

The balance of trade regularly makes headlines, but what it estimates and why it is important are rarely clear. The balance of trade is a country’s export revenue minus import expenditure on manufactured goods during a given time period. Trade deficits occur if import expenditure is greater than export revenue.

A. INTERNATIONAL MARKETS

Everyone is involved in international markets every day. Almost everything we buy has some foreign element or component. Virtually every job provides something to exports and uses some imports. International markets provide a beginning toward understanding the policy issues of international economics. This section presents the picture of an international market.

Domestic Demand

The law of demand states that as the price of a good rises, the quantity demanded falls. Examples of the law of demand are everywhere. If a clothing retailer wants to clear the shelves, prices are lowered. Car dealers offer discounts and rebates when inventories are too high. Fast food restaurants introduce specials with low prices to increase their sales.

Figure 1.1 shows a domestic market demand curve *D* for new rugs. This demand curve represents the quantity of a particular quality of rug that would be demanded at various prices by domestic consumers. If the price of a rug is \$15, 100 units are demanded per month. Demand curves show the quantity consumers would buy at various prices.

Demand curves slope downward for two reasons:

- *substitution effect* — a higher price induces consumers to look for substitutes

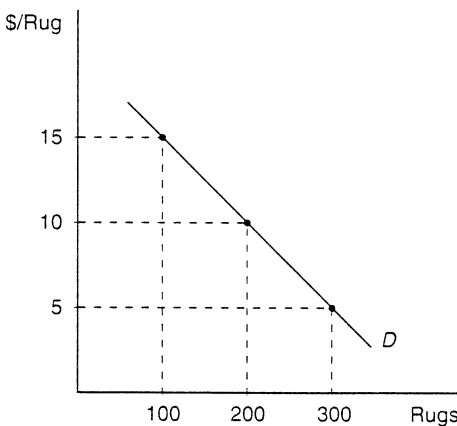


Figure 1.1
The Domestic Demand (D) for Rugs
 The quantity demanded is inversely related to price. When price goes up, the quantity demanded falls. When price goes down, the quantity demanded rises.

- *income effect* — a higher price, especially for a good that has a large budget share, lowers real income and consumption of all goods.

Some goods have readily available substitutes. If the price of beef rises with a quota on imported beef, consumers make a switch to pork, chicken, lamb, or fish. If the price of gasoline rises by 50% because of more expensive imported crude oil, consumers trade in their old cars for new more fuel efficient ones. If the price of Japanese cars rises with a voluntary export restraint, consumers switch to European or US cars. If the price of Dutch cheese rises with a tariff, consumers switch to Wisconsin cheese.

Many other goods do not have such readily available substitutes. International telephone service has no good substitutes: international mail is slow, e-mail is impersonal, and so on. There is no good substitute for original artwork, since each artist produces a limited amount of work. Teak is a durable wood from East India without good substitutes. When there are fewer substitutes, demand is less responsive to price changes.

Embargoes of the Organization of Petroleum Exporting Countries (OPEC) during the 1970s significantly raised the price of crude oil. The price of gasoline rose relative to other goods. Consumers began to substitute away from gasoline, but real incomes fell. The higher relative price of gas lowered the purchasing power of consumer income, which lowered the consumption of all goods, including oil.

Another example of the income effect comes from the entry of Japanese cars in the US market in the 1970s. Japanese imports were cheaper than cars made in the US. Consumers who bought Japanese cars enjoyed higher real income, and increased the purchases of all goods, including cars.

Many types of goods, from big screen television sets to shirts to refrigerators are traded internationally. The world of international economics must be simplified to gain an understanding of what is going on. The process of abstracting and simplifying is a crucial step in the scientific method. Scientists build and test simple models that reflect what goes on in the real world. If a theoretical model proves useful in predicting what happens, it becomes accepted. The demand curve in Figure 1.1 presents a first step of model building.

Demand curves slope downward because of substitution and income effects.

