

Unit 6: Open Economy: International Trade and Finance

Unit 6 opens the model to the rest of the world. It covers how international transactions are recorded in the balance of payments accounts, how exchange rates are quoted and what appreciation and depreciation do to trade, how supply and demand in the foreign exchange market set a currency's value, how interest rates, income, and inflation shift those curves, how exchange rate changes move net exports and aggregate demand, and how real interest rates direct international capital flows.

AP Macroeconomics

Open Economy: International Trade and Finance

About 11 minutes to read

How to use this guide

Read it in order the first time because the topics build on each other. The balance of payments accounts set up the accounting, exchange rates give you the price that connects the economies, the foreign exchange market shows how that price is set, policy and economic shocks show what moves it, net exports connect it back to aggregate demand, and capital flows tie the trade balance to interest rates. Exam questions often give you a shock, such as a rise in US interest rates, and ask you to trace the whole chain to net exports.

After the first read, use the trap boxes and the tables to review the distinctions that exam questions test most often. Finish with the practice questions, then complete the recall check on the last page out loud and note any items you cannot explain yet.

What this unit is worth. Open Economy: International Trade and Finance is about 10 to 13 percent of the AP Macroeconomics exam. It also carries more weight than that number suggests, because exchange rates are the channel through which monetary and fiscal policy from Units 4 and 5 spill into net exports and aggregate demand. If the chain from interest rates to the dollar to net exports feels shaky now, the policy questions will feel shaky later.

6.1 Balance of Payments Accounts

The **balance of payments** is the record of all transactions between a country's residents and the rest of the world over a period of time. It has two main accounts. The **current account** tracks trade in goods and services, net investment income, and net transfers. The trade part, exports minus imports of goods and services, is the **trade balance**. **Net investment income** is income US residents earn on assets they own abroad minus income paid to foreigners on assets they own in the US. **Net transfers** include foreign aid and remittances sent home by workers abroad.

The **financial account** (paired with a small capital account) tracks purchases and sales of assets: foreign direct investment, stocks and bonds, and bank flows. When a foreign investor buys a US asset, money flows into the US. That is a **capital inflow**. When a US resident buys a foreign asset, money flows out, which is a **capital outflow**.

The key identity is that the balance of payments sums to zero. Every transaction that puts money in one account puts an offsetting entry in the other. A **current account deficit**, usually from importing more goods and services than the country exports, must therefore be matched by a **financial account surplus**. In plain terms, a country that buys more from the world than it sells pays for the difference by selling assets to the world or borrowing from it, and that sale or borrowing is a capital inflow.

Trap. A trade deficit does not mean the balance of payments is negative. The accounts offset each other by construction, so the overall balance of payments is always zero. A current account deficit is exactly matched by a financial account surplus. Questions that ask what "must be true" when a country runs a trade deficit are testing this identity.

6.2 Exchange Rates

An **exchange rate** is the price of one currency in terms of another. Rates are conventionally quoted as domestic currency per unit of foreign currency. A rate of \$1.20 per euro means one euro costs \$1.20.

Appreciation of the dollar means the dollar gains value against the foreign currency. Fewer dollars are needed to buy one euro, so the quoted rate falls, for example from \$1.20 to \$1.10 per euro.

Depreciation of the dollar means the dollar loses value, so more dollars are needed per euro and the quoted rate rises.

Exchange rate changes reprice every traded good. When the dollar appreciates, US imports become cheaper for Americans and US exports become more expensive for foreigners. When the dollar depreciates, the reverse happens: imports get more expensive and exports get cheaper for foreign buyers.

CHANGE	US IMPORTS	US EXPORTS
Dollar appreciates	Cheaper for Americans, so import spending tends to rise	More expensive for foreigners, so export sales tend to fall
Dollar depreciates	More expensive for Americans, so import spending tends to fall	Cheaper for foreigners, so export sales tend to rise

Trap. With the rate quoted as dollars per euro, appreciation of the dollar makes the number smaller, not larger. Students routinely read a falling rate as a weakening dollar. Anchor yourself this way: a stronger dollar buys more foreign currency so each unit of foreign currency costs fewer dollars.

