Principles of Macroeconomics: Capital Flows and Exchange Rates

Class 13

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October 7, 2025

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Overview

- Announcements:
  - LC 18, GH 18 due Friday at 11:59pm
  - Practice Midterm on Canvas
  - Midterm: October 16 in class!
- Topics:
  - Balance of Payments
  - Exchange Rates
- Readings:
  - Chapters 18.1 - 18.3

Net Capital Inflows and the Trade Balance

- Remember this identity?

$$NCI = -(x - im)$$

- Why exactly is this the case?
  - I argued broadly when we covered investment that if we imported goods from a foreign country, then we must give that foreign country some financial asset (if we don't trade goods for goods)
  - Then usable capital is flowing into the United States and financial assets are flowing into Brazil, so the US has a positive net capital inflow.
- Let's look at a concrete example

Farming (from textbook)

Suppose we are farmers interacting with the world around us. Our transactions might look like:

	Sources of cash	Uses of cash	Net
Sales and purchases of goods and services	Artichoke sales: $100,000	Farm operation and living expenses: $110,000	− $10,000
Interest payments	Interest received on bank account: $500	Interest paid on mortgage: $10,000	− $9,500
Loans and deposits	Funds received from new loan: $25,000	Funds deposited in bank: $5,500	+ $19,500
Total	**$125,500**	**$125,500**	**$0**

We gain $100,000 in sales and spend $110,000 of it fixing the farm ("net exports").
We received $500 in factor payments and paid out $10,000 in factor payments ("factor income")
We took out a loan to finance our farm, but still saved some money in assets ("financial account")
The idea: every dollar has a source, and every dollar received goes somewhere

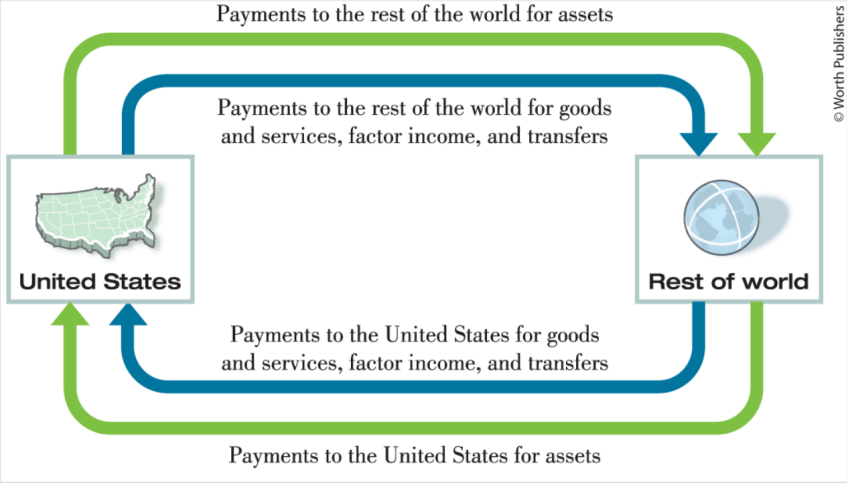
Going More In-Depth

- Net exports or trade balance: $(x - im)$
- Current account: $(x - im)$ + international transfers + international factor income
- Financial Account: Net asset acquisition - net liability acquisition
- Capital account: one-time capital transfers (think forgiveness on a loan, not a payment) and non-produced, non-financial assets (think like usage of land rights)
  - This is small in practice
- Before, we had $NCI = -NX$. But we've added transfer payments and factor income. The identity now is: $CA + KA = -FA$
  - Since KA is very small, $CA \approx -FA$
  - Why is this true? Because of the same reasoning from farming – every dollar received goes somewhere and every dollar has a source
- If we could perfectly account for all transactions, this identity would hold true

For the US, 2025Q2, Millions of Dollars

	Payments from foreigners	Payments to foreigners	Net
1 Sales and purchases of goods and services	851,826	1,042,218	–190,392
2 Factor income	376,087	383,772	–7,685
3 Transfers	45,935	99,170	–53,235
Current account (1 + 2 + 3)			-251,312
4 Asset sales and purchases	653,406	220,644	406,916
Financial account (4)			406,916
Net non-produced, non-financial assets (5)	16	1,922	-1,906
Capital Account (5)			-1,906
Statistical discrepancy			-153,698

In Circular Flow



Tying the Financial Account to NCI

- NCI is defined as the amount of foreign savings that are available to finance domestic investment
- Remember investment and saving? We made a lot of simplifying assumptions
  - We assumed that all international capital flows were loans. In reality, there's foreign stock, foreign real estate, direct foreign investment, etc.
  - We assumed that something called exchange rates were inconsequential (will relax shortly)
- With those simplifications, comes a prediction: if it is easy for countries to lend across boarders (and there's similar risk levels), interest rates will equalize across countries
  - Capital moves from places where capital is cheap to places where capital is expensive

Why are Interest Rates Different Between Countries?

- High growth $\longrightarrow$ higher demand for capital $\longrightarrow$ higher returns to investment
- Difference in savings rate – high government debt $\longrightarrow$ higher NCI
- Suppose demand for loanable funds is high – then interest rates are higher, which makes foreign investment more attractive (high NCI)
- Example: early 20th century
  - Britain – slow growth, low interest rates, capital outflow
  - US – high growth, high interest rates, capital inflow

Gross Capital Flows

- Note, we have been talking about net capital flows – But what about *gross* flows?
  - In reality, the US buys foreign assets and sells assets. Why?
- Investors seek more than just the highest rate of return
  - Diversification – US investors seeks to reduce risk by investing in Europe, European investors seek to reduce risk by investing in the US
  - Companies try to optimize where each part of their product is constructed – think computers made in Korea but the car chassis is constructed in Germany
  - Some places are centers for banking – New York or London for example – because they are safe and reliable

But How Do These Countries Actually Trade?

