Open Economy IS/LM Model: Fixed Exchange Rate

Prof. Lutz Hendricks

Econ520

March 29, 2016

Exchange Rate Interventions

- Almost all central banks intervene in FX markets
- The mechanics: buy dollars and sell Euros (or vice versa)
- Each intervention changes the money supply.
- This produces a conflict: the CB has one instrument (M) but 3 targets
  - stable inflation
  - stable output
  - stable exchange rate

Exchange Rate Regimes

- Two extremes:
  - **floating**: the CB does not buy or sell FX
  - **peg**: the CB stands ready to buy/sell any amount of FX at a fixed E
- Reality is somewhere in between

Pegging and Monetary Control

UIP

$$1+i=(1+i^*)E/E^e \tag{1}$$

With a strict peg:

$$E=E^e \tag{2}$$

$$i=i^* \tag{3}$$

The CB has no control over the interest rate

Money market clearing

$$M/P=YL(i^*) \tag{4}$$

The CB has no control over the money supply either.

- Any shock induces a change in M to keep the interest rate constant

Equilibrium: Fixed Exchange Rate

$$IS: Y = C(Y-T) + I(Y, i^*) + G + NX(\underset{-,+,-}{Y, Y^*, \varepsilon}) \tag{5}$$

$$LM: M/P = YL(i^*) \tag{6}$$

$$UIP: i = i^* \tag{7}$$

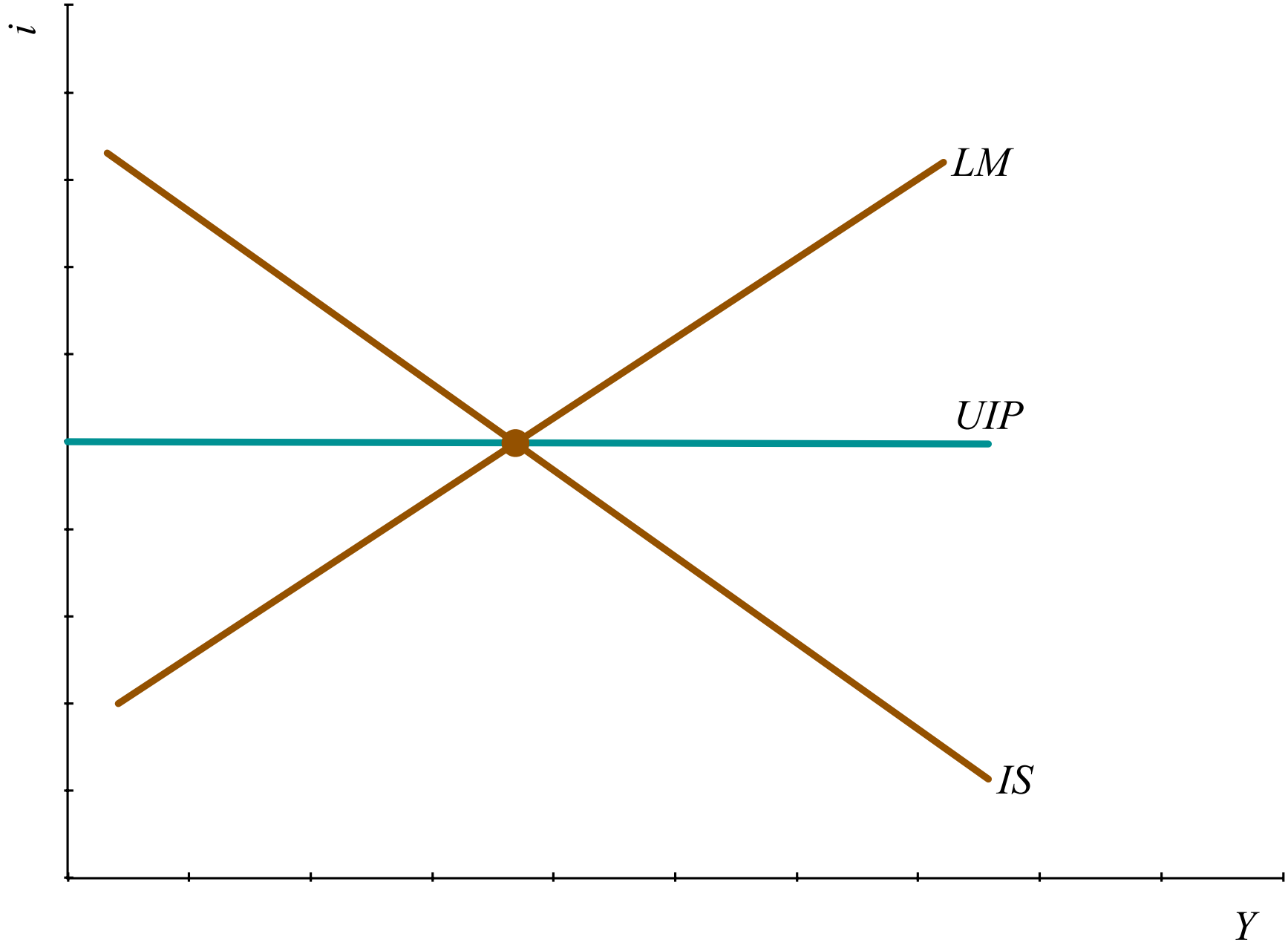
Exogenous: $E = E^e$, $i = i^*$, P, P^*, $\varepsilon = EP/P^*$, Y^*.