Demand curves are different across nations. Various factors determine the position of a demand curve:

- Tastes of consumers
- The number of potential consumers
- Price expectation of consumers
- Income of consumers
- Prices of related goods

As tastes for a good become stronger, the demand curve shifts right. This means that consumers are willing to pay a higher price for the same quantity of the good, or will demand more of the good at any price.

Tastes change and are difficult to analyze. Only 35 years ago, US consumers had little taste for Japanese cars or electronics. Imported beer, beverages, food, bicycles, and clothes were rare. Advertising is one way to change tastes. Foreign firms spend resources advertising their products. Advertising informs consumers about product availability quality. In the same way, US firms advertise in foreign countries.

An increase in the number of potential consumers in a market increases demand. As nations grow, there is increased demand for goods and services. When a country enters international trade, the number of potential buyers of its products expands. The North American Free Trade Area (NAFTA) increases the demand for goods produced in Canada, Mexico, and the US. The US government outlaws trade with Cuba, a loss of potential consumers for US exports. If Europe opens its protected agricultural industry to free trade, the demand for US agricultural products will increase.

Expectations of higher prices induce consumers to buy now in order to avoid higher prices later, increasing current demand. When approval of NAFTA was pending, US buyers of Canadian lumber waited for the tariff to be eliminated. The expectation of lower prices in the future lowered present demand. With news that the Ukrainian wheat harvest is expected to be poor, buyers of wheat expect higher prices in the future, increasing their current demand and pushing up prices.

Higher income raises demand for *normal* goods, but lowers demand for *inferior* goods. Income limits what consumers can spend on all goods and services. As income rises, consumers increase spending and save some of their income for future consumption. The Japanese save a relatively large share of their income. As incomes rise in newly industrialized countries such as South Korea, Mexico, and Brazil, their demand for normal goods rises, increasing the demand for exports of US business services. Demand for public transport, an inferior good, may decline in these growing countries as more people switch to cars.

Many goods are related in consumption. Demand for a good is positively related to the price of its substitutes. Coffee and tea are substitutes. When the price of coffee rose in the early 1970s as the international coffee cartels restricted output, demand for tea and the price of tea increased. Other examples of substitutes are new versus used cars, and junior college versus university education. Coffee and sugar are complements and the two are used together. If the price of coffee tripled, demand for sugar and its price would fall. Demand for a good is negatively related to the price of its complements. Other examples of complements are gas and tires, and tuition and textbooks.

When the demand curve in Figure 1.1 increases because of these nonprice influences, it shifts right. At a price of \$15, consumers will want to buy more than 100 units. To consume 200 units, consumers will be willing to pay more than \$10 per unit. A decrease in demand would be represented as a shift to the left of D .

Demand curves shift to the right (increase) or left (decrease) because of nonprice influences.

EXAMPLE 1.1 *Growing Levels of International Trade*

During the past 50 years there has been a steadily increasing level of international trade in manufactures, minerals, and agriculture. Growth in world trade has outstripped growth in output, which itself has steadily grown since World War II. US firms are becoming more involved in international trade, and US consumers enjoy products from around the world.

Domestic Supply

Supply curves are the marginal costs of production of firms in an industry. Marginal cost is the additional or extra cost of producing one more unit of output. Marginal cost slopes upward for two reasons:

- *Diminishing marginal productivity* of labor, natural resources, and capital inputs
- Increasing output may bid up prices of inputs

The law of diminishing marginal productivity law says that the additional output per unit of an added input declines as the input is increased, holding other inputs constant. For a given physical plant, the marginal product of additional workers declines after some point. For some large industries, increasing output may also raise demand for inputs enough that input prices rise.

The marginal cost curve of a typical firm slopes upward. When output in an industry rises, firms within the industry are producing more or new firms are entering the industry. Output in an industry will generally rise when the price of output in the industry rises. There is a positive relationship between price and output.

