International Economics - B.Sc. IB
11. Open-Economy Macroeconomics: Output and the Exchange Rate in the Short Run

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Plan for Today

Chapter 17:

- Determinants of aggregate demand in the short run
- Short run equilibrium for aggregate demand and output (DD curve)
- Short run equilibrium in the asset markets (AA curve)
- Short run equilibrium (AA & DD)
- Temporary changes in monetary and fiscal policy
- Permanent changes in monetary and fiscal policy
- Macroeconomic policies and the current account (XX curve)

Chapter 17: Output and the Exchange Rate in the Short Run

Determinants of Aggregate Demand in the Short Run (1)

Remind:

1. Long run: flexible prices
2. **Short run**: prices are sticky (reasons: menu costs, labor contracts, imperfect information...)

In this class: relationship between E and Y ($E = f(Y)$) in the short run.

Determinants of Aggregate Demand in the Short Run (2)

Aggregate demand D can be expressed by:

$$D = C + I + G + CA$$

where

- C: consumption expenditure
- I: investment expenditure
- G: government purchase
- CA: current account

Determinants of Aggregate Demand in the Short Run: C

$$C = C\left(Y^d, R\right)$$

Consumption expenditure is a function of

- disposal income $Y^d = Y - T$ (positively related, but consumption typically increases less than the amount that disposable income increases.)
- interest rate R (assumption in our model: unimportant)
- wealth (assumption in our model: non important)

Determinants of Aggregate Demand in the Short Run: G, I, T

- Government purchases G, the level of taxes T, and investment expenditure I are determined by exogenous factors.
- in reality: $I = I(R)$

Determinants of Aggregate Demand in the Short Run: *CA*

$$CA \approx EXP - IMP$$

$$CA = CA\left(\frac{EP^*}{P}, Y - T\right)$$

Current account is a function of

- $\frac{EP^*}{P}$: if $\frac{EP^*}{P} \Uparrow \Rightarrow EXP \Uparrow, IMP \Downarrow, TOT \Uparrow$
- assumption: a real depreciation leads to an increase in the current account, i.e. the volume effect dominates the value effect

Determinants of Aggregate Demand in the Short Run

The aggregate demand

$$D = C + I + G + CA$$

can be rewritten as

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

or

$$D = D\left(\frac{EP^*}{P}, Y - T, I, G\right)$$

Determinants of Aggregate Demand in the Short Run

Two effects:

1. **Real exchange rate:** $\frac{EP^*}{P} \Uparrow \Rightarrow CA \Uparrow \Rightarrow D \Uparrow$
2. **Disposable income:** $(Y - T) \Uparrow \Rightarrow C \Uparrow \Rightarrow CA \Downarrow \Rightarrow D?$

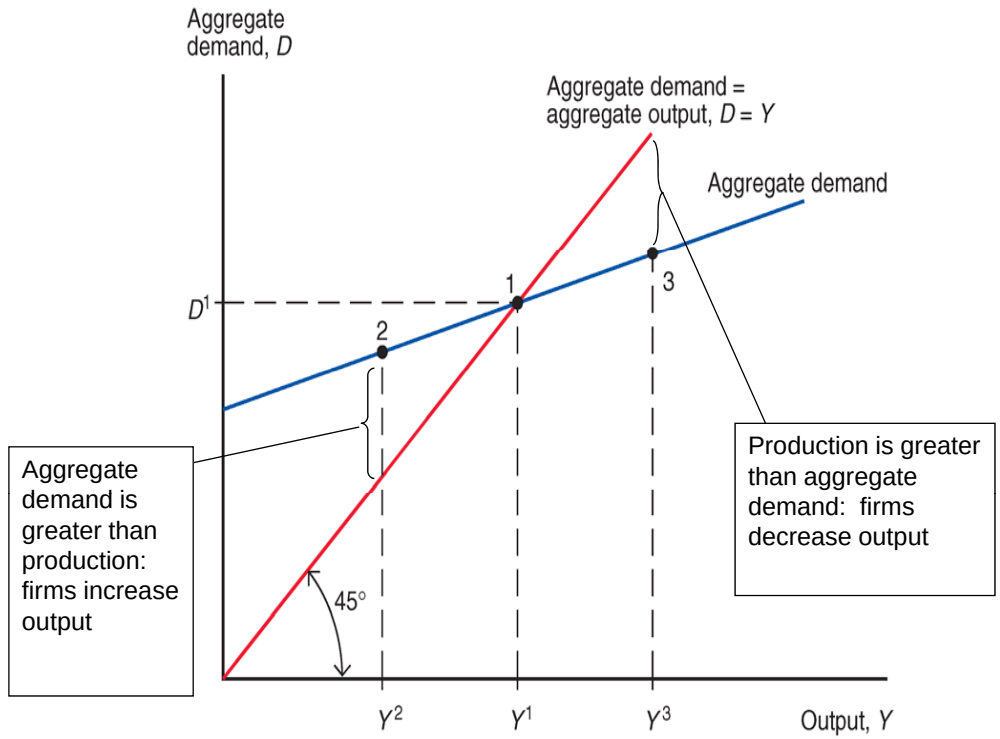
- usually consumption expenditure is greater than expenditure on foreign products $\Rightarrow D \Uparrow$

Short Run Equilibrium for Aggregate Demand and Output

Equilibrium is achieved when the value of income from production (output) Y equals the value of aggregate demand D.

$$Y = D\left(\frac{EP^*}{P}, Y - T, I, G\right)$$

Fig. 17-2: The Determination of Output in the Short Run



DD Schedule (1)

- with $\overline{P}$ and $\overline{P^*}$ if $E \Uparrow \Rightarrow CA \Uparrow \Rightarrow D \Uparrow$
- $\Rightarrow Y \Uparrow$