Endogenous: Y, M

The logic:

- UIP $\Longrightarrow$ i, IS $\Longrightarrow$ Y, LM $\Longrightarrow$ M.

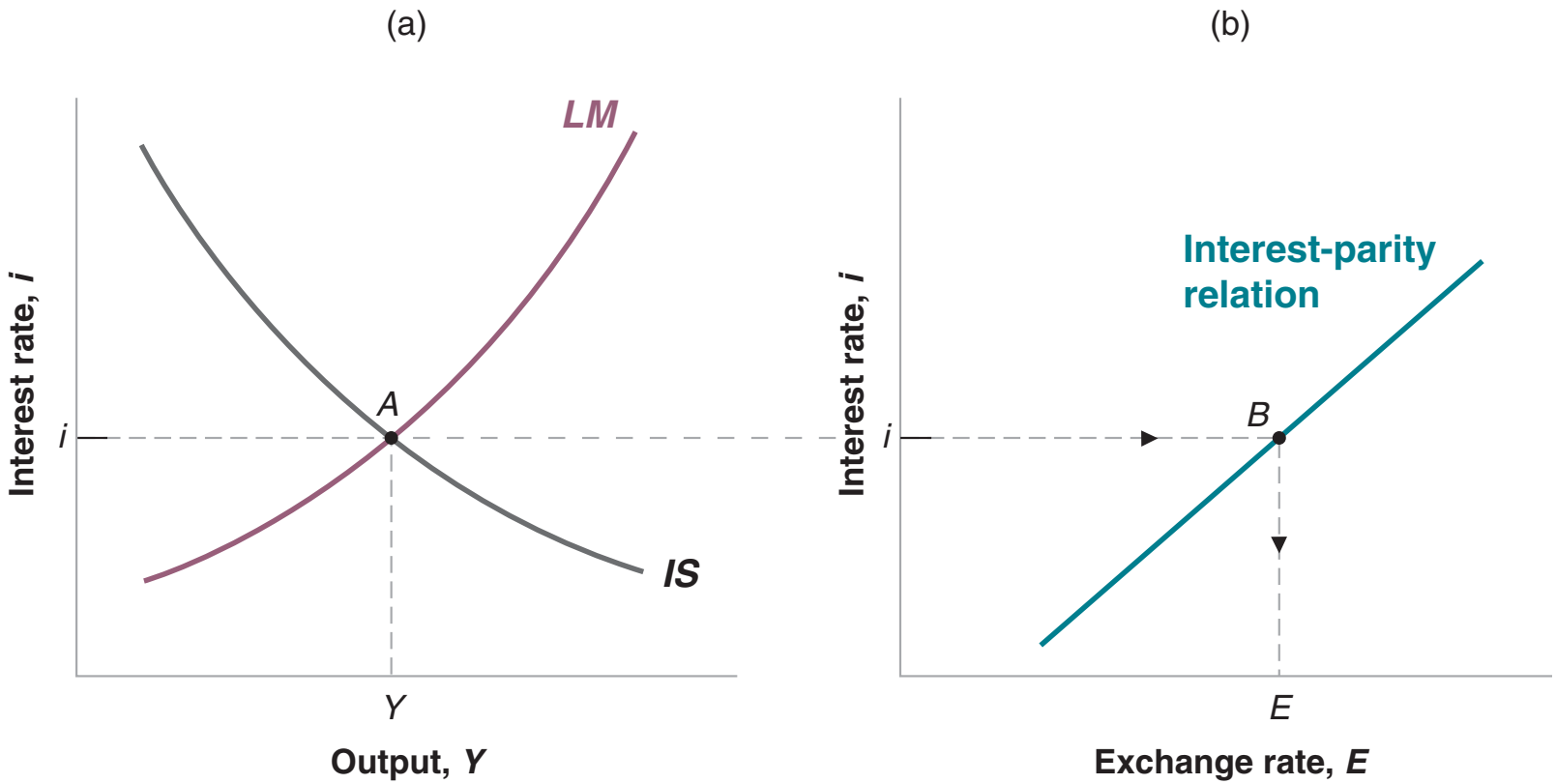
Fiscal Policy



Open Market Operations

- What happens if the CB tries to increase the money supply?
- Open market operation: buy bonds in exchange for money.
- We know the eventual outcome:
- What is the process?