6.3 The Foreign Exchange Market

The **foreign exchange market** is where currencies are traded, and supply and demand set the equilibrium exchange rate just as in any market. Work with the market for the dollar. The vertical axis is the exchange rate, measured as units of foreign currency per dollar, for example euros per dollar. The horizontal axis is the quantity of dollars. A higher exchange rate on this graph means a stronger dollar.

The **demand for dollars** comes from foreigners who need dollars to buy US goods and services or US assets. The **supply of dollars** comes from Americans who offer dollars in exchange for foreign currency to buy foreign goods and services or foreign assets. An increase in demand for dollars, with supply unchanged, pushes the exchange rate up, which is dollar appreciation. An increase in the supply of dollars pushes the exchange rate down, which is dollar depreciation.

Notice the symmetry. One person's demand for dollars is another currency's supply story. If Europeans want more US goods, they demand more dollars, and the dollar appreciates. If Americans want more European goods, they supply more dollars to the market, and the dollar depreciates. The curve that shifts depends on whose behavior changed: foreigners buying American shifts dollar demand, Americans buying foreign shifts dollar supply.

Trap. Shift the curve of the currency whose holders changed their behavior. If the shock is that Americans import more, Americans are the ones acting, so the *supply* of dollars shifts, not the demand. Drawing the shift on the wrong currency's curve is one of the most common graphing errors in this unit.

6.4 Effect of Changes in Policies and Economic Conditions on the Foreign Exchange Market

Four kinds of shocks move the dollar's supply and demand curves. First, **relative interest rates**. When US interest rates rise relative to rates abroad, US assets pay more, so foreign investors want them. They demand dollars to buy those assets, demand for dollars shifts right, and the dollar appreciates. Second, **relative income**. When US income grows faster than income abroad, Americans buy more of everything, including imports. They supply more dollars to pay for those imports, supply of dollars shifts right, and the dollar depreciates.

Third, **relative inflation**. When US inflation is higher than inflation abroad, US goods become relatively more expensive, so foreigners buy fewer of them. Demand for dollars shifts left and the dollar depreciates. Fourth, **tastes and expectations**. If foreign consumers develop a stronger taste for US goods, or speculators expect the dollar to strengthen, demand for dollars rises and the dollar appreciates.

SHOCK	CURVE SHIFT	EFFECT ON THE DOLLAR
US interest rates rise relative to abroad	Demand for dollars shifts right	Appreciates
US income grows faster than abroad	Supply of dollars shifts right	Depreciates
US inflation higher than abroad	Demand for dollars shifts left	Depreciates
Stronger foreign taste for US goods	Demand for dollars shifts right	Appreciates

Trap. Higher US interest rates appreciate the dollar, not depreciate it. The intuition that "expensive money weakens the currency" is backwards. Higher rates attract foreign buyers of US assets, and those buyers need dollars first, which bids the dollar up.

6.5 Changes in the Foreign Exchange Market and Net Exports

Net exports, exports minus imports, are a component of aggregate demand, so anything that moves net exports shifts the AD curve. The exchange rate is the link. When the dollar appreciates, US exports fall because they cost foreigners more, and US imports rise because they cost Americans less. Net exports fall, and AD shifts left. When the dollar depreciates, exports rise and imports fall, net exports rise, and AD shifts right.

This makes the exchange rate the **transmission channel** from domestic policy to the trade balance. Trace a full chain. The Federal Reserve runs expansionary monetary policy, which lowers US interest rates. Lower rates make US assets less attractive, so capital flows out as investors seek higher returns abroad. That outflow means more dollars supplied to the foreign exchange market, so the dollar depreciates. The weaker dollar makes US goods cheaper abroad and foreign goods pricier at home, so net exports rise and AD shifts right, reinforcing the original stimulus.