Fig. 17-3: Output Effect of a Currency Depreciation with Fixed Output Prices

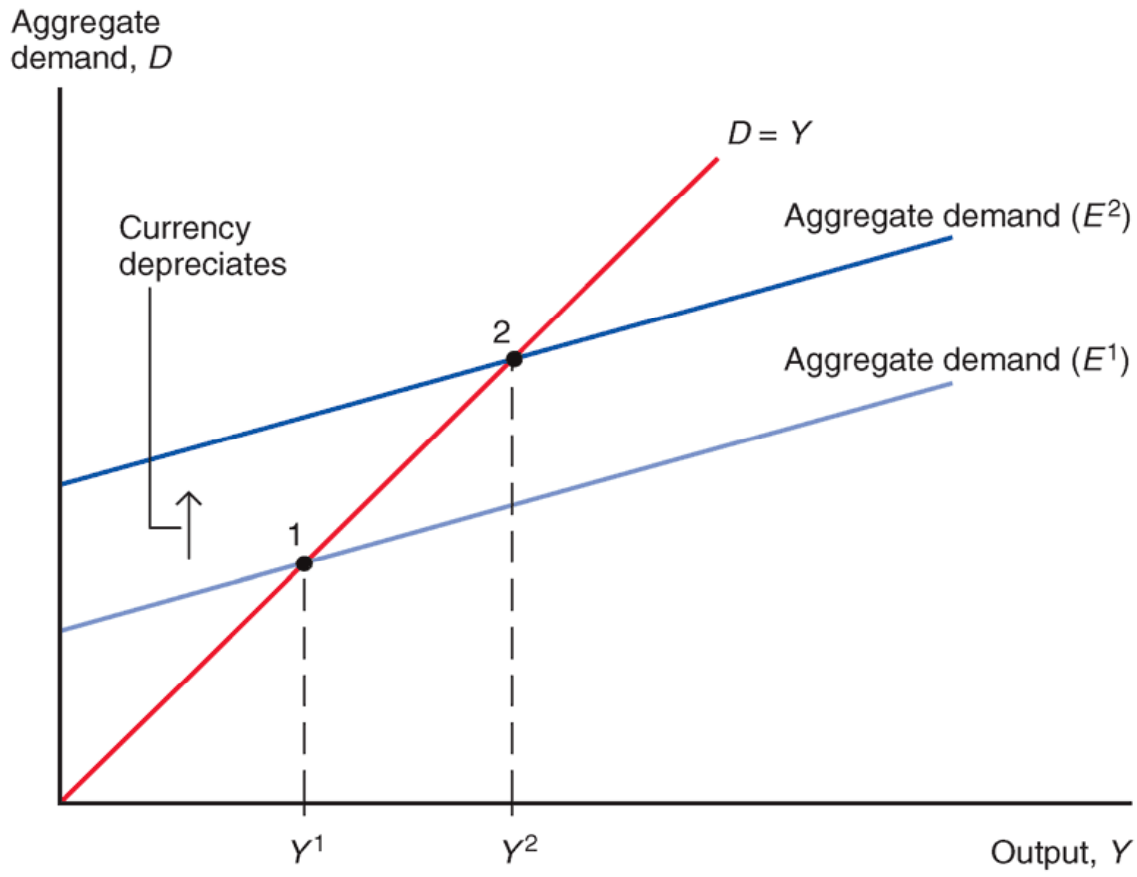
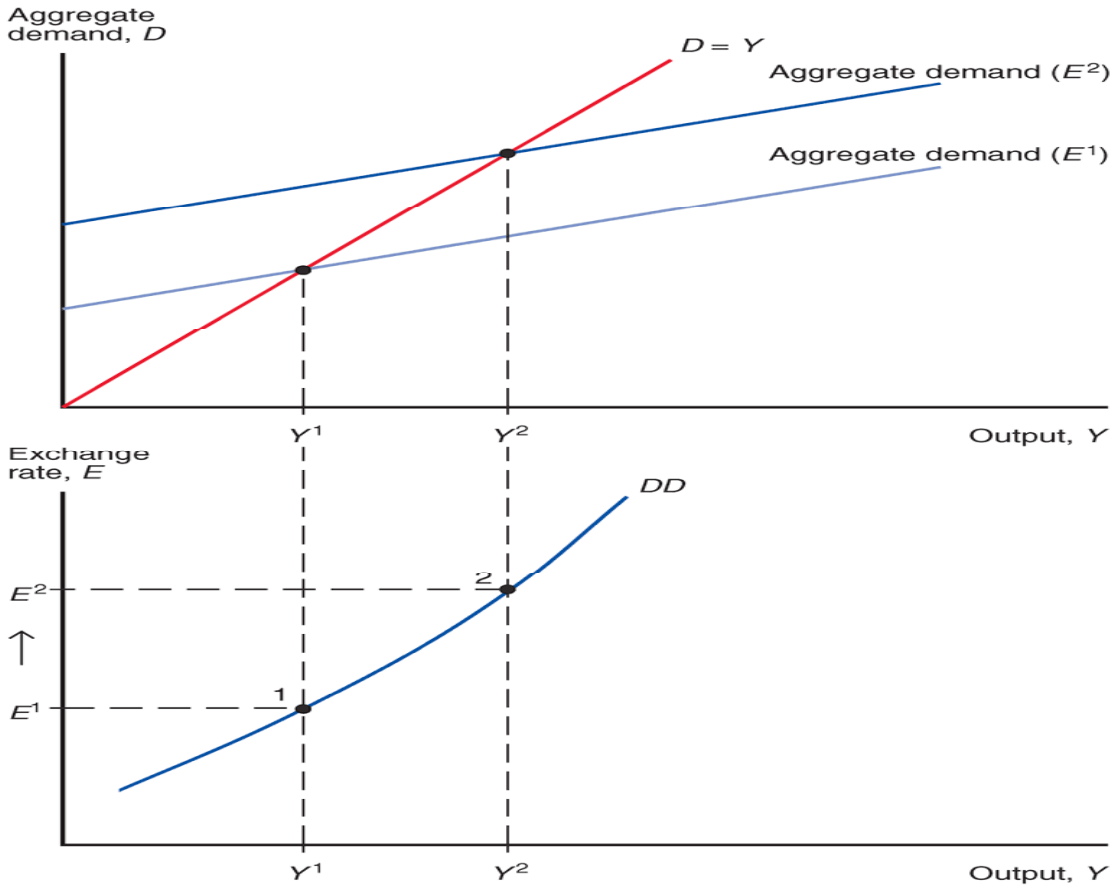


Fig. 17-4: Deriving the DD Schedule



Output and the Exhange Rate in the Short Run

DD Schedule (2)

DD schedule:

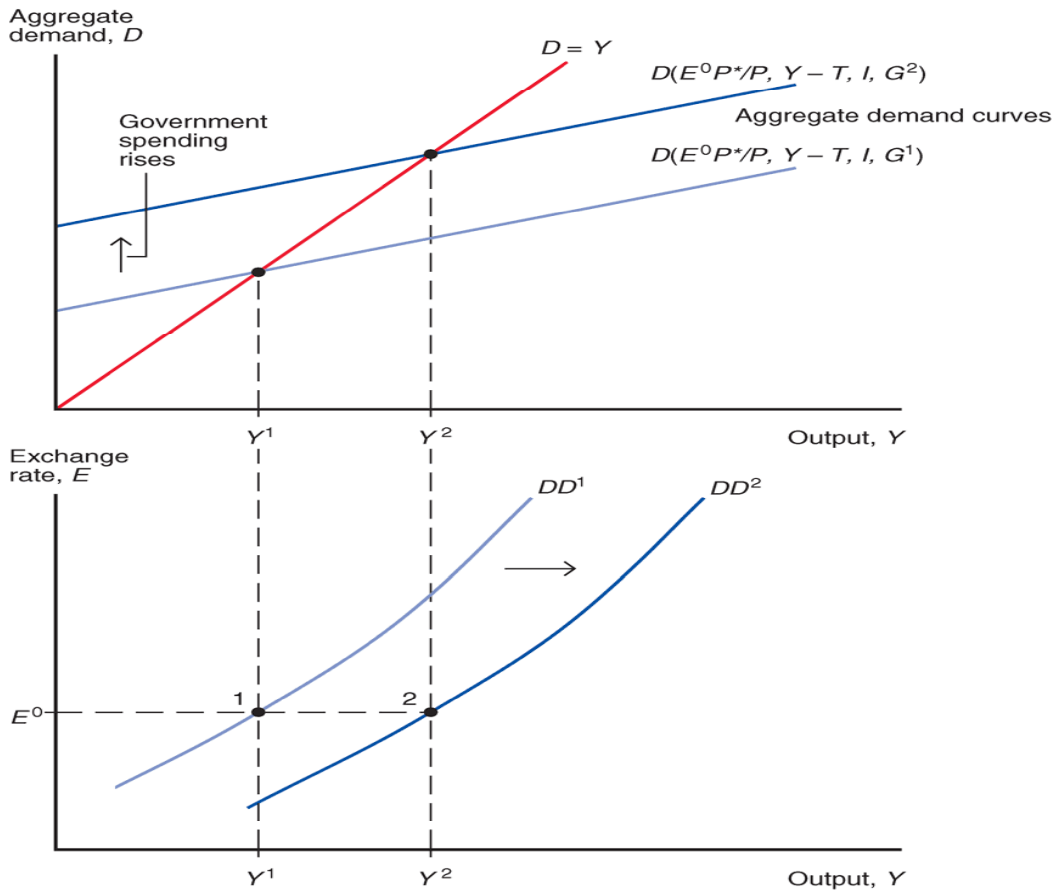
- combinations of Y and the E at which the output market is in short run equilibrium
- slopes upward

DD Schedule (3)

Several changes could cause DD to shift to the right:

1. G: if $G \Uparrow \Rightarrow D\&Y \Uparrow$
2. T: if $T \Downarrow \Rightarrow C \Uparrow \Rightarrow D\&Y \Uparrow$
3. I: if $I \Uparrow \Rightarrow D\&Y \Uparrow$
4. $\frac{P}{P^*}$: if $\frac{P}{P^*} \Downarrow \Rightarrow D\&Y \Uparrow$
5. C: if $C \Uparrow \Rightarrow D\&Y \Uparrow$
6. demand of domestic goods with respect to the demand of foreign goods: $D\&Y \Uparrow$

Fig. 17-5: Government Demand and the Position of the DD Schedule



Short Run Equilibrium in Asset Markets (1)

Two sets of assets markets:

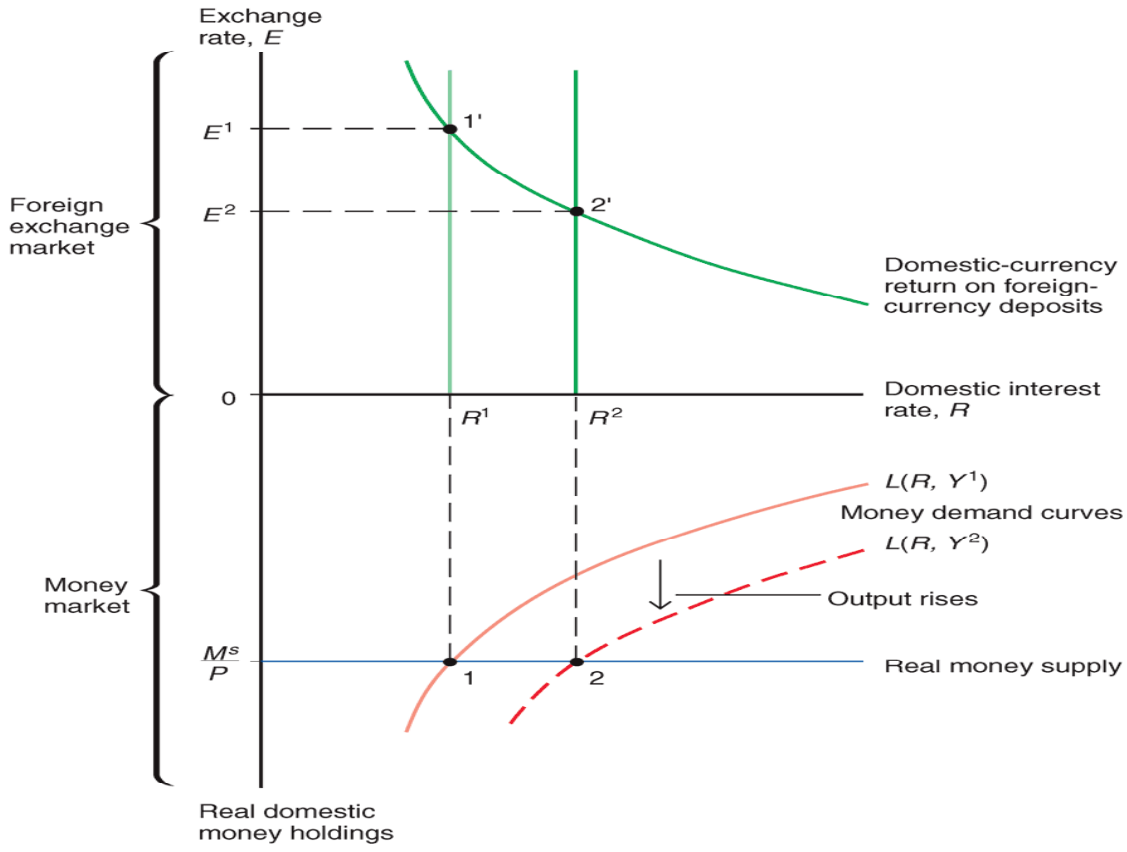
1. Foreign exchange markets

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

2. Money market

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

Fig. 17-6: Output and the Exchange Rate in Asset Market Equilibrium



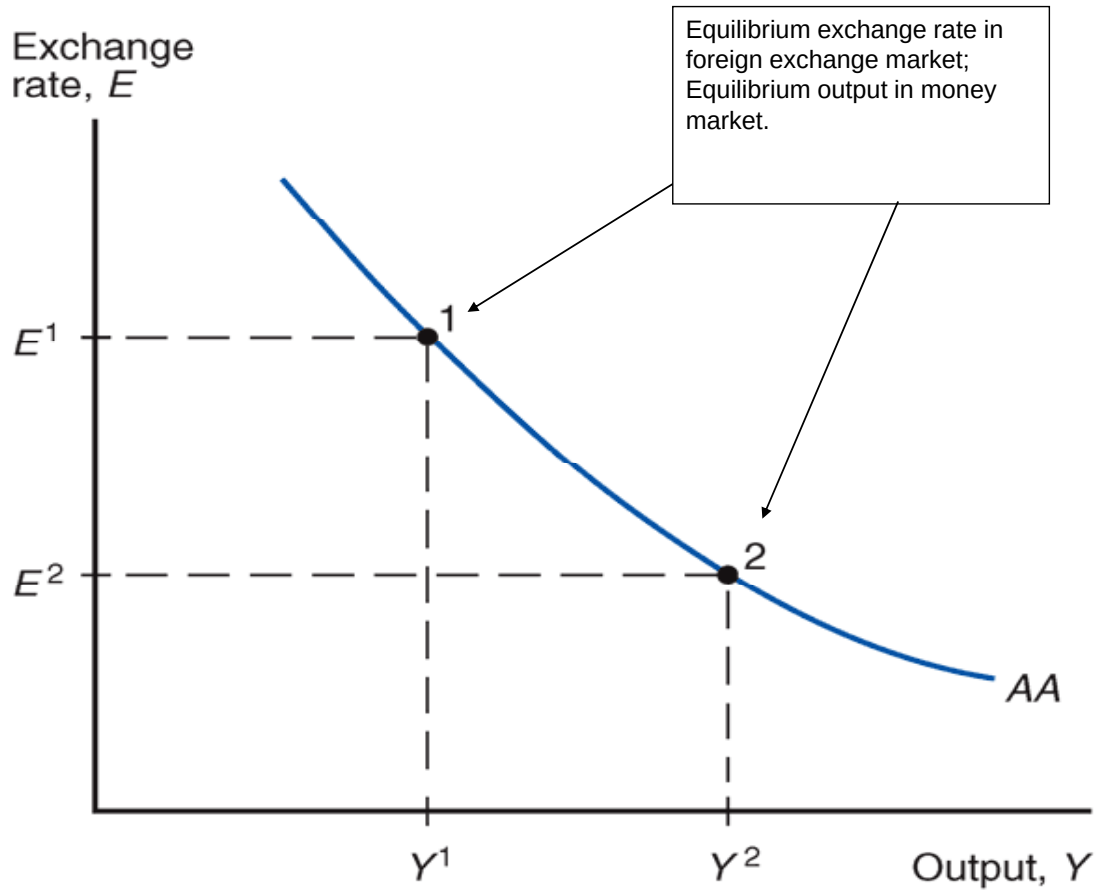
Short Run Equilibrium in Asset Markets: AA Curve

If $Y \Uparrow$:

1. $L(R, Y) \Uparrow$
2. $R \Uparrow$
3. $E \Downarrow$

The inverse relationship between output and exchange rates needed to keep the foreign exchange markets and the money market in equilibrium is summarized as the AA curve.

Fig. 17-7: The AA Schedule



AA Schedule

Several changes could cause AA to shift:

1. M^s: if $M^s \Uparrow \Rightarrow R \Downarrow \Rightarrow E \Uparrow$: AA shifts up.
2. P: if $P \Uparrow \Rightarrow \frac{M^s}{P} \Downarrow \Rightarrow R \Uparrow \Rightarrow E \Downarrow$: AA shifts down.
3. $L(R, Y)$: if $L(R, Y) \Downarrow \Rightarrow$ more non-monetary assets $\Rightarrow E \Uparrow$: AA shifts up.
4. R^*: if $R^* \Uparrow E \Uparrow$: AA shifts up.
5. E^e: if $E^e \Uparrow \Rightarrow D\&Y \Uparrow$

Shifting the AA Curve

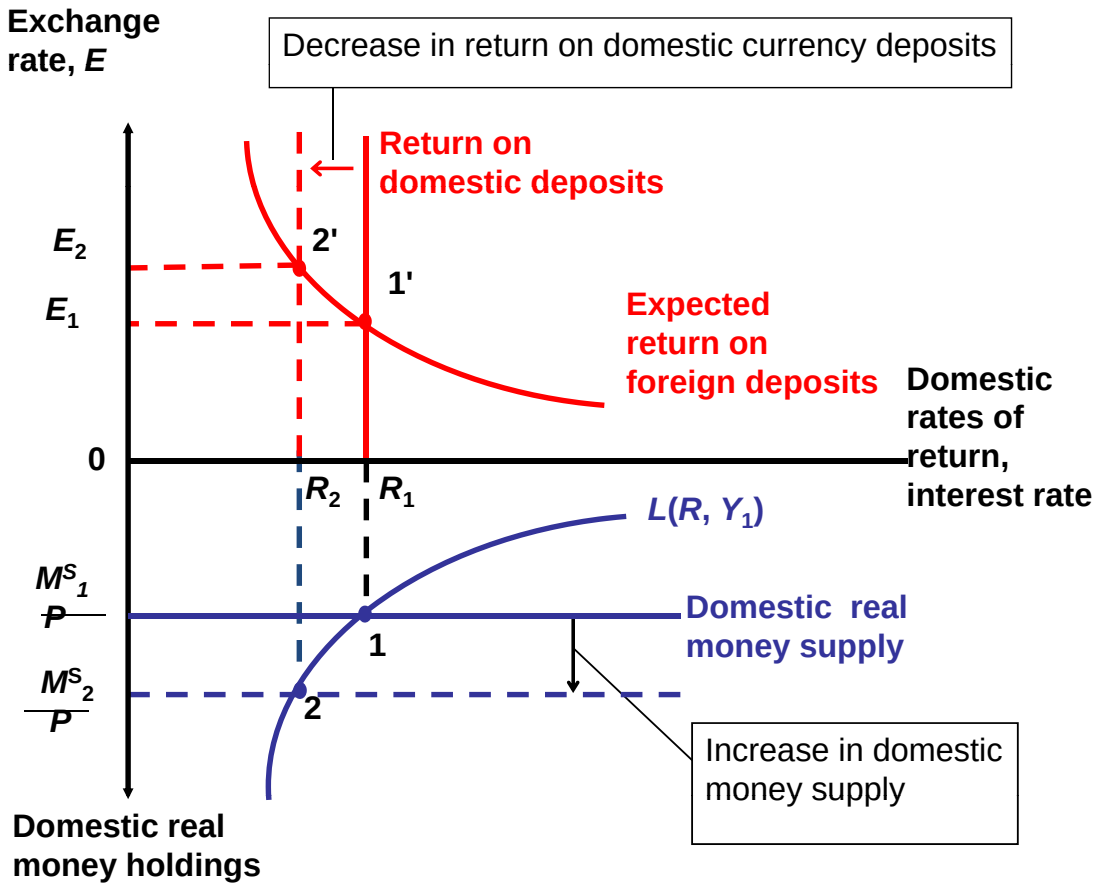
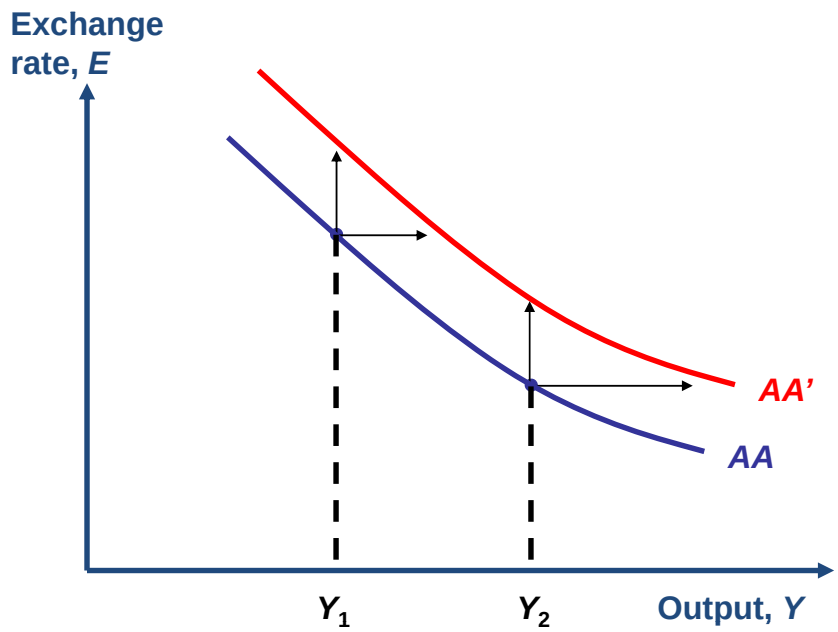