Figure 1.2 shows the upward sloping domestic supply of a manufactured good. It might represent any manufactured good, cars, apparel, or computers. Supply curves are likely to differ across nations. Differences in the supply curve are due to

- Technology
- The number of firms

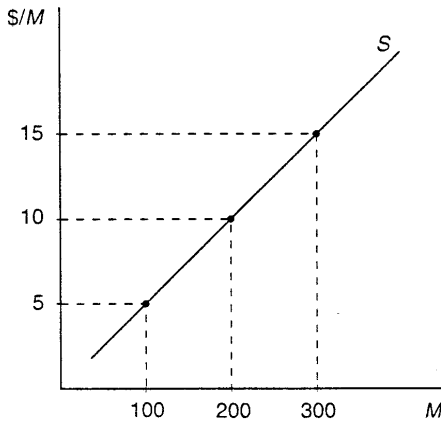


Figure 1.2
The Domestic Supply (S) of Manufactures (M)

The quantity supplied is positively associated with price. When price goes up, the quantity supplied rises. When price goes down, the quantity supplied falls.

- Prices of productive inputs
- Price expectations of firms

Improved technology means that firms can produce more output with the same inputs. More efficient jet engines have lowered the cost of international air travel. With the same amount of labor, fuel, and other inputs, airlines lower their prices. Improved technology is represented by a shift of the supply of air travel to the right, an increase in supply. An increase in the supply of international internet communication would occur if satellite transmission improves.

An increase in the number of firms in an industry also increases supply. A good example of this occurred in the personal computer (PC) market. The original PCs were made by a few companies, which enjoyed high prices and profits. Other firms began to enter the industry, many of them foreign firms or domestic firms using foreign components. As firms entered, supply rose and the price of PCs fell.

Lower input prices also increase supply. Many US manufacturing firms import intermediate inputs. Consider a tariff on imported television components. A tariff is a tax on an imported good that must be paid at the border. If the tariff is raised, the price of making televisions inside the US increases. Firms would likely increase the price of televisions.

Labor, natural resources, and capital are productive factors used to produce goods and services. A change in wages shifts the supply of manufacturers. For example, the immigration of Latin Americans lowers wages, which increases the supply of manufactured goods.

Price expectations shift supply. If firms expect higher prices, they will hoard their products and decrease current supply. If firms expect lower prices, they will sell inventories and increase current supply.

The international oil market provides a classic example of how price expectations affect current supply. International oil dealers and brokers stockpile oil,

buying it from oil producers and selling it to refineries or other dealers and brokers. If an OPEC meeting ends in agreement, dealers expect oil prices to increase. An OPEC agreement keeps oil prices high by restricting the output of member countries. Higher oil prices mean the stockpiles held by brokers and dealers will be worth more in the future. Supply decreases immediately and price rises right away. If OPEC is not able to reach an agreement, dealers expect falling prices and sell their inventories. Current supply and price fall right away.

Supply curves slope upward, reflecting the higher marginal cost typically associated with more output. Domestic supply curves shift because of nonprice influences, which can be international in origin.

Shifts in supply or demand must be distinguished from movements along the curves. A change in price causes a change in the quantity supplied or demanded along the curve. A change in a nonprice influence shifts the entire curve.

EXAMPLE 1.2 *The US: Relatively Big and Relatively Closed*

Relative to other countries, the US economy is a closed giant. It is less involved in trade and is also very large. The IMF reports that the US produces about 40% of the output of all industrial nations. The US leads all countries in the share of world trade, but trade is a relatively small share of US output. The ratio of exports plus imports to output is about 20% for the US, and about 40% for Japan and Europe.