Contractionary policy runs the chain in reverse. Higher interest rates attract capital inflows, the dollar appreciates, net exports fall, and AD shifts left. Fiscal policy travels the same channel. An expansionary fiscal policy that raises interest rates appreciates the dollar and drags net exports down, which partly offsets the fiscal stimulus. This is one reason deficits and trade deficits often move together.

Trap. Keep the direction of the chain straight: the policy moves interest rates, interest rates move capital flows, capital flows move the exchange rate, and the exchange rate moves net exports. Students often skip from interest rates straight to net exports and lose the exchange rate step, which is exactly the step the free-response question asks them to draw and explain.

6.6 Real Interest Rates, Net Capital Flows, and Net Exports

International investors chase the highest **real** return, not the highest nominal interest rate. The real interest rate is the nominal rate minus expected inflation. A country offering 8 percent nominal interest with 6 percent inflation pays a 2 percent real return, while a country offering 5 percent nominal with 1 percent inflation pays a 4 percent real return. Capital flows toward the second country.

When a country's real interest rates rise relative to the rest of the world, **net capital inflows** increase: more foreign money comes in to buy domestic assets than domestic money goes out. Those inflows are a financial account surplus, and by the balance of payments identity from topic 6.1, a financial account surplus is matched by a current account deficit. This is the deep connection of the unit. Net capital inflows finance a trade deficit. A country that imports more than it exports is, in effect, borrowing the difference from the rest of the world, and it can keep doing so as long as foreign investors are willing to hold its assets.

This also ties the trade balance to saving and investment. When domestic investment exceeds domestic saving, the gap is funded from abroad, which shows up as net capital inflows and a matching trade deficit. Policies that raise real interest rates therefore tend to strengthen the currency and widen the trade deficit at the same time, two sides of the same capital inflow.

Trap. Capital flows respond to the real interest rate, not the nominal one. A question that gives you nominal rates and inflation rates for two countries is testing whether you subtract inflation before comparing. Comparing nominal rates directly picks the wrong country whenever inflation differs.

Confusions That Cost Points

PAIR	HOW TO KEEP THEM STRAIGHT
Appreciation vs depreciation	Appreciation means the currency gains value. Quoted as dollars per euro, appreciation makes the number smaller because fewer dollars buy one euro. Anchor on value, not on the direction of the number.
Trade deficit vs balance of payments deficit	There is no such thing as a balance of payments deficit. The accounts sum to zero, so a current account deficit is always matched by a financial account surplus. A trade deficit is one account's balance, not the whole system's.
Nominal vs real interest rate for capital flows	Investors compare real returns: nominal rate minus expected inflation. High nominal rates with high inflation attract no capital. Always subtract inflation before comparing countries.
Demand for dollars vs supply of dollars	Demand comes from foreigners buying US goods and assets. Supply comes from Americans buying foreign goods and assets. Shift the curve belonging to whoever changed their behavior.
Shift of a currency curve vs movement along it	A change in the exchange rate itself causes movement along the curves. Only a change in an underlying determinant, such as interest rates, income, or tastes, shifts a curve.
Expansionary monetary policy and the dollar	Lower interest rates push capital out, which depreciates the dollar. Do not assume stimulus strengthens the currency. Weaker dollar, stronger net exports, rightward AD shift.
Budget deficit vs trade deficit	The budget deficit is government spending minus tax revenue. The trade deficit is imports minus exports of goods and services. They are different deficits that can move together through the interest rate channel, but one is fiscal and the other is external.

Practice Questions

Original questions written for this guide in the style of the AP exam. Answers and explanations are on the next page, so complete the questions before checking them.

- 1.** A country runs a current account deficit of \$150 billion. Which of the following must be true?
 1. The country's balance of payments is negative \$150 billion.
 2. The country has a financial account surplus of \$150 billion.
 3. The country's currency must depreciate.
 4. The country is running a budget deficit of \$150 billion.