Fig. 17-7: Shifting the AA Curve

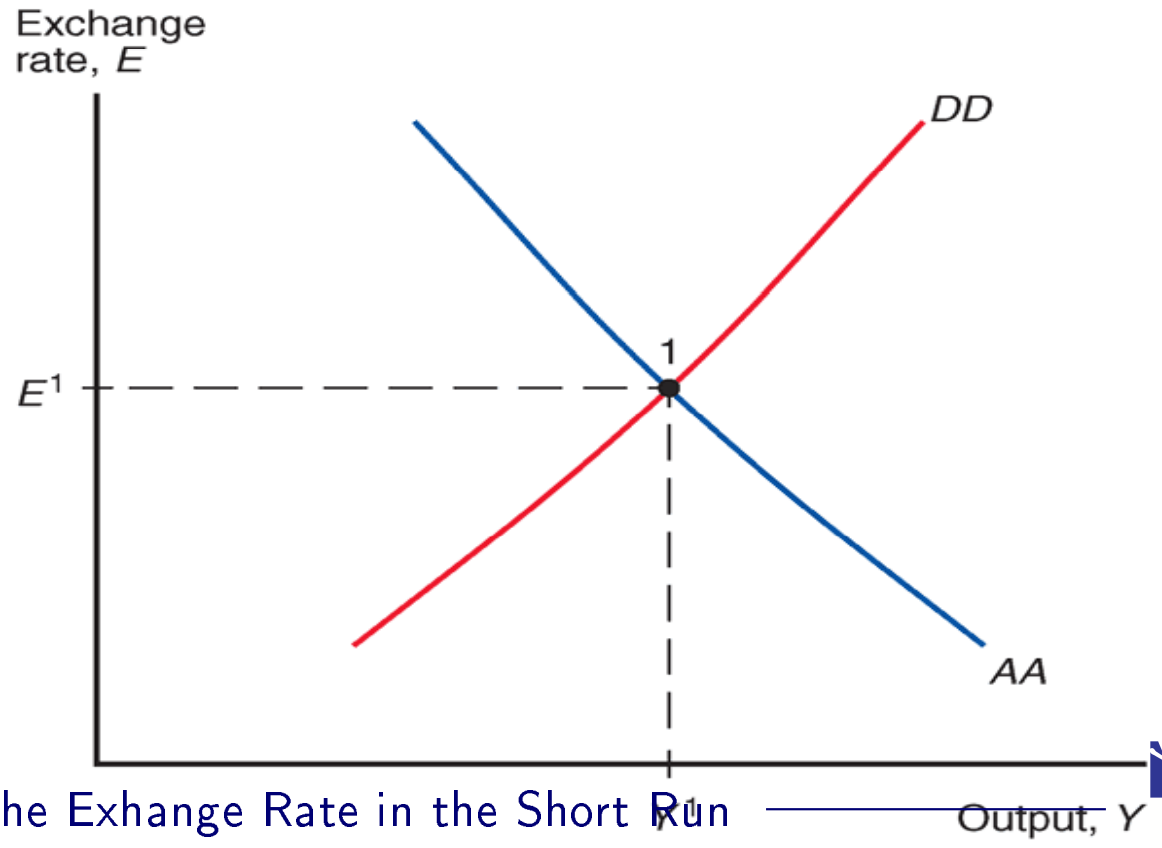


Short Run Equilibrium

A short run equilibrium means E and Y such that:

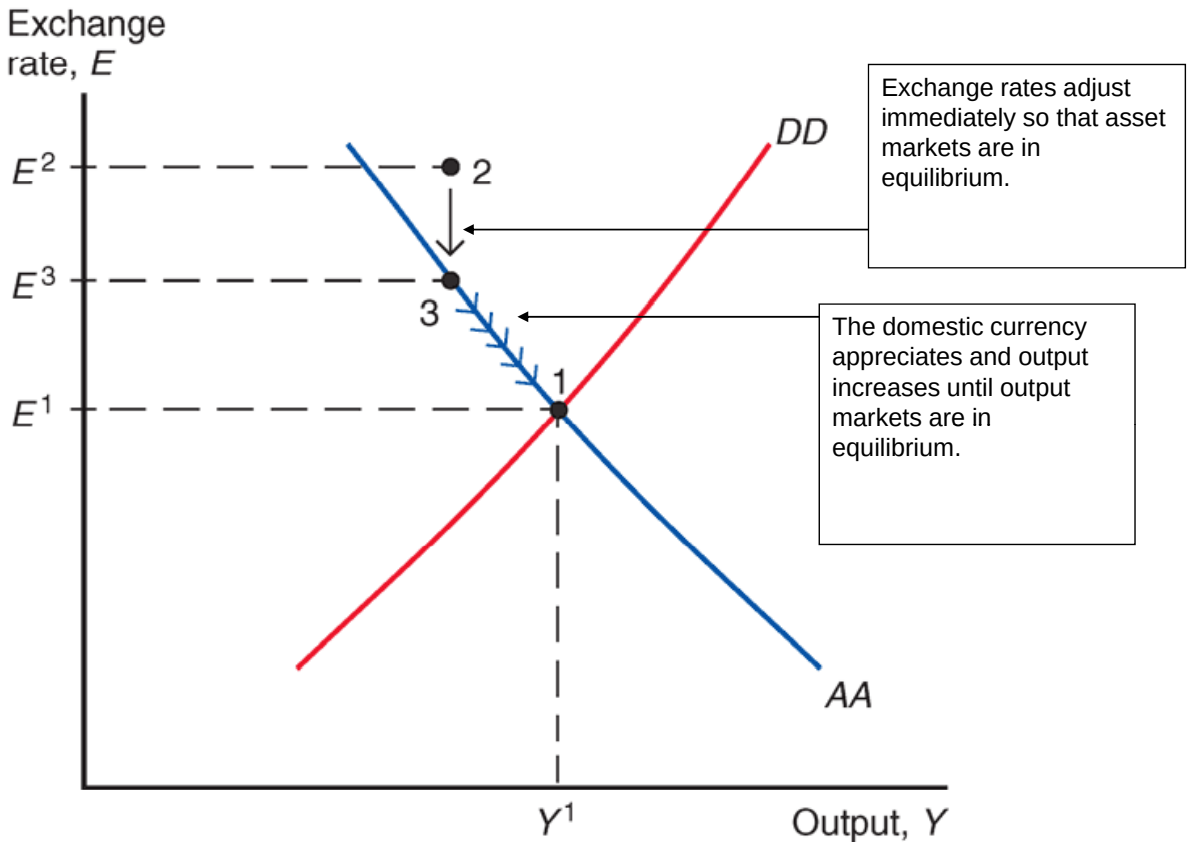
1. equilibrium in the output markets holds (DD): $D = Y$
2. equilibrium in the foreign exchange markets holds (AA): $R = R^* + \frac{(E^e - E)}{E}$
3. equilibrium in the money market holds: $M^s = M^d$