	Exports/World	Exports/Output
US	15%	7%
Germany	11%	32%
Japan	9%	13%
UK	6%	26%
Canada	4%	27%

Markets and Market Clearing

The domestic market for manufactures is shown in Figure 1.3. It contains domestic demand and supply. The domestic *equilibrium price* is determined where the quantity domestic buyers are willing to consume just equals the quantity domestic suppliers are willing to produce. In this example the equilibrium price is \$10/unit. Firms produce 200 units, which are exactly consumed at the equilibrium price.

At any other price the quantities supplied and demanded would not be equal. At a price of \$15, production at 300 is greater than consumption at 100, and

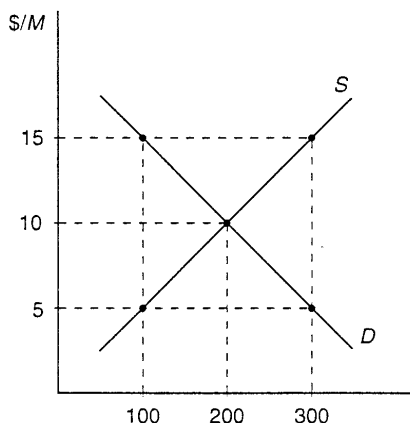


Figure 1.3
The Domestic Market for Manufacturers (M)

Domestic supply (S) and demand (D) interact to determine the domestic equilibrium price \$10 and the domestic equilibrium quantity 200. The equilibrium price equates quantity supplied with quantity demanded.

inventories increase by 200 units. Suppliers would lower price to keep their inventories from accumulating. At a price of \$5, desired consumption at 300 is greater than production at 100. Consumers bid up the price in competition for the underpriced good.

This market clearing mechanism explains why government policymakers cannot arbitrarily set prices and expect the economy to respond with desired production and consumption. Suppose a politician thinks a \$5 price of this manufactured product is desirable so purchasers can afford it. A price ceiling is put into effect, a law that will not allow the price to go above \$5. Buyers want 300 units. Suppliers will produce only 100 since they have no incentive to make more than 100 units given their cost of production. Somehow the 100 units that are produced must be allocated among consumers clamoring for 300 units. A black market may arise, with the good illegally changing hands at \$15, the price that allocates the product to those willing to pay the high price. The government may allocate coupons to determine who gets the product at the artificially low price.

At the other extreme, a government policy maker may decide that a \$15 floor price would benefit the manufacturing industry. Firms respond to the high price by expanding output, but consumers will not buy the 300 units produced. The government may purchase the surplus, as happens with some US agricultural products. The goods begin to overflow warehouses. The only price that matches the quantity suppliers produce with the quantity demanded is the market clearing equilibrium price, \$10.

Markets clear at equilibrium prices equating quantity demanded with quantity supplied.

International Markets

In an international market, there are producers and customers at home and in other countries. Suppose there are only two nations. Figure 1.4 shows the home and foreign markets for the same manufactured good M. Asterisks are used for the foreign nation. Neither supply nor demand is identical across countries, and price is almost always different. In Figure 1.4 the equilibrium price in the home market is \$10 and the equilibrium price in the foreign market is 250 yen.

When comparing price in the foreign country with the price at home, traders must convert to a common currency. This conversion is necessary to determine where the good is cheaper and to carry out any transaction. This is the role of the foreign exchange market, where the *exchange rate* is expressed as the dollar value of the yen (\$/yen) or the yen value of the dollar (yen/\$). The exchange rate is the price of one currency in terms of another. In Figure 1.4, the exchange rate is \$/yen = 0.01 or yen/\$ = 100. Each yen buys one cent, and it takes 100 yen to buy \$1.

This international market offers an opportunity for trade or *arbitrage*. Traders can buy the goods in the foreign country at a price of 250 yen or $\$2.50 = 250 \times 0.01$, which is less than the \$10 domestic price. Arbitrageurs buy goods where they are cheap and transport them to where they are more expensive. In Figure 1.4, the good is cheap before trade in the foreign country. It is profitable to buy the good in the foreign country and sell it in the home country. Arbitrage across national markets is the foundation of international trade.

