

CHAPTER 17

The Foreign Exchange Market

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Outline

The FX Market and Why It Matters

Exchange Rates in the Long Run

The Short Run: An Asset-Market Approach

Shifts and Applications

Wrap-up

Reading and objectives

- ▶ Mishkin, *The Economics of Money, Banking, and Financial Markets*, 13th ed.
- ▶ This deck: **Chapter 17** — The Foreign Exchange Market.
- ▶ We have spent the course inside one economy. Now we open the border: an **exchange rate** is just another price, set in a market — and the asset-market logic you already know explains how it moves.

Learning objectives

- 17.1** Explain how the FX market works and why exchange rates matter.
- 17.2** Identify the factors that drive exchange rates in the *long run*.
- 17.3** Draw demand and supply for domestic assets; find equilibrium.
- 17.4** List and illustrate the factors that move rates in the *short run*.
- 17.5** Apply the model; state the *interest parity* condition.

PART 1

The FX Market and Why It Matters

The exchange rate and the FX market

Exchange rate: the price of one currency in terms of another. The **foreign exchange market** is where that price is determined.

- ▶ **Spot transaction:** an immediate (two-day) exchange of bank deposits, at the **spot exchange rate**.
- ▶ **Forward transaction:** an exchange of deposits at a specified *future* date, at the **forward exchange rate**.
- ▶ It is a vast **over-the-counter** market — most trades are the buying and selling of bank deposits denominated in different currencies, not physical cash.

Read the units carefully

We quote E as **units of foreign currency per dollar** (euros/\$). A *higher* E means each dollar buys more euros — the dollar is *stronger*.

Appreciation, depreciation, and why it matters

- ▶ **Appreciation:** a currency rises in value relative to another (E up).
- ▶ **Depreciation:** a currency falls in value relative to another (E down).

The key real-world consequence

When the dollar **appreciates**, U.S. goods become *more expensive* to foreigners and foreign goods become *cheaper* to Americans. Exports fall, imports rise. A **depreciation** does the reverse — which is why exporters cheer a weak currency and travelers cheer a strong one.

The exchange rate is therefore not a curiosity for traders — it is one of the most important prices in the economy, linking domestic policy (Chs. 13–16) to the rest of the world.

Mishkin Ch. 17, Section 17.1.

PART 2

Exchange Rates in the Long Run

The law of one price and PPP

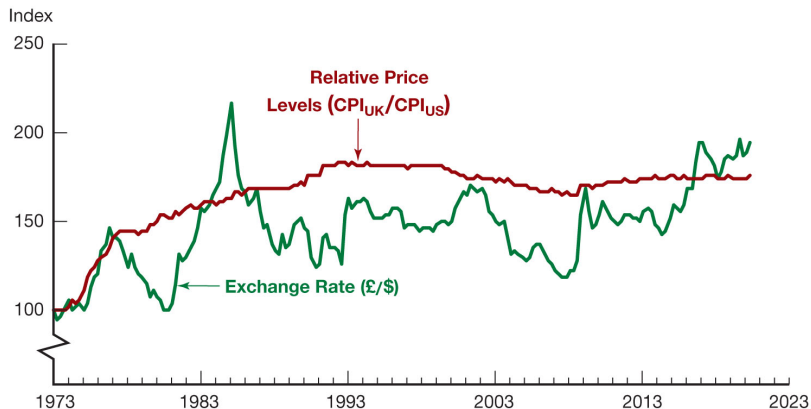
Start with a single good. The **law of one price**: if two countries produce an identical good and trade is frictionless, its price must be the same in both — expressed in a common currency.

- ▶ Generalize from one good to the whole price level and you get the **theory of purchasing power parity (PPP)**: exchange rates adjust so that identical baskets cost the same everywhere.
- ▶ Equivalently — the exchange rate between two currencies tracks the ratio of their **price levels**.

The assumptions (and why PPP is only a long-run guide)

PPP assumes all goods are identical across countries, that trade barriers and transport costs are low, and ignores that many goods (haircuts, housing) are *not traded* at all. Those frictions are why PPP holds loosely, and only over the **long run**.

Figure 1 — Purchasing Power Parity: US/UK, 1973–2020



Mishkin Ch. 17, Figure 1 (FRED). Relative price levels and the £/\$ exchange rate move together over decades — but with large, persistent short-run gaps.

Burgernomics: the Big Mac index

A famous, light-hearted test of PPP from *The Economist* since 1986.