Fig. 17-8: Short-Run Equilibrium: The Intersection of DD and AA

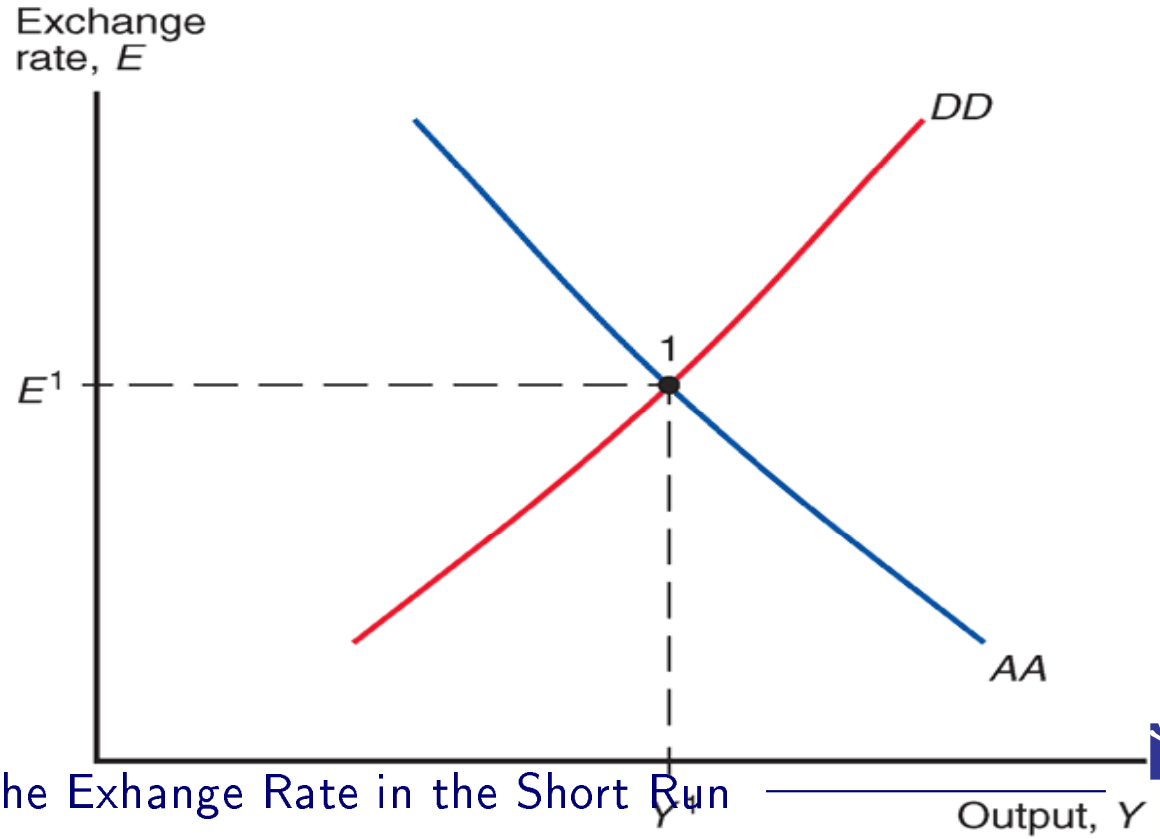


Output and the Exhange Rate in the Short Run

Fig. 17-9: How the Economy Reaches Its Short-Run Equilibrium



Temporary Changes in Monetary and Fiscal Policy



Output and the Exhange Rate in the Short Run

Temporary Changes in Monetary and Fiscal Policy

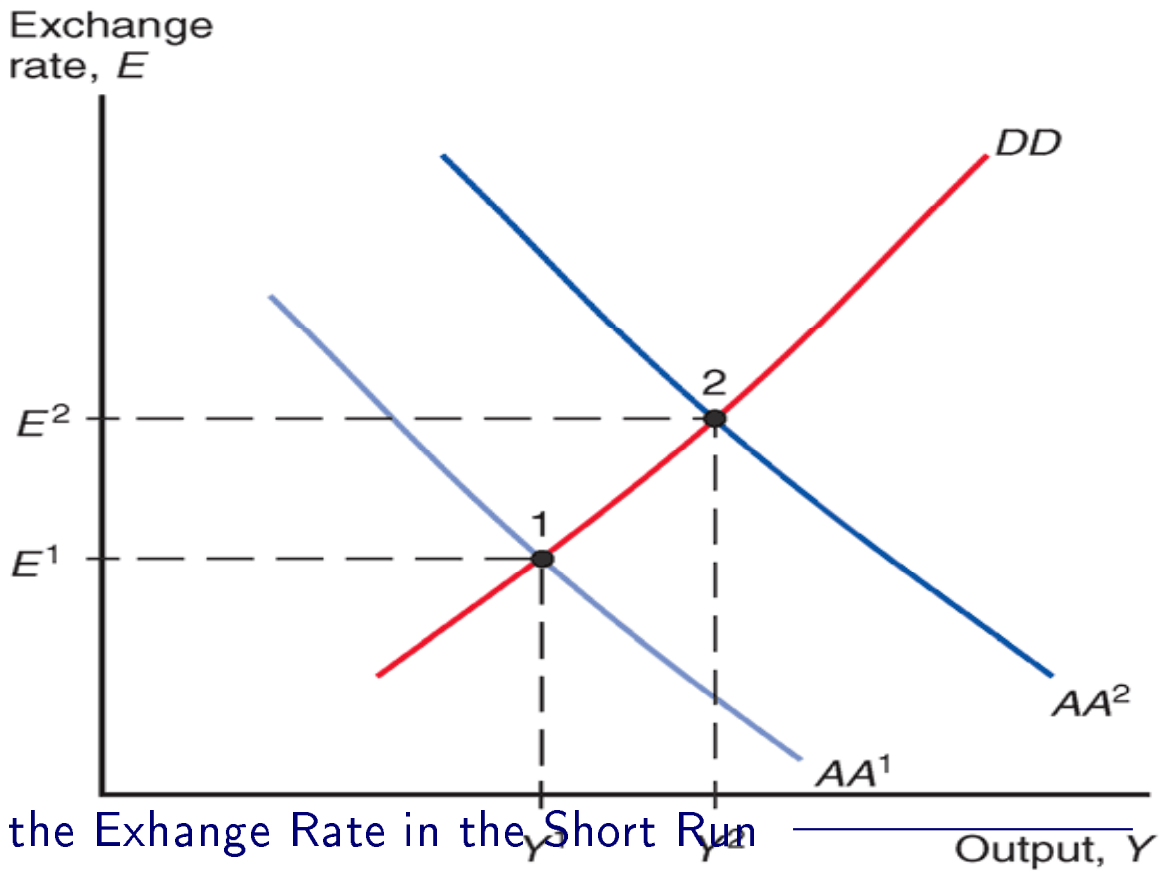
- **Monetary policy:** the central bank influences the supply of monetary assets (AA)
- **Fiscal policy:** governments influence the amount of government purchases and taxes (DD)

Both policies are expected to be effective in the short run.

Temporary Monetary Policy

- if $M^s \Uparrow \Rightarrow R \Downarrow E \Uparrow$
- AA shifts up
- Domestic products relative to foreign products are cheaper so that aggregate demand and output increase until a new short run equilibrium is achieved.

