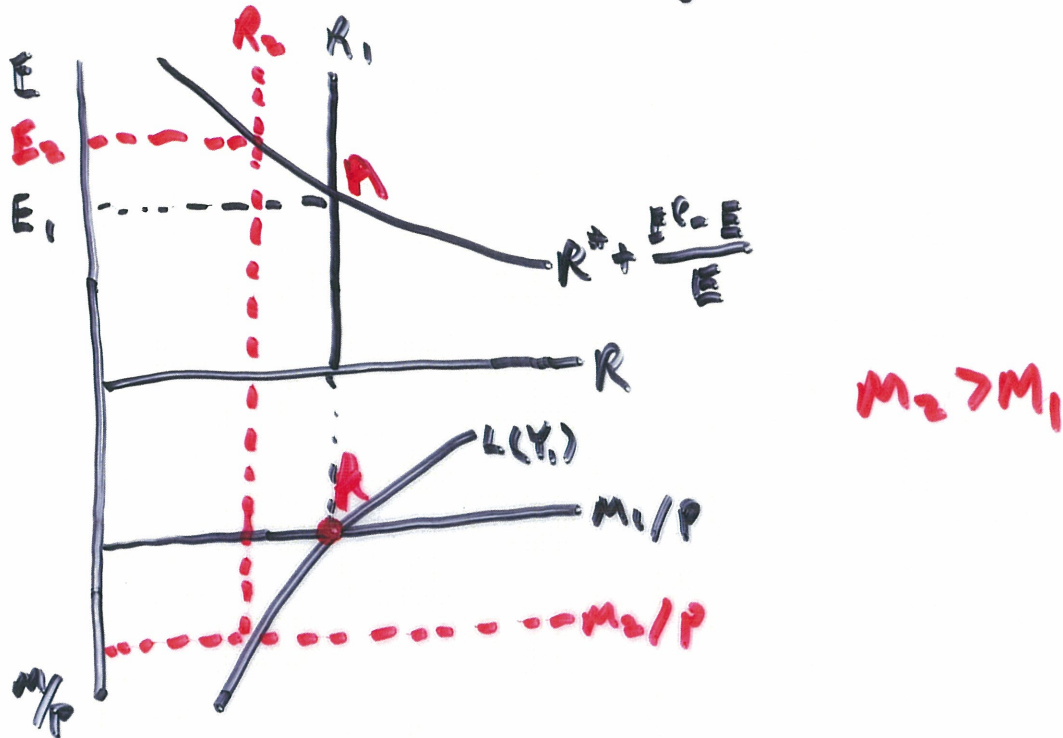
General Rule: Disturbances that increase Aggregate Demand shift DD to the right
 Disturbances that decrease Aggregate Demand shift DD to the left.