- 2.** The exchange rate is quoted as \$1.25 per euro. One month later it is quoted as \$1.10 per euro. Which of the following is true?
 1. The dollar appreciated and the euro depreciated.
 2. The dollar depreciated and the euro appreciated.
 3. US exports to Europe will become cheaper for European buyers.
 4. European imports will become more expensive for Americans.

- 3.** Real interest rates in the United States rise relative to real interest rates in Europe. In the market for dollars, which of the following will occur?
 1. The supply of dollars will increase and the dollar will depreciate.
 2. The demand for dollars will increase and the dollar will appreciate.
 3. The demand for dollars will decrease and the dollar will depreciate.
 4. The supply of dollars will decrease and the dollar will appreciate.

- 4.** The US dollar depreciates against major trading partners' currencies. What is the most likely short-run effect on US net exports and aggregate demand?
 1. Net exports fall and aggregate demand shifts left.
 2. Net exports rise and aggregate demand shifts right.
 3. Net exports fall and aggregate demand shifts right.
 4. Net exports rise and aggregate demand shifts left.

- 5.** The Federal Reserve pursues an expansionary monetary policy. Which of the following chains best describes the open-economy effect?
1. Interest rates fall, capital flows out, the dollar depreciates, net exports rise.
 2. Interest rates fall, capital flows in, the dollar appreciates, net exports fall.
 3. Interest rates rise, capital flows out, the dollar appreciates, net exports rise.
 4. Interest rates rise, capital flows in, the dollar depreciates, net exports fall.
- 6.** Country X has a nominal interest rate of 9% and an inflation rate of 7%. Country Y has a nominal interest rate of 6% and an inflation rate of 2%. Based on real interest rates, in which direction will capital most likely flow?
1. Toward Country X, because its nominal interest rate is higher.
 2. Toward Country Y, because its real interest rate is higher.
 3. Toward Country X, because its inflation rate is higher.
 4. Capital will not flow because nominal rates differ.
- 7.** US national income grows much faster than the income of its trading partners. What is the most likely effect in the foreign exchange market and on US net exports?
1. The supply of dollars increases, the dollar depreciates, and net exports fall.
 2. The demand for dollars increases, the dollar appreciates, and net exports fall.
 3. The supply of dollars decreases, the dollar appreciates, and net exports rise.
 4. The demand for dollars decreases, the dollar depreciates, and net exports rise.
- 8.** A US resident receives \$5,000 in interest payments on bonds she owns that were issued by a Japanese corporation. In the US balance of payments, this transaction is recorded in
1. the financial account, as a capital outflow.
 2. the current account, as investment income.
 3. the financial account, as a capital inflow.
 4. the current account, as a transfer payment.