Fig. 17-10: Effects of a Temporary Increase in the Money Supply



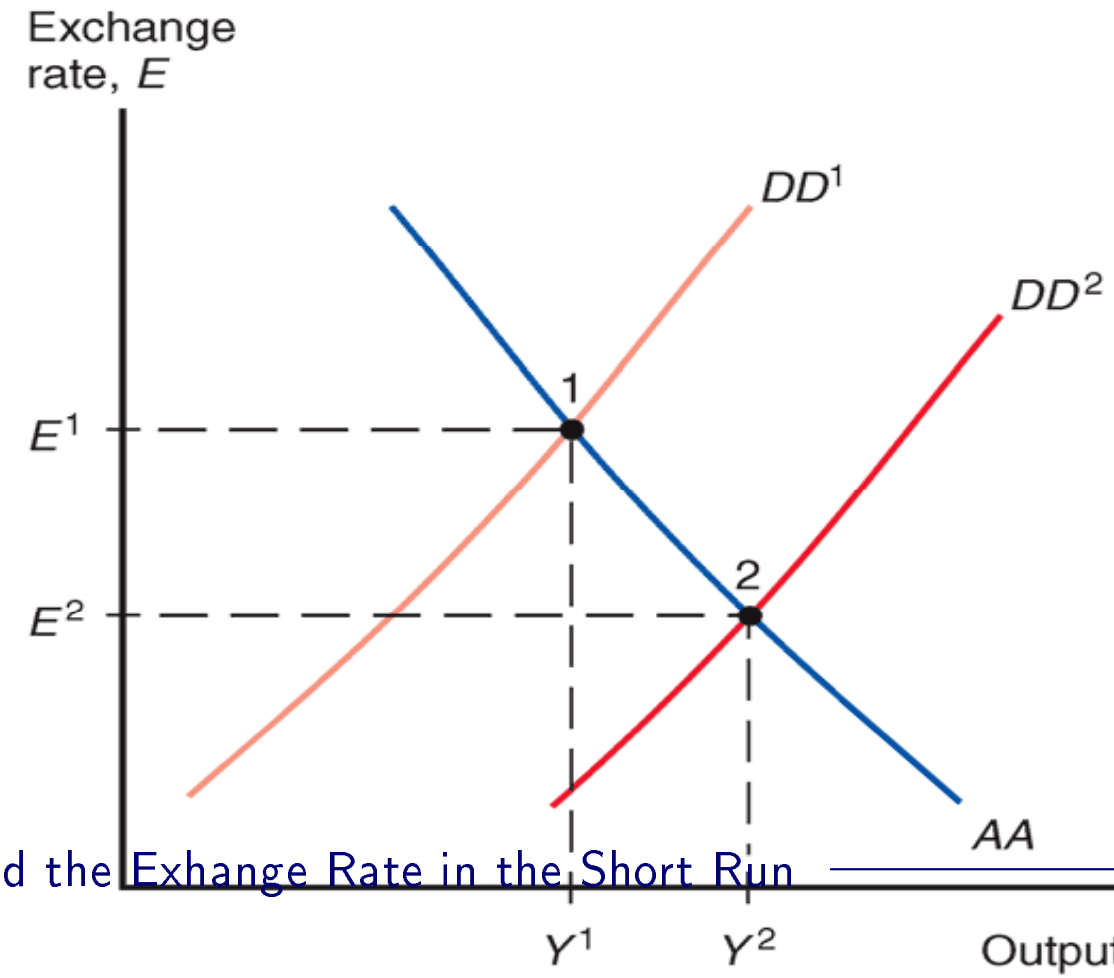
Output and the Exhange Rate in the Short Run

Temporary Fiscal Policy

In the short run

- if $G \Uparrow$ (or $T \Downarrow$) $\Rightarrow D \& Y \Uparrow$
- DD shifts down
- $Y \Uparrow \Rightarrow L(Y, R) \Uparrow \Rightarrow R \Uparrow$
- $E \Downarrow$

Fig. 17-11: Effects of a Temporary Fiscal Expansion



Output and the Exhange Rate in the Short Run

Policies to Maintain Full Employment

Processes can be

- underemployed
- natural/potential level
- overemployed

Fig. 17-12: Maintaining Full Employment After a Temporary Fall in World Demand for Domestic Products

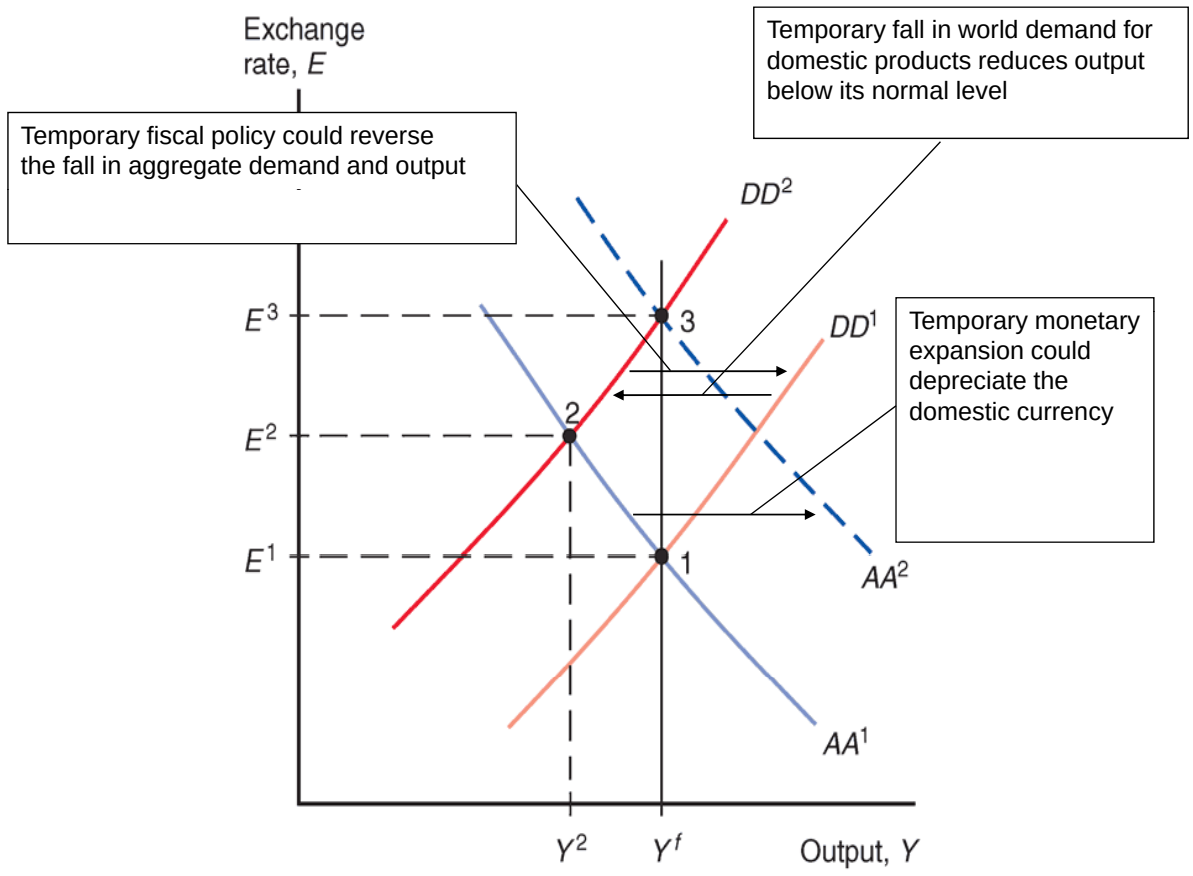
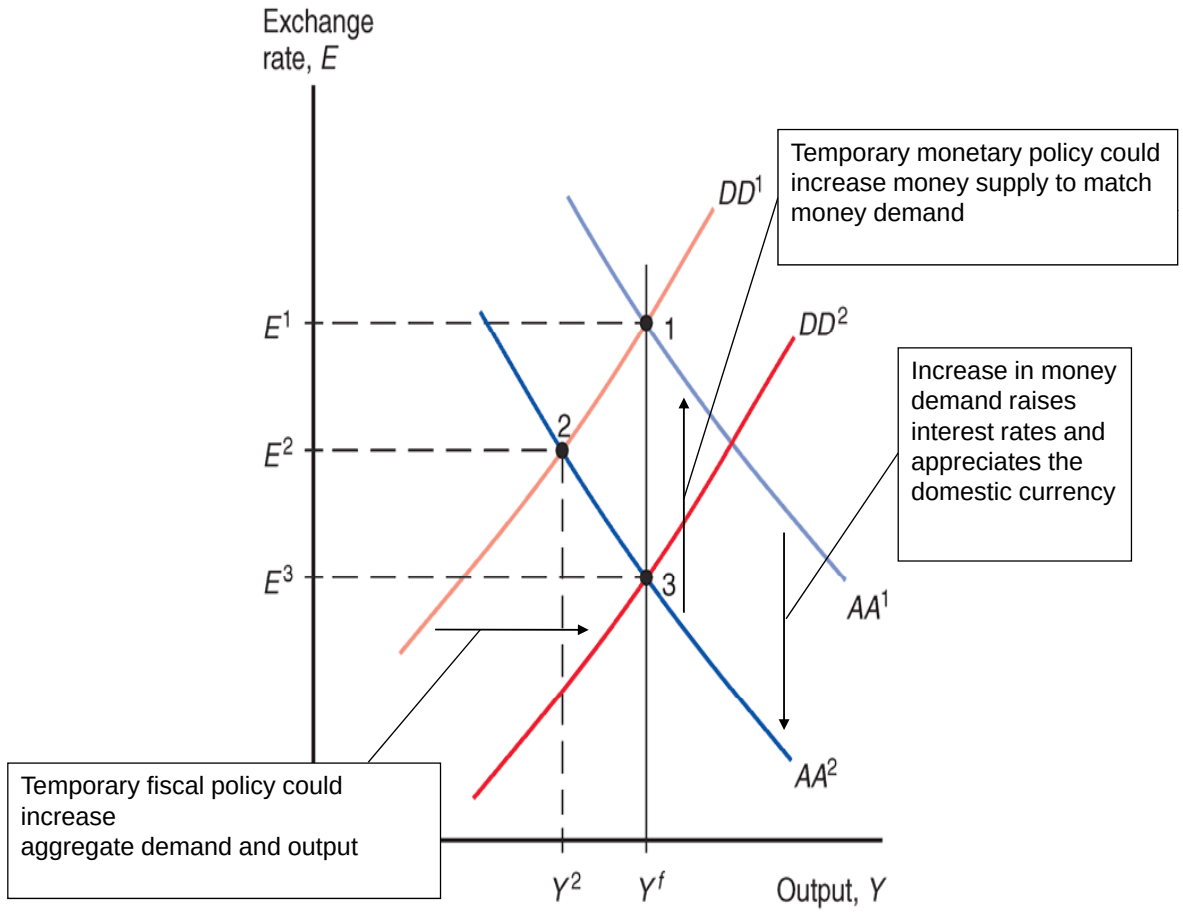


