Lecture 11: Macroeconomics in Open Economy

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Course: Macroeconomics 101

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The Road Ahead

1. Balance of Payments
2. Exchange Rates and Foreign Exchange Market
3. National Saving and Investment
4. Monetary and Fiscal Policy

Balance of Payments

- A set of accounts recording a country's international transactions, compiled by BEA
  - **current account** = trade balance (net exports) + income balance + net unilateral transfers
  - **financial account** = sales of assets to foreigners — purchases of assets from foreigners
  - **capital account**: quantitatively small in U.S.
- Principle of double-entry bookkeeping
  - current acc't balance = — financial acc't balance
- Example
  - a U.S. resident buys a smartphone of $500 from South Korea with dollars (U.S. asset)
  - current acc't ↓ $500, financial acc't ↑ $500

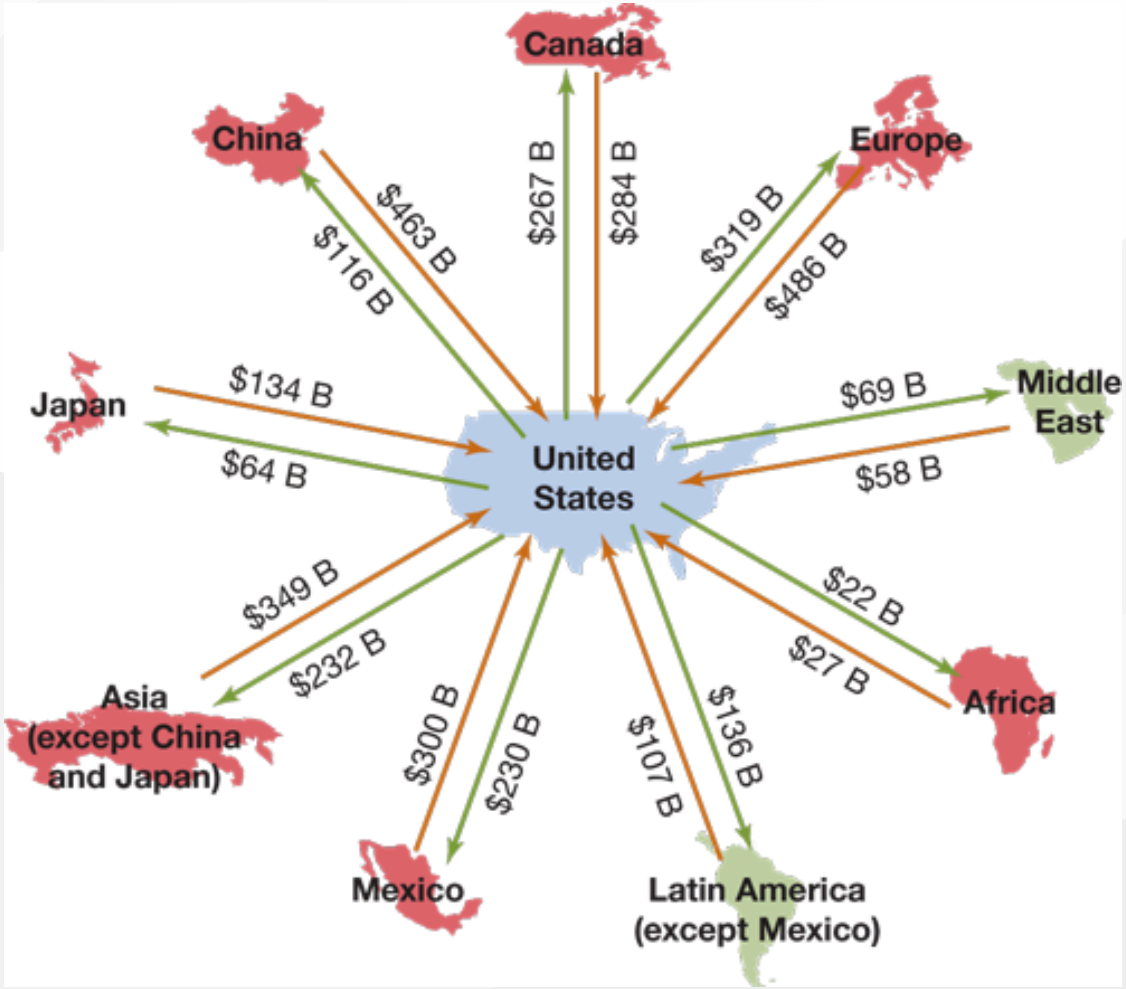
U.S. Balance of Payments, 2016

Current Account		
Exports of goods	$1,456	
Imports of goods	–2,208	
Balance of trade		–752
Exports of services	752	
Imports of services	–505	
Balance of services		247
Income received on investments	814	
Income payments on investments	–641	
Net income on investments		173
Net transfers		–119
Balance on current account		**–451**
Financial Account		
Increase in foreign holdings of assets in the United States	741	
Increase in U.S. holdings of assets in foreign countries	–364	
Balance on financial account		**377**
Balance on Capital Account		**0**
Statistical discrepancy		**74**
Balance of payments		**0**

The sum of the balance of trade and the balance of services equals net exports.

- Source: BEA, billions of dollars
- Large deficits in trade balance and current account