- ▶ A Big Mac is (roughly) the same identical basket sold by McDonald's in 50-plus countries — a one-good stand-in for the whole PPP basket.
- ▶ Compare the local-currency price to the U.S. price: the ratio gives the exchange rate *PPP would imply*. Compare that to the actual rate.
- ▶ If a Big Mac is far cheaper abroad than the actual exchange rate suggests, that currency looks **undervalued** — and vice versa.

The lesson

The index is a toy, but it makes the serious point vivid: actual exchange rates routinely *deviate* from PPP, sometimes for years. PPP is a gravitational pull, not a daily law.

Mishkin Ch. 17, Section 17.2 (Application: Burgernomics).

Four factors that move the long-run rate

What makes a currency appreciate over the long run? Four forces, all working through trade competitiveness:

1. **Relative price levels** — a rise in the domestic price level (relative to foreign) makes home goods dearer; the domestic currency *depreciates*.
2. **Trade barriers** — tariffs and quotas raise demand for home goods; the domestic currency *appreciates*.
3. **Preferences for domestic vs. foreign goods** — higher demand for *exports* appreciates the currency; higher demand for *imports* depreciates it.
4. **Productivity** — rising relative productivity lets a country make cheaper goods; its currency *appreciates*.

Mishkin Ch. 17, Section 17.2.

Summary: long-run factors (Table 1)

Factor	Change	Response of E
Domestic price level [†]	↑	↓ (depreciates)
Trade barriers [†]	↑	↑ (appreciates)
Import demand	↑	↓ (depreciates)
Export demand	↑	↑ (appreciates)
Productivity [†]	↑	↑ (appreciates)

E = units of foreign currency per dollar. [†]Relative to other countries. Decreases reverse the response.

The mnemonic

Anything that makes home goods *relatively cheaper or more wanted* appreciates the currency; anything that makes them *dearer or less wanted* depreciates it.

PART 3

The Short Run: An Asset-Market Approach

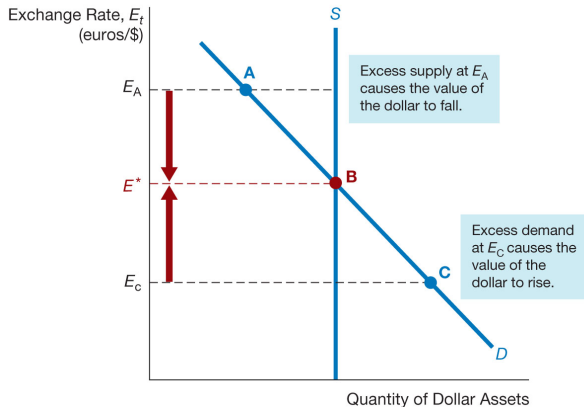
Exchange rates as asset prices

Long-run trade flows are too slow to explain *daily* moves. The modern view: an exchange rate is the **price of domestic assets in terms of foreign assets**, set the way any asset price is.

- ▶ Decisions to hold dollar deposits vs. euro deposits dominate the market — and they turn on **relative expected returns**, exactly the asset-demand logic from Chapter 4.
- ▶ **Supply** of domestic (dollar) assets is taken as fixed in the short run $\Rightarrow$ a *vertical* supply curve.
- ▶ **Demand**: at a *lower* current value of the dollar, dollar assets are expected to appreciate more, so their expected return is higher and quantity demanded is greater $\Rightarrow$ a *downward-sloping* demand curve.

Mishkin Ch. 17, Section 17.3.

Figure 2 — Equilibrium in the foreign exchange market



Mishkin Ch. 17, Figure 2. Equilibrium E^* is where demand meets the fixed supply: above it, excess supply pushes the dollar down; below it, excess demand pushes it up.

Reading the equilibrium

The mechanics

- ▶ Supply S is vertical (stock of dollar assets fixed).
- ▶ Demand D slopes down: a cheaper dollar today $\Rightarrow$ bigger expected appreciation $\Rightarrow$ higher expected return.
- ▶ At E^* the market clears.

The forces

- ▶ Above E^* : *excess supply* of dollar assets, value of dollar falls.
- ▶ Below E^* : *excess demand*, value of dollar rises.

Why this framework is powerful

Comparative statics become easy: anything that raises the **relative expected return** on dollar assets shifts D *right* and **appreciates** the dollar. The whole short-run story is just shifts in one demand curve.

Mishkin Ch. 17, Section 17.3.

PART 4

Shifts and Applications

What shifts the demand for dollar assets?