Fig. 17-13: Policies to Maintain Full Employment After a Money Demand Increase



Policies to Maintain Full Employment

Policies to maintain full employment are difficult to implement:

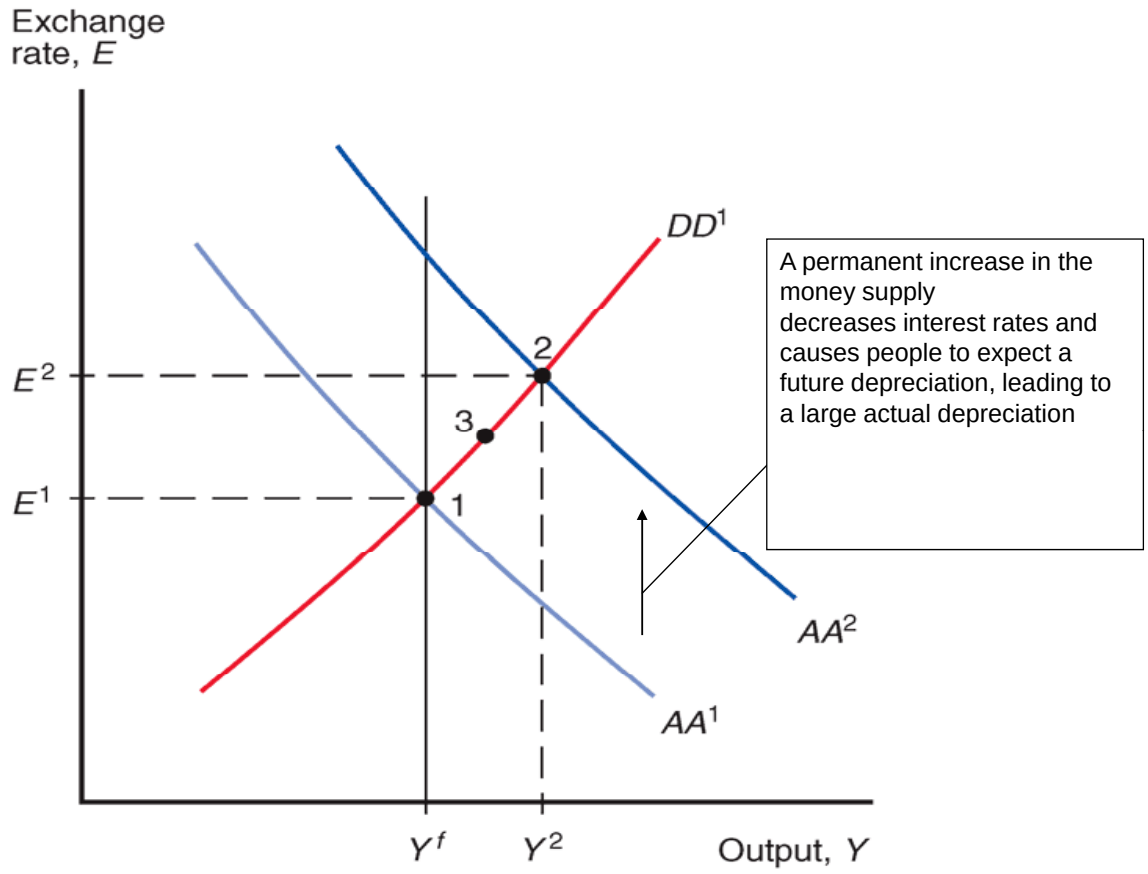
1. people may anticipate the effects of policy changes and modify their behavior (e.g., Barro-Ricardian equivalence)
2. data difficult to measure
3. slow policies
4. lobbies

Permanent Changes in Monetary Policy (1)

Chapter 14:
An increase in a country's money supply:

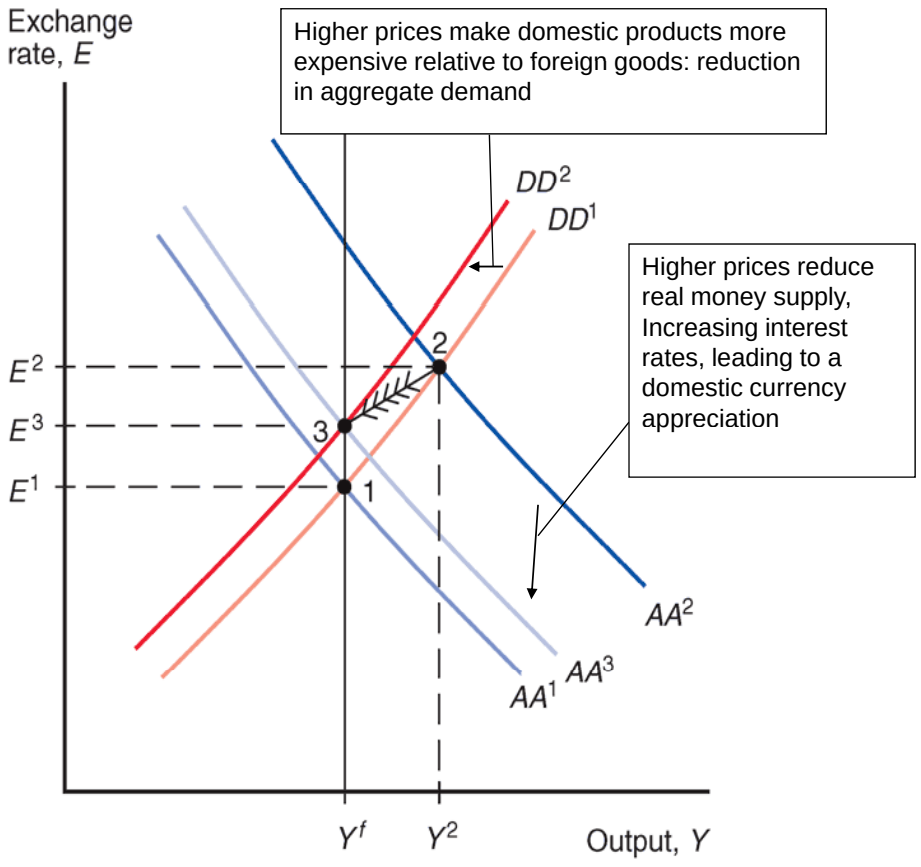
- $R \Downarrow$
- depreciation of the domestic currency

Fig. 17-14: Short-Run Effects of a Permanent Increase in the Money Supply



Permanent Changes in Monetary Policy (2)