U.S. Trade Flows, 2016



- Green arrows: exports, red arrows: imports

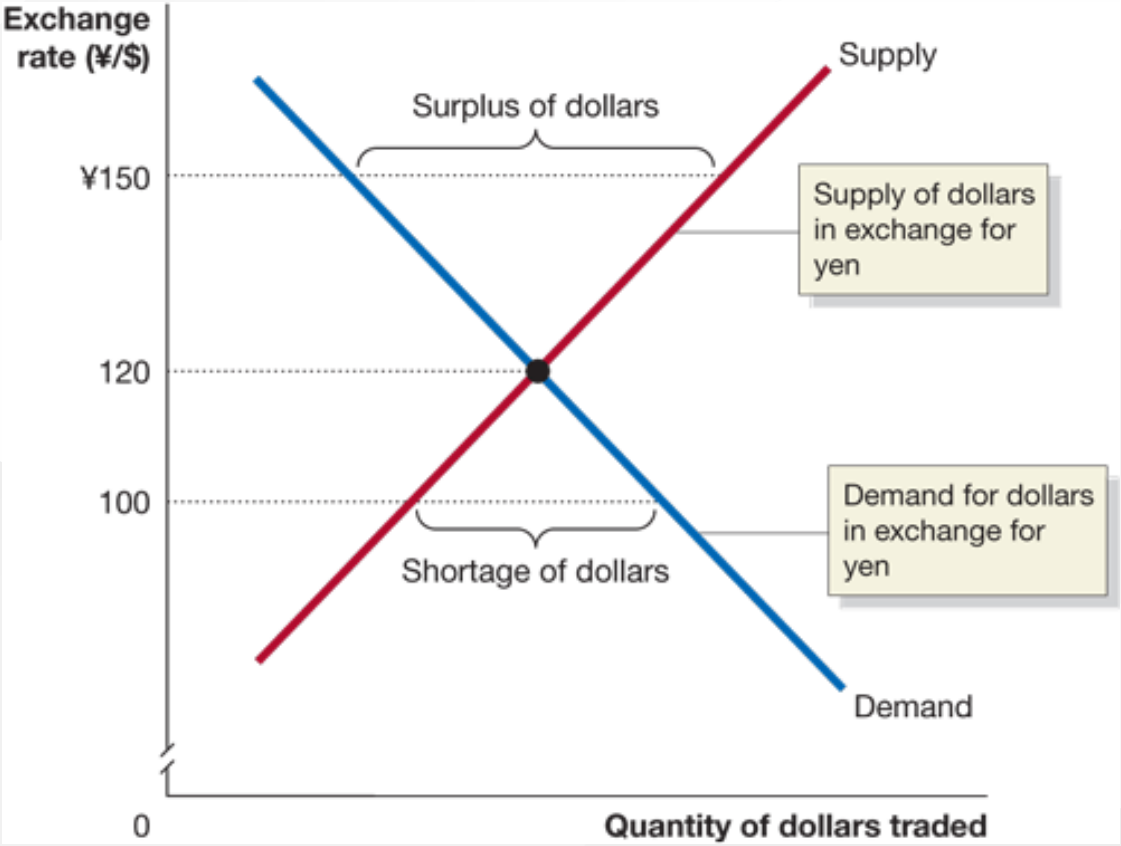
Nominal Exchange Rate

- Value of one currency in terms of another
  - how much yen is one dollar? (¥100/$)
    ⇒ **price** of domestic currency in foreign currency
  - how much dollar is one yen? ($0.01/¥)
    ⇒ **price** of foreign currency in domestic currency
- This course: foreign price of domestic currency
- Why is it important
  - comparing prices in different countries becomes easy
  - $22,000 Ford v.s. ¥2,500,000 Nissan