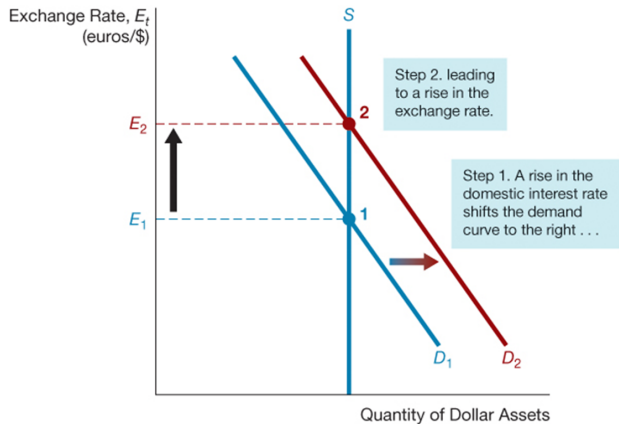
Three variables change the **relative expected return** on dollar assets, and so shift D :

1. **Domestic interest rate** i^D — a rise (holding expected inflation fixed) raises the relative return on dollar assets $\Rightarrow D$ right, dollar *appreciates*.
2. **Foreign interest rate** i^F — a rise raises the return on *euro* assets $\Rightarrow D$ for dollars left, dollar *depreciates*.
3. **Expected future exchange rate** E_{t+1}^e — a rise means bigger expected appreciation of the dollar $\Rightarrow D$ right, dollar *appreciates* today.

The next three figures take each shift in turn — watch the demand curve, not the supply curve, do all the work.

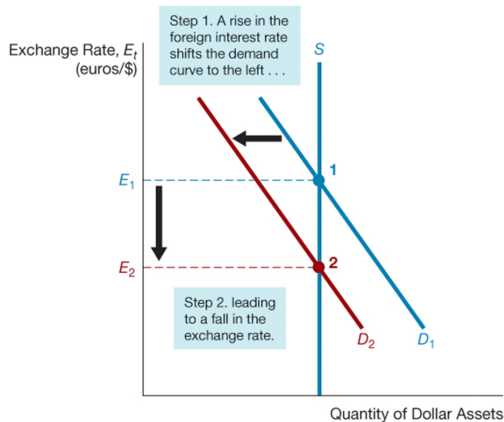
Mishkin Ch. 17, Section 17.4.

Figure 3 — Rise in the domestic interest rate i^D



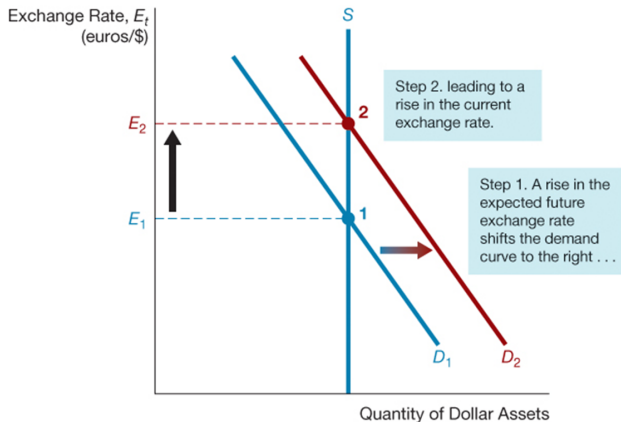
Mishkin Ch. 17, Figure 3. Higher i^D raises the relative return on dollar assets; D shifts right; the dollar appreciates from E_1 to E_2 .

Figure 4 — Rise in the foreign interest rate i^F



Mishkin Ch. 17, Figure 4. Higher i^F makes euro assets more attractive; demand for dollar assets shifts left; the dollar depreciates from E_1 to E_2 .

Figure 5 — Rise in the expected future exchange rate E_{t+1}^e



Mishkin Ch. 17, Figure 5. A higher expected future rate raises expected appreciation; D shifts right; the dollar appreciates today.

Summary: short-run shifts (Table 2)

Factor (increase)	Demand for \$ assets	Response of E
Domestic interest rate i^D	$\rightarrow$ (right)	$\uparrow$ appreciate
Foreign interest rate i^F	$\leftarrow$ (left)	$\downarrow$ depreciate
Expected domestic price level	$\leftarrow$ (left)	$\downarrow$ depreciate
Expected trade barriers	$\rightarrow$ (right)	$\uparrow$ appreciate
Expected import demand	$\leftarrow$ (left)	$\downarrow$ depreciate
Expected export demand	$\rightarrow$ (right)	$\uparrow$ appreciate
Expected productivity	$\rightarrow$ (right)	$\uparrow$ appreciate

Every long-run factor reappears here through its effect on the *expected future* rate E_{t+1}^e .