With $N > \overline{N} \Rightarrow w \Uparrow \Rightarrow P \Uparrow$

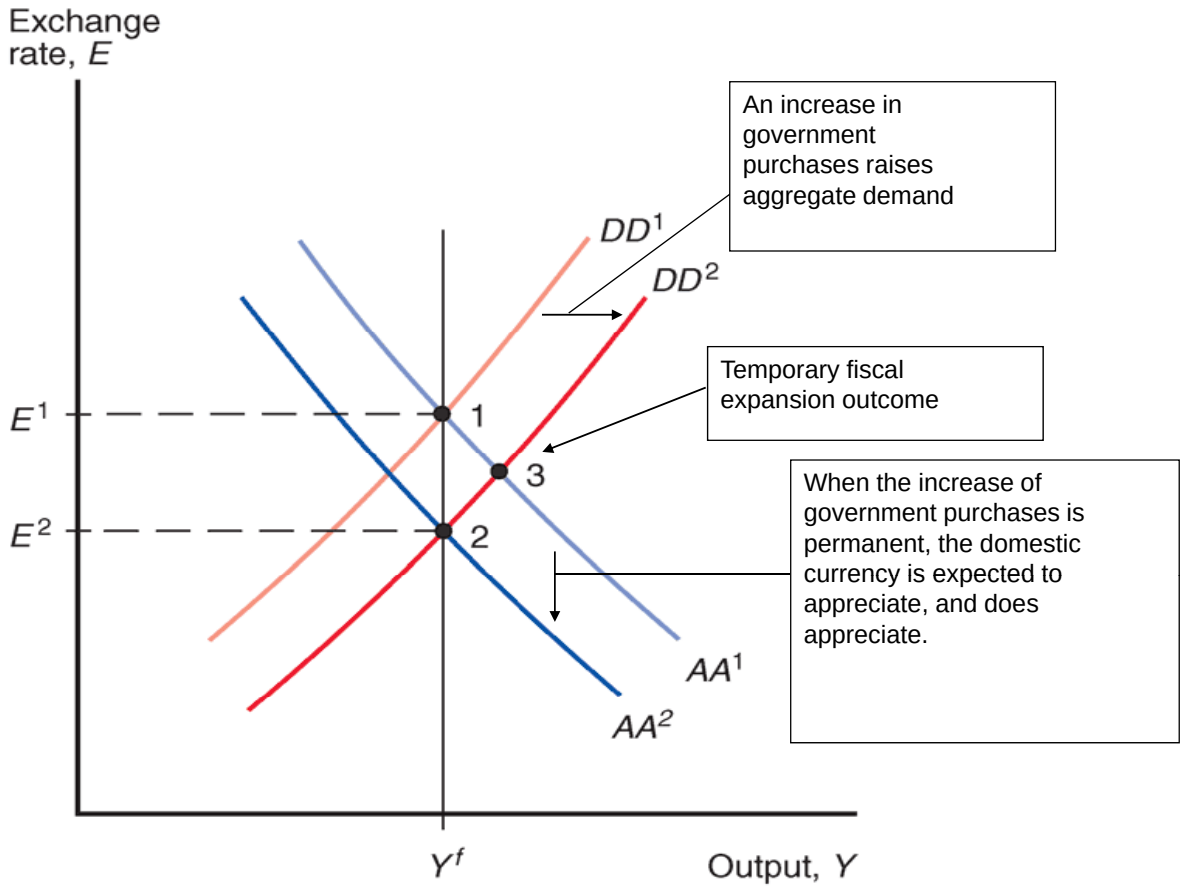


In the long run, output returns to its normal level, and we also see overshooting: $E_1 < E_3 < E_2$

Effects of Permanent Changes in Fiscal Policy

If $G \Uparrow$ or $T \Downarrow$ The final effect is $D \Leftrightarrow$: an increase in government purchases completely crowds out net exports, due to the effect of the appreciated domestic currency

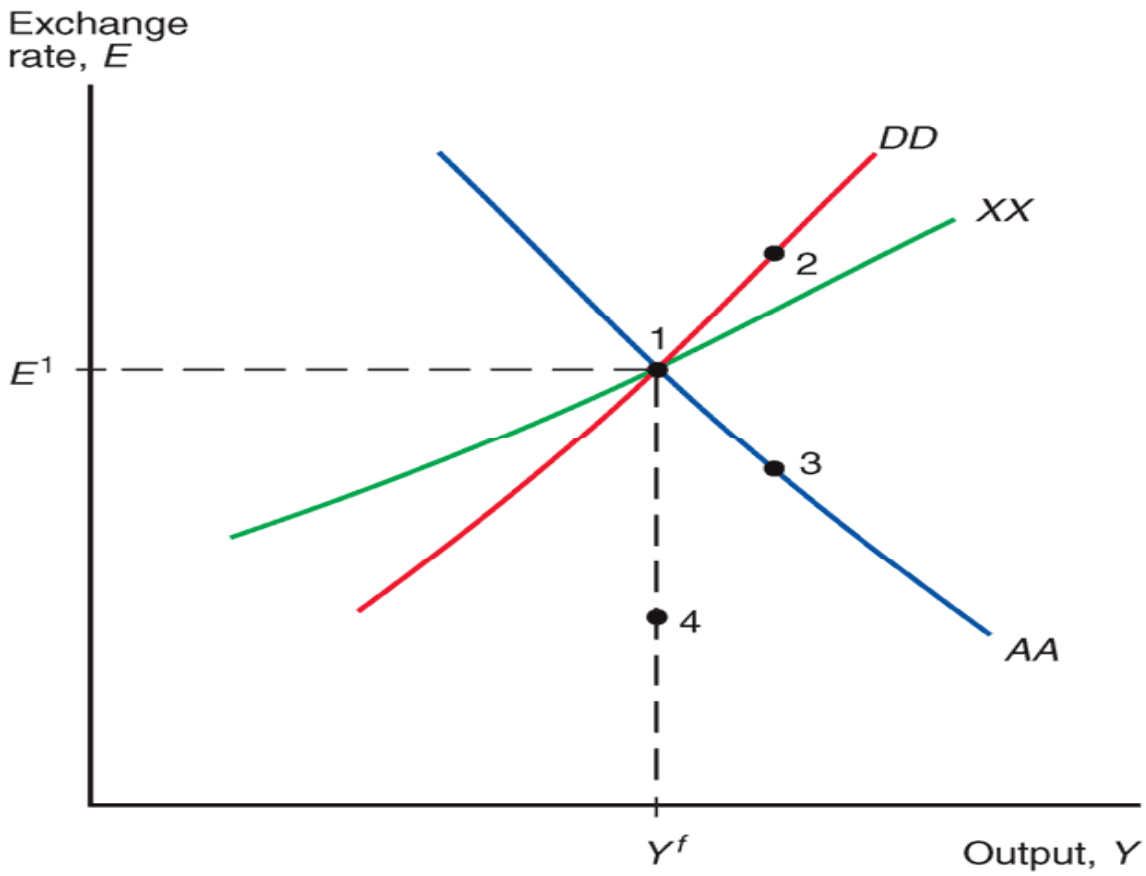
Fig. 17-16: Effects of a Permanent Fiscal Expansion



Macroeconomic Policies and the Current Account

- XX curve: combinations of output and exchange rates at which the current account is at its desired level.
- if $Y \Uparrow \Rightarrow CA \Downarrow$
- XX curve slopes upward but is flatter than the DD curve

Fig. 17-17: How Macroeconomic Policies Affect the Current Account



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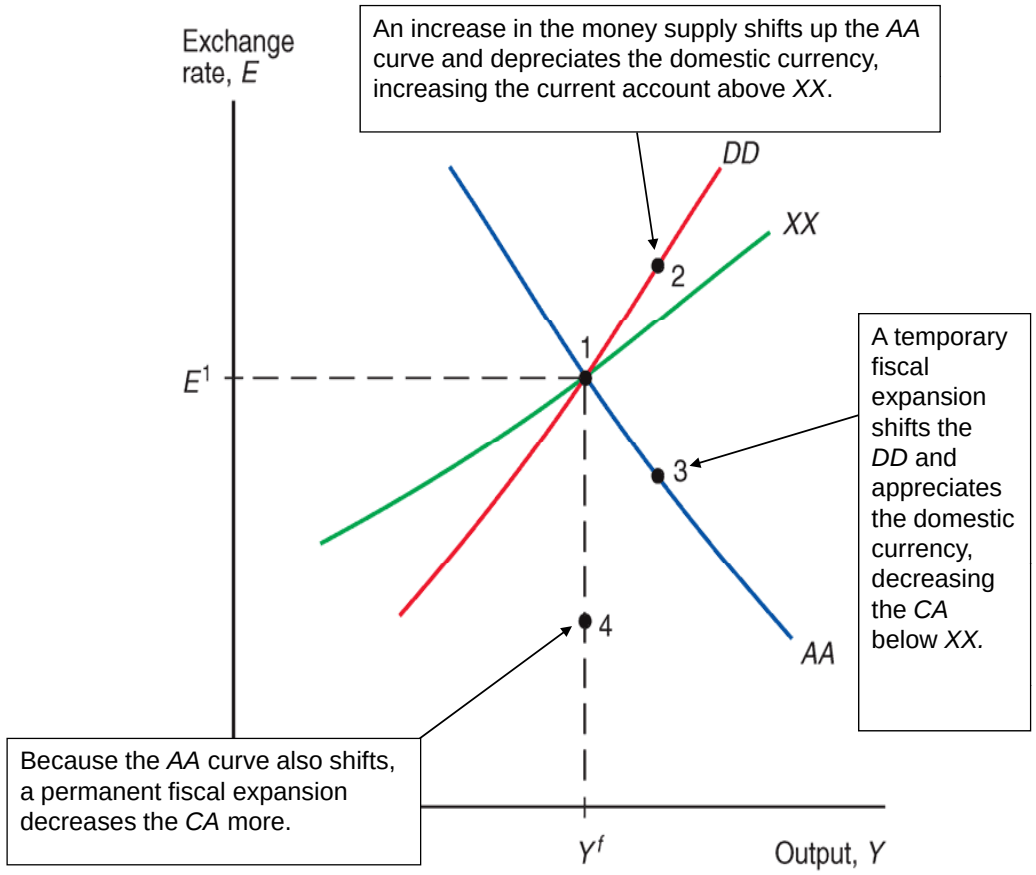

Fig. 17-18: The J-Curve