  - ¥2,500,000 "=" $2,500,000 × 0.01

Changes in Exchange Rates

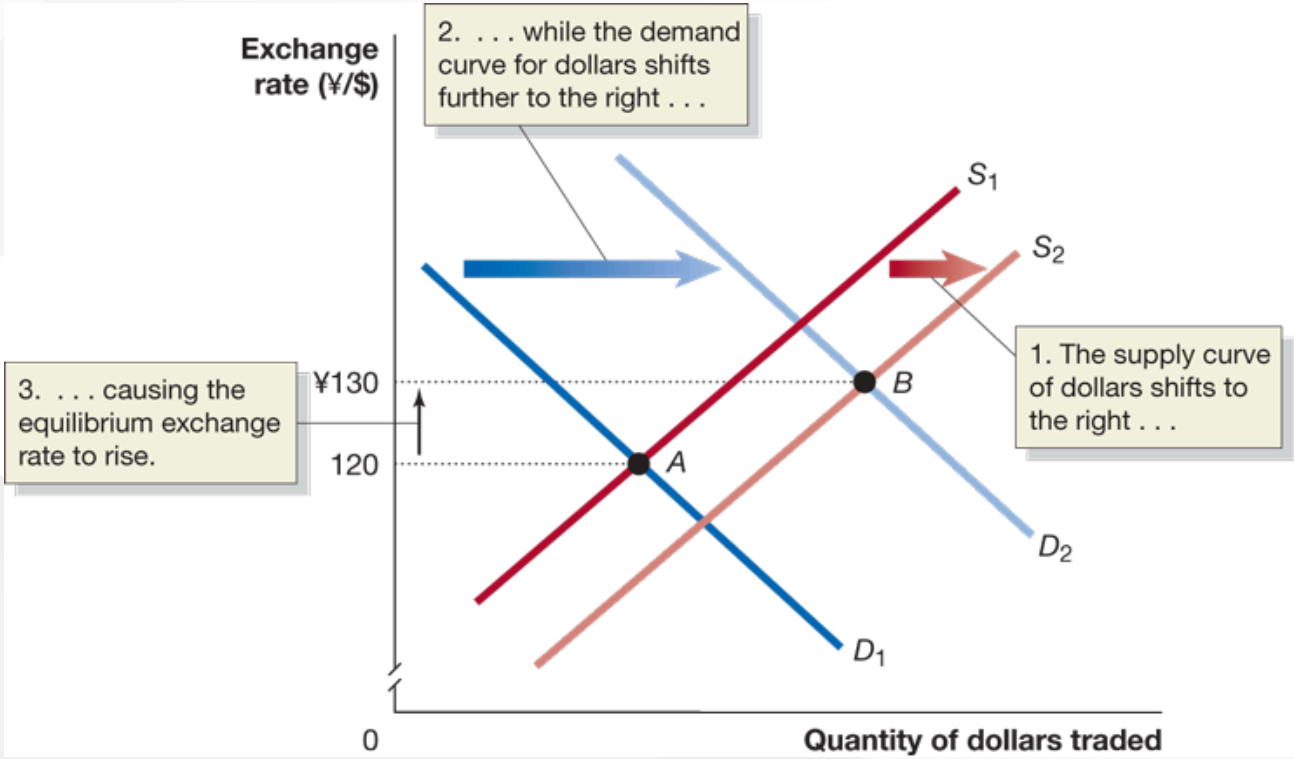
- Currency depreciation: decrease in value of one currency **relative** to another
  - \$1/€ ↑ \$1.2/€: \$ becomes less valuable relative to €
  - \$0.01/¥ ↓ \$0.012/¥: Nissan costs more as \$ depreciates
  - price of exports ↓ relative to price of imports
- Currency appreciation: increase in value of one currency **relative** to another
- Domestic currency depreciates (appreciates) ⇔ foreign currency appreciates (depreciates)