Open Market Operations



Open Market Operations

The CB buys bonds with high powered money

Then it buys the high powered money back in the FX market

The Central Bank balance sheet:

Assets		Liabilities	
Bonds:	ΔB	**Monetary base**	$\Delta B - \Delta B$
Reserves:	$-\Delta B$		$= 0$

- Open Market Operations simply exchange currency reserves for bonds.
- No effect on money supply

Reality Check

- We have assumed perfect capital mobility (UIP)
- In reality, Central Banks have some control over the domestic interest rate
- Outcomes are somewhere in between closed economy and perfect capital mobility.

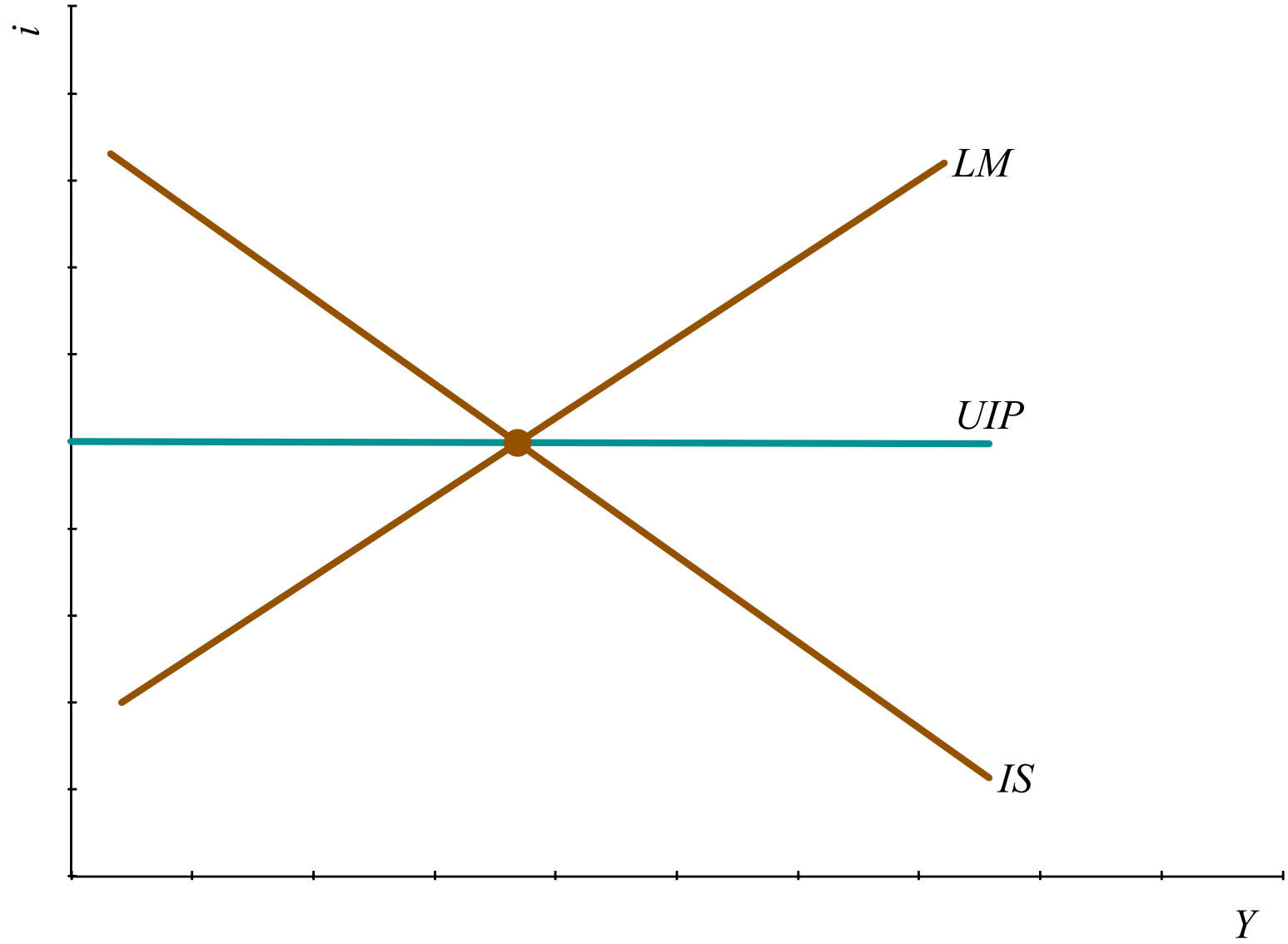
Trade restrictions

What is the effect of a tariff on imports?