AA - Curve



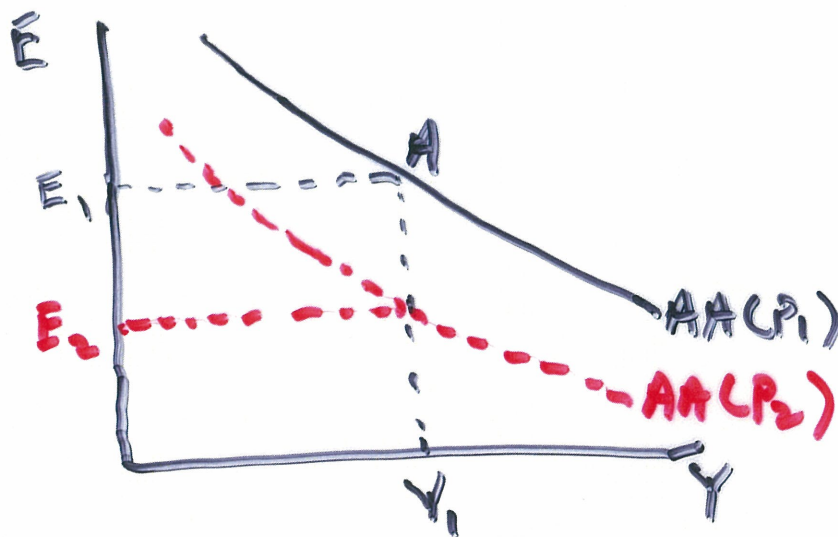
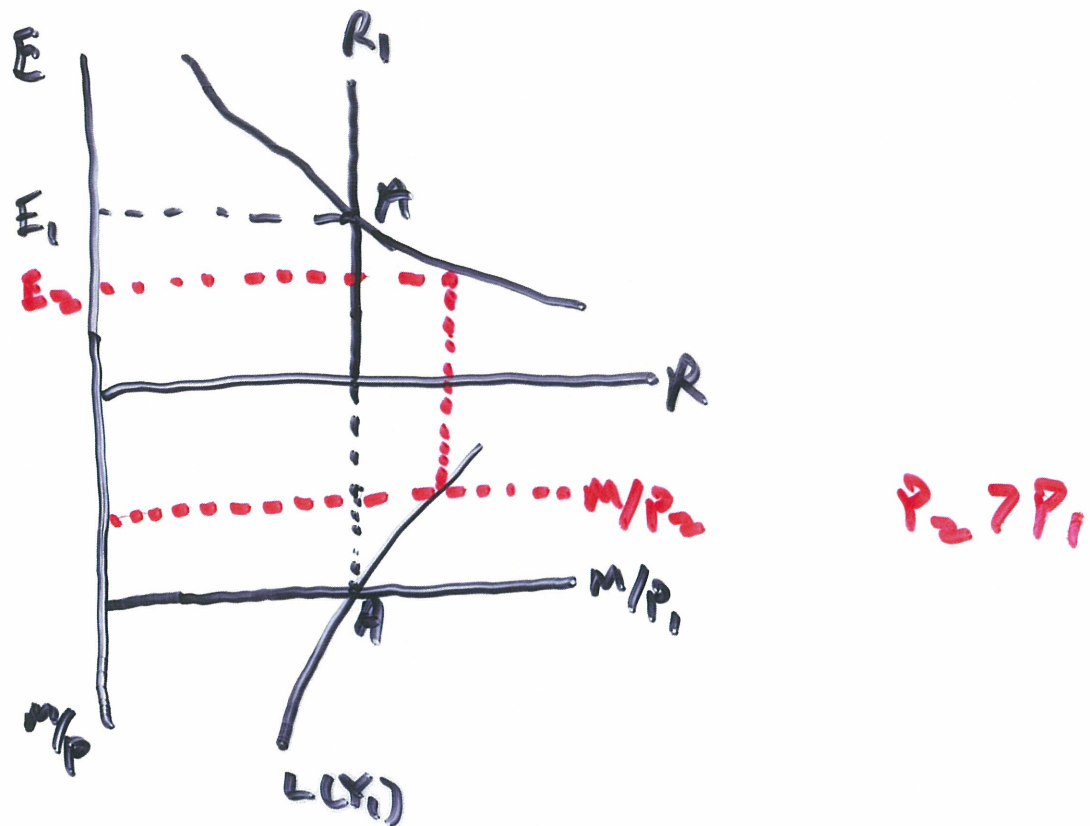
Shifts in the AA-Curve

① Expansionary Monetary Policy ($M \uparrow$)



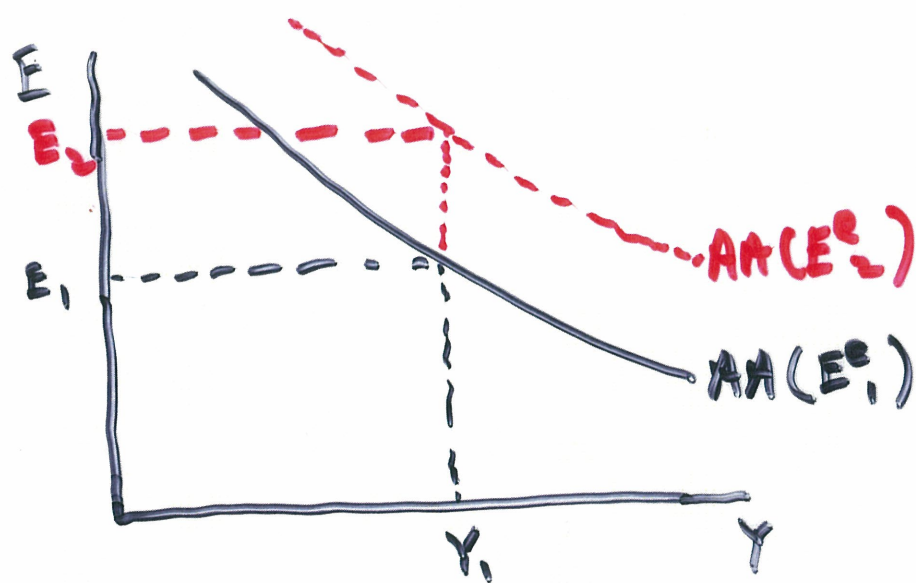
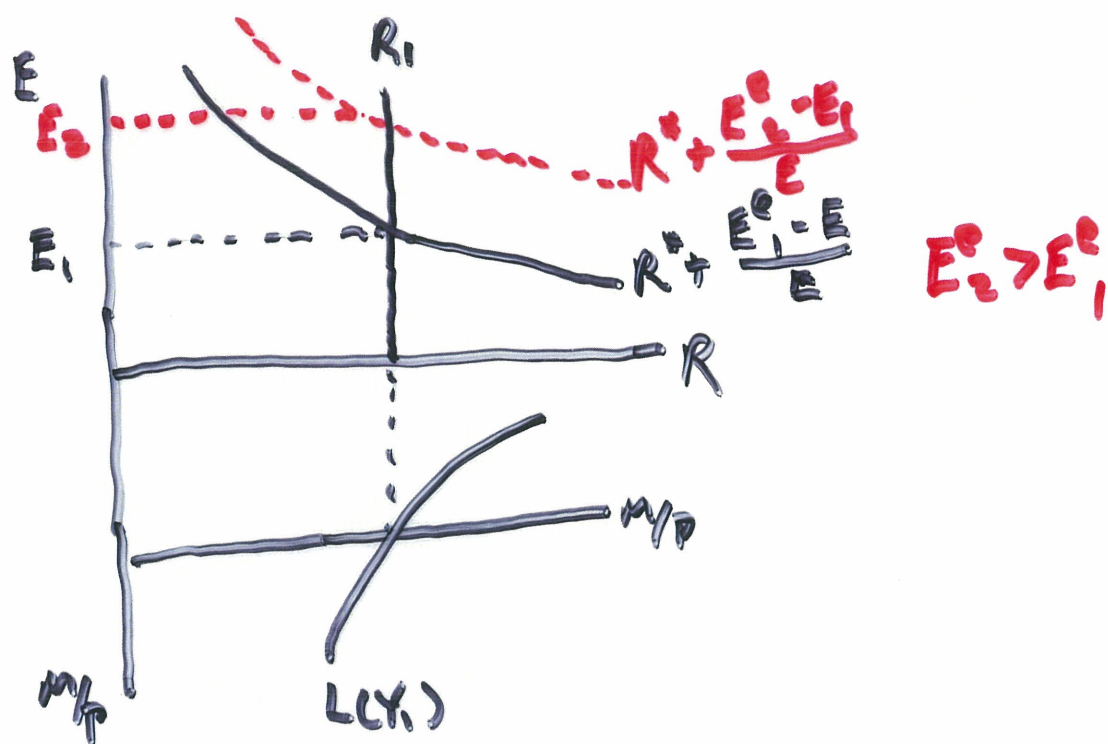
Expansionary Monetary Policy shifts AA up