Foreign Exchange Market Equilibrium



- Equilibrium occurs when dollar supply equals demand
- Fixed exchange rates are not determined by market

Shifts in Demand and Supply



- Demand shifters: foreign income, domestic interest rate, expected value of home currency
- Supply shifters: domestic income, foreign interest rate, expected value of foreign currency

Real Exchange Rate

Purchasing Power Parity (PPP)

$$P^* = E \times P \quad (\text{no arbitrage})$$

- Some notations
  - P = domestic price of a basket of goods
  - P^* = foreign price of a basket of goods
  - E = foreign price of domestic currency
- What is real exchange rate?
  - **price** of domestic goods in foreign goods

$$e = E \times P/P^*$$

  - PPP condition holds if $e = 1$

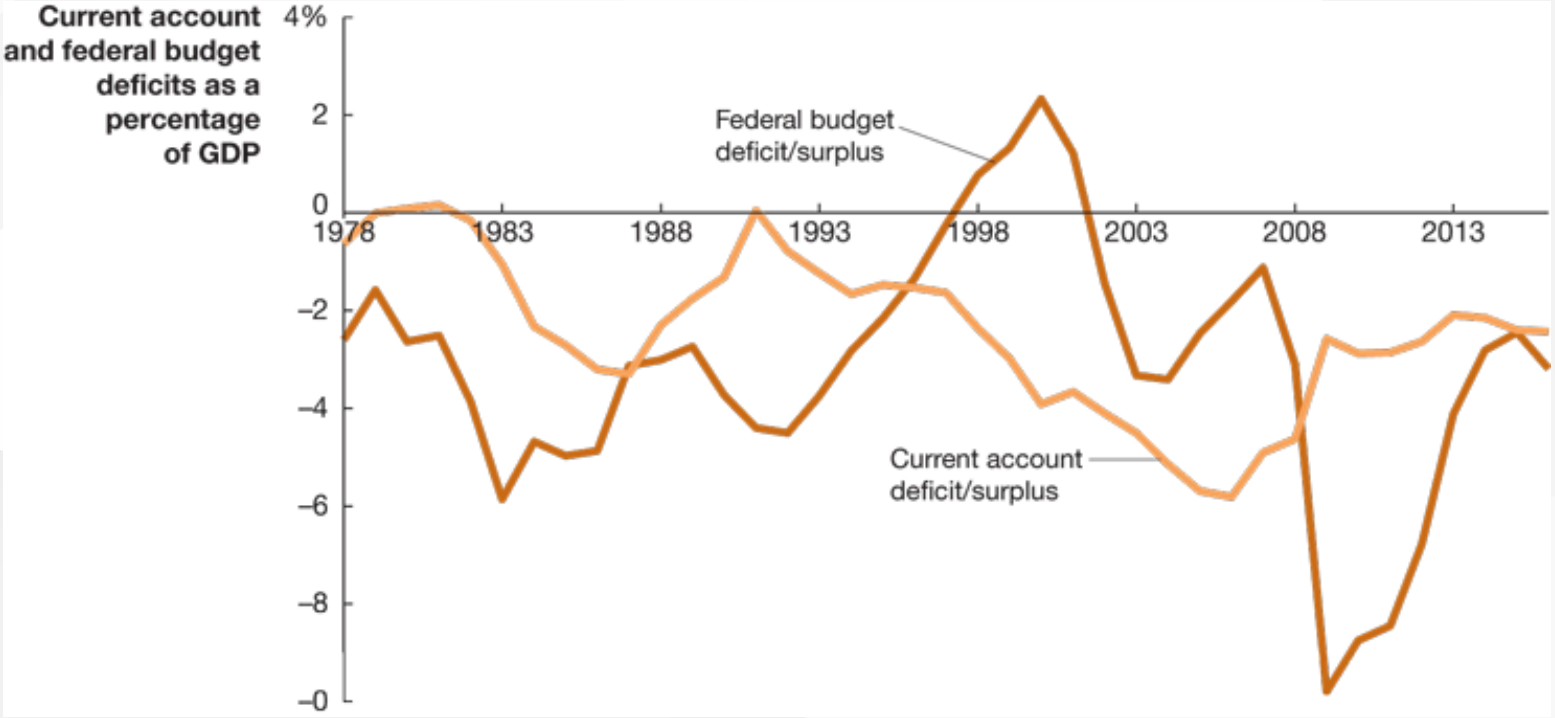
Saving Equals Investment Revisited

National income identity

$$\underbrace{S}_{\text{national saving}} = \underbrace{Y - T - C}_{\text{private saving}} + \underbrace{T - G}_{\text{gov't saving}} = I + NX$$

- Some notations
  - T = taxes net of transfers (net taxes)
  - $Y - T$ = disposable income
  - S^p = private saving, S^g = gov't (public) saving
  - $G - T$ = primary deficit/newly issued gov't debt
- Ways to raise national wealth
  - Closed economy: only domestic investment ($S = I$)