Mishkin Ch. 17, Section 17.4, Summary Table 2.

Application: interest rates and the money supply

A subtle but crucial distinction — *why* the interest rate rose matters:

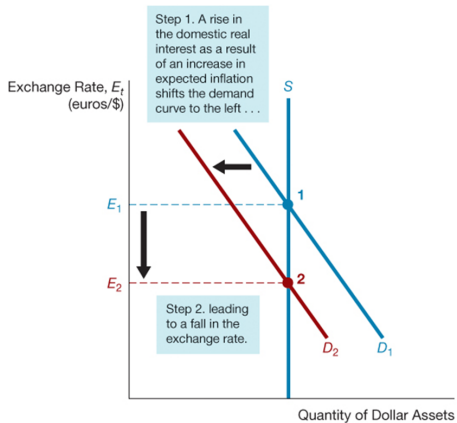
- ▶ A rise in the domestic **real** interest rate (expected inflation unchanged) raises the relative return on dollar assets $\Rightarrow$ the dollar **appreciates**.
- ▶ A rise in the nominal rate driven by higher **expected inflation** is different: expected inflation *lowers* the expected future value of the dollar, shifting D *left* $\Rightarrow$ the dollar **depreciates**.

And the money supply

A higher domestic **money supply** raises the price level and expected inflation, lowers E_{t+1}^e , and so causes the dollar to **depreciate**. Expansionary money weakens the currency — the link from Chs. 14–15 to the FX market.

Mishkin Ch. 17, Section 17.4 (Application).

Figure 6 — Rise in i^D from higher expected inflation



Mishkin Ch. 17, Figure 6. When the rate rises because of expected inflation, D shifts left and the dollar depreciates — the opposite of a real-rate increase.

Application: exchange-rate overshooting

Why does a money-supply increase make the exchange rate *overshoot* — depreciate by more in the short run than in the long run?

- ▶ Long run: a higher money supply raises the price level proportionally, so the dollar depreciates to a new, lower long-run value.
- ▶ Short run: people *immediately* mark down E_{t+1}^e to that lower long-run level. With domestic rates also falling, both forces shift D left at once.
- ▶ Result: the dollar *undershoots* its long-run value on impact, then recovers part way — it “overshoots” the move.

Why it matters

Overshooting explains why exchange rates are so much more **volatile** than the goods prices behind them — asset markets jump today on news that goods markets will absorb only slowly.

Mishkin Ch. 17, Section 17.4 (Overshooting).

The interest parity condition

The asset approach rests on one no-arbitrage equation. If dollar and euro deposits are **perfect substitutes** and capital is mobile, their expected returns (in a common currency) must be equal:

$$i^D = i^F - \frac{E_{t+1}^e - E_t}{E_t}$$

- ▶ Left side: the return on a dollar deposit, i^D .
- ▶ Right side: the foreign rate i^F , *minus* the expected appreciation of the dollar (a stronger expected dollar erodes the euro deposit's dollar return).
- ▶ Rearranged, this is the engine behind every shift on the last few slides: change i^D , i^F , or E_{t+1}^e and E_t must adjust to restore parity.

Mishkin Ch. 17, Appendix: The Interest Parity Condition.

PART 5

Wrap-up

Key terms from Chapter 17

- ▶ exchange rate; foreign exchange market
- ▶ spot vs. forward transaction and rate
- ▶ appreciation; depreciation
- ▶ law of one price; purchasing power parity
- ▶ Big Mac index (burgernomics)
- ▶ four long-run factors; trade barriers
- ▶ asset-market approach; relative expected return
- ▶ demand/supply for domestic assets
- ▶ E_{t+1}^e ; expected future exchange rate
- ▶ real vs. inflation-driven rate changes
- ▶ exchange-rate overshooting
- ▶ interest parity condition

The one idea to take away

An exchange rate is an asset price

In the **long run**, purchasing power parity and four trade factors pin the rate down. In the **short run**, the rate is the price that equates the **relative expected return** on domestic vs. foreign assets — so it is governed by interest rates and expectations, enforced by the **interest parity condition**, and is far more volatile than the goods prices behind it.

- ▶ Expansionary monetary policy *depreciates* the currency — and can make it overshoot.
- ▶ This connects domestic policy (Chs. 13–16) to the world. Next: **Chapter 18** — the International Financial System, where we ask how central banks *manage* the exchange rate they have now learned to read.