② An increase in the Domestic Price Level ($P \uparrow$)



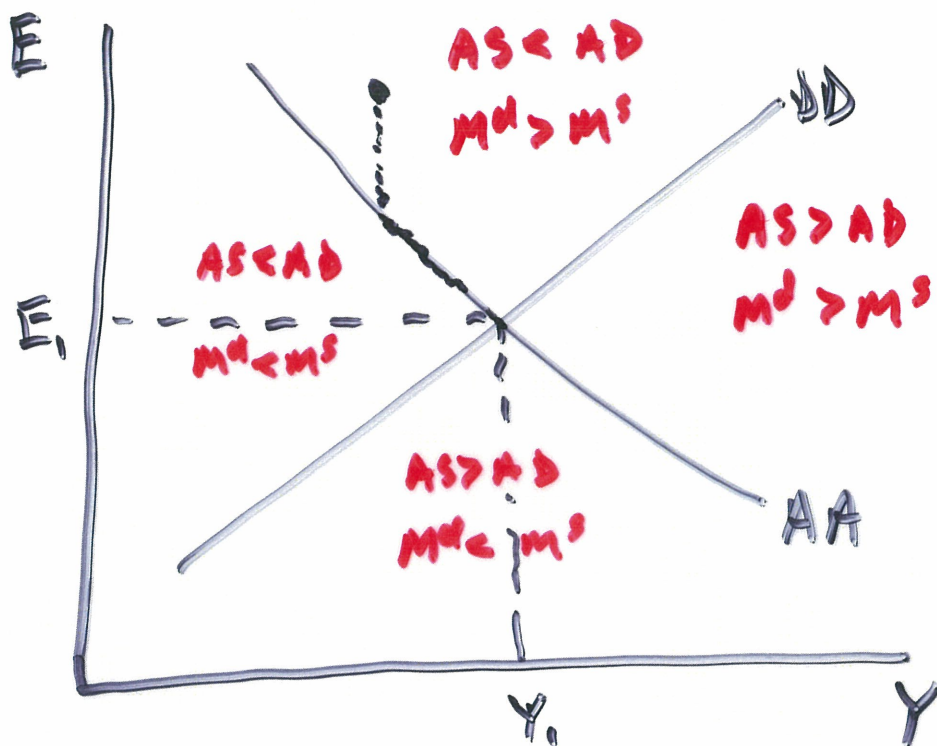
An increase in the Price Level shifts AA down

③ Expected Future Depreciation ($E^e \uparrow$)



An expected depreciation shifts AA up

General (Short-Run) Equil.



(E_1, Y_1) is the only exchange rate output combination consistent with equilibrium in both the goods market and the asset markets