  - Open economy: also net foreign investment (NX)

Twin Deficits



- Effects of government budget deficit: $S \downarrow \Rightarrow I \downarrow$ or $NX \downarrow$ (why?)
- $G - T \uparrow \Rightarrow$ U.S. bond supply $\uparrow \Rightarrow i \uparrow \Rightarrow I \downarrow$
- $i \uparrow \Rightarrow$ dollar demand $\uparrow \Rightarrow E \uparrow \Rightarrow NX \downarrow$

Monetary and Fiscal Policy

- Monetary policy in open economy
  - consider monetary expansion ($M^s \uparrow \Rightarrow i \downarrow$)
  - closed economy: $I \uparrow, C \uparrow$
  - open economy: dollar demand $\downarrow \Rightarrow E \downarrow \Rightarrow NX \uparrow$
  - MP becomes more effective in open economy
- Fiscal policy in open economy
  - consider fiscal expansion ($G \uparrow$ or $T \downarrow \Rightarrow i \uparrow$)
  - closed economy: $I \downarrow, C \downarrow$ (crowding out)
  - open economy: dollar demand $\uparrow \Rightarrow E \uparrow \Rightarrow NX \downarrow$
  - smaller multiplier effect
  - FP becomes less effective in open economy

Readings & Exercises

- Readings
  - HO: chapter 18
  - BJ: lecture 16 (supplementary)
- Exercises
  - HO: problem 1.3, 2.1, 2.9, 3.9, D18.1
  - Graphically compare effects of monetary or fiscal expansion on equilibrium output in closed and open economy. EXPLAIN your results.