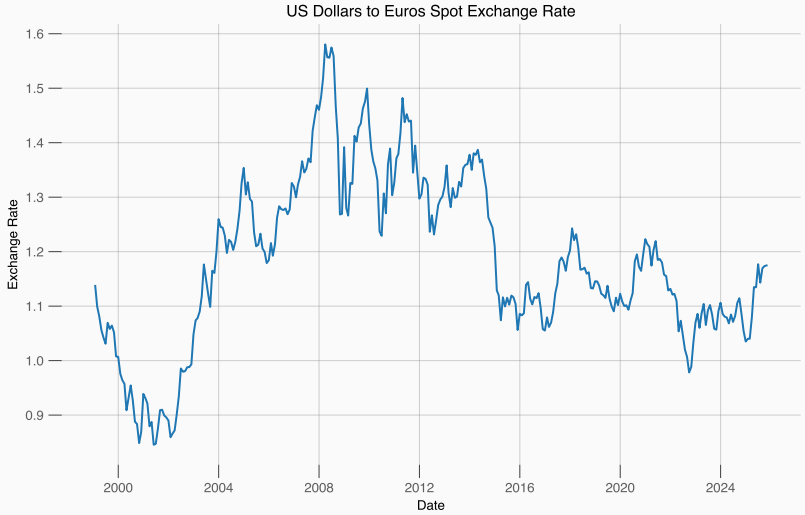
- Many countries exist $\longrightarrow$ many currencies exist
- UN says 180 different currencies
- There are 5 big currencies:
  (1) US Dollar
  (2) Euro
  (3) Japanese Yen
  (4) Swiss Franc
  (5) UK Pound
- These are traded in the foreign exchange (FX) market
- $7.5 trillion in transactions everyday as of April 2022
- Banks trade everyday

The Exchange Rate

- How do we know how many US Dollars a Euro is worth?
- We call the price of one currency in terms of another the exchange rate
- As of October 7, 2025, one dollar is worth 0.86 Euros
  - Or, one Euro is worth 1.17 dollars
- Notation:

$$E_{€/\$} = \frac{0.86€}{1\$} \qquad E_{\$/€} = \frac{1.17\$}{1€}$$

Dollars to Euros Over Time

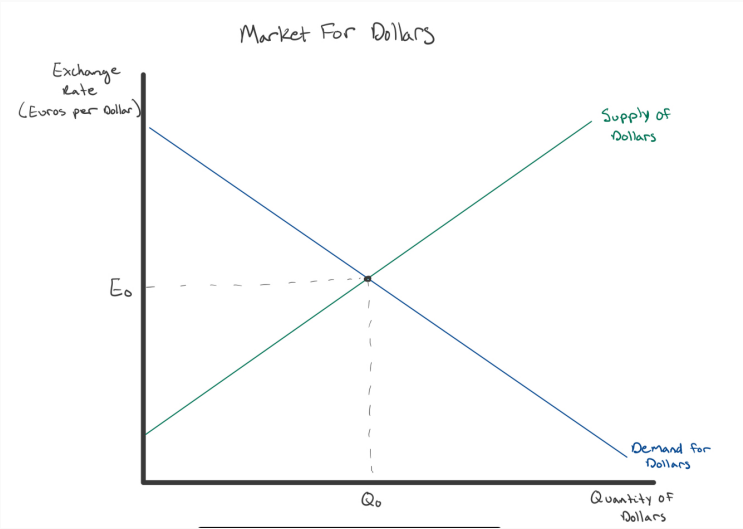


Supply and Demand in the FX Market

- First, who trades in the FX Market?
  (1) People who purchase goods
  (2) People who purchase services
  (3) Governments who want to manage exchange rates

- Money is a medium of exchange
  - Every time firms export/import or investors move want to invest abroad, we need to do currency conversion
  - People who want to buy in the US want to buy in dollars $\longrightarrow$ demand for dollars
    - Example: Europeans who want to buy dollars, sell euros
  - People who want to sell dollars $\longrightarrow$ supply for dollars
    - Americans who want to buy Euros, sell dollars

Graphically



Shifting Equilibrium

- What happens if demand for dollars increases?
  - Then the dollar has become more value – the dollar has appreciated in value relative to the Euro
  - At the same time, the Euro has depreciated in value relative to the dollar
- So what? Well, most of us probably think in terms of money prices when thinking about goods
  - How much does a MacBook Pro cost? – $1599
  - To a European, this costs: $0.86 \times 1599 \approx €1375$
- What if the euro appreciates relative to the dollar, say now one dollar can buy 0.75 euro?

$$0.75 \times 1599 \approx €1200$$

- Or what if the euro depreciates, say to 1.1 euro per dollar? Then:

$$1.1 \times 1599 \approx €1760$$

But What About "Real"ity?

- So far, this has been the nominal exchange rate. Now, we want to think about the real exchange rate. Divide by the relative price level:

$$q_{US/Eur} = \frac{E_{\$/€} P_{Eur}}{P_{US}}$$

- P_{Eur} is the price level in Europe (in euros)
- P_{US} is the price level in the US (in dollars)
- If $\uparrow q_{US/Eur} \longrightarrow$ European goods are relatively more expensive
  - US imports decrease: European goods get expensive for Americans
  - US exports increase: US goods are relatively cheaper for Europeans
  - As such: "weak dollar" $\longrightarrow$ good for exporters, bad for importers
- Similar logic holds for a decline in $q_{US/Eur}$

Summary

- Balance of Payments
- Exchange rates
  - Why might countries want to manipulate their exchange rates?
- Remember: homework due Friday night
- Read chapters 18.1 - 18.3
- Practice Midterm