Answer Key

- 1. B.** The balance of payments sums to zero, so a current account deficit of \$150 billion must be offset by a financial account surplus of \$150 billion. A confuses one account's balance with the whole system; there is no such thing as a negative overall balance of payments. C brings in exchange rates, which are not determined by the accounting identity alone. D confuses the trade deficit with the budget deficit, which is a fiscal concept about government spending and taxes.
- 2. A.** Fewer dollars now buy one euro, so the dollar gained value and the euro lost value. B reads the falling number as a weakening dollar, the classic quotation trap. C is backwards: a stronger dollar makes US exports more expensive for Europeans, not cheaper. D is backwards as well: a stronger dollar makes European goods cheaper for Americans, not more expensive.
- 3. B.** Higher US real rates attract European investors to US assets. To buy those assets they need dollars, so the demand for dollars shifts right and the dollar appreciates. A shifts the wrong curve and gets the direction wrong; Americans are not the ones acting here. C reverses the capital flow logic; higher rates attract capital, they do not repel it. D shifts supply when the shock belongs to foreign demanders of dollars.
- 4. B.** A weaker dollar makes US exports cheaper for foreigners and foreign imports more expensive for Americans, so exports rise, imports fall, and net exports rise. Since net exports are part of aggregate demand, AD shifts right. A describes what an appreciation would do. C and D each get one half of the chain right and the other half backwards; net exports and AD always move in the same direction here because net exports are a component of AD.
- 5. A.** Expansionary policy lowers interest rates, which makes US assets less attractive, so capital flows out. Investors sell dollars to buy foreign assets, increasing the supply of dollars and depreciating the dollar. The weaker dollar then raises net exports. B gets the capital flow and the exchange rate backwards. C and D start with rising interest rates, which is contractionary policy, not expansionary.
- 6. B.** Real rates are nominal minus inflation: Country X pays 9% minus 7%, which is 2%, while Country Y pays 6% minus 2%, which is 4%. Capital flows toward the higher real return, Country Y. A compares nominal rates directly, which is the trap the question is built around. C treats high inflation as an attraction when it actually erodes the real return. D is nonsense; differing rates are exactly what causes capital to flow.
- 7. A.** Faster US income growth means Americans buy more imports. To pay for them they supply more dollars to the foreign exchange market, so the supply of dollars shifts right and the dollar depreciates. The weaker dollar would normally help net exports, but the direct effect dominates here: the import surge itself lowers net exports. B shifts the wrong curve; the actors are Americans buying foreign goods, which is dollar supply. C and D both claim the dollar appreciates when Americans are flooding the market with dollars, which is backwards.
- 8. B.** Interest earned on foreign-owned assets is investment income, which belongs in the current account. A and C put it in the financial account, which records purchases and sales of assets, not the income those assets pay out. The original purchase of the bonds would have been a financial account outflow, but the interest payment is current account income. D mislabels investment income as a transfer; transfers are one-way payments like foreign aid or remittances, not returns on investment.

When you check your answers, note which distinction each miss came from. Make a flashcard for that distinction and drill it spaced out over the next few days instead of rereading the whole section. If you

missed one of these questions, the same distinction is worth practicing again in Rycal, where the AP Macroeconomics deck has flashcards for it and more practice questions use the same kinds of traps.

One-Page Recall Check

Say each answer out loud before you look back, and mark the ones you cannot finish. Anything you cannot say out loud yet belongs in your flashcard deck. In Rycal, add those items to the AP Macroeconomics deck and let spaced review bring them back over the next few days.

- Define the balance of payments and name the two main accounts.
- List the three components of the current account.
- Explain why a current account deficit must be matched by a financial account surplus.
- Explain what "quoted as dollars per euro" means and what a falling quote tells you about the dollar.
- State what dollar appreciation does to US import prices and US export prices.
- In the market for dollars, label both axes and say who demands dollars and who supplies them.
- Predict the effect on the dollar when US interest rates rise relative to rates abroad, and say which curve shifts.
- Predict the effect on the dollar when US income grows faster than income abroad, and say which curve shifts.
- Trace the full chain from expansionary monetary policy to net exports through the exchange rate.
- Explain how a change in net exports shifts aggregate demand.
- Compute a real interest rate from a nominal rate and an inflation rate.
- Explain why net capital inflows finance a trade deficit.

Where to go next. Turn every missed item above into flashcards and drill them spaced out over several days rather than in one sitting. In Rycal, open the AP Macroeconomics deck. The deck covers the terms in this guide, and its practice questions target the same traps named here. If you have a test date, add it in the Test Planner. You can also start your next review with a Brain Dump, then check what you missed against this guide.

Key terms for this unit

Balance of payments, Current account, Trade balance, Net investment income, Net transfers, Financial account, Capital inflow, Capital outflow, Current account deficit, Financial account surplus, Exchange rate, Appreciation, Depreciation, Foreign exchange market, Demand for dollars, Supply of dollars, Relative interest rates, Relative income, Relative inflation, Net exports, Transmission channel, Real interest rate, Net capital inflows.

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