Think of a tariff as improving NX for given (Y, Y^*, ε)

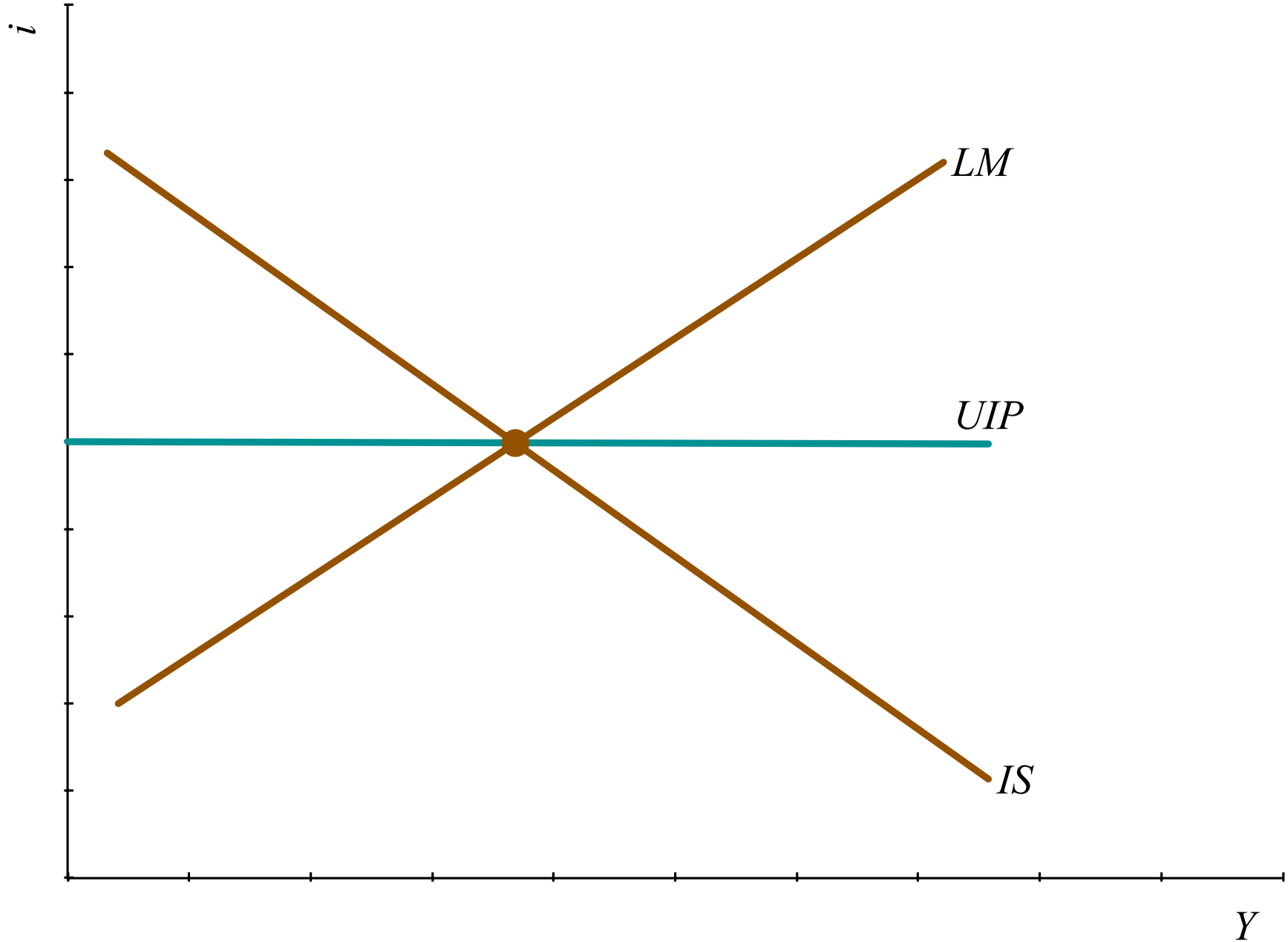
$$IS: Y = C(Y-T) + I(Y, i^*) + G + \underset{-,+,-}{NX}(Y, Y^*, \varepsilon, \tau) \qquad (8)$$

Trade restrictions



Result: tariffs work (again), but only in the short run...

Devaluation



Policy coordination

Countries can achieve domestic expansion in different ways:

1. $G \uparrow$: positive spillover on other countries ($NX \downarrow$)
2. Devaluation, tariffs: negative spillover

Need for policy coordination

Risk of competitive devaluations

Reading

- Blanchard / Johnson, Macroeconomics, 6th ed., ch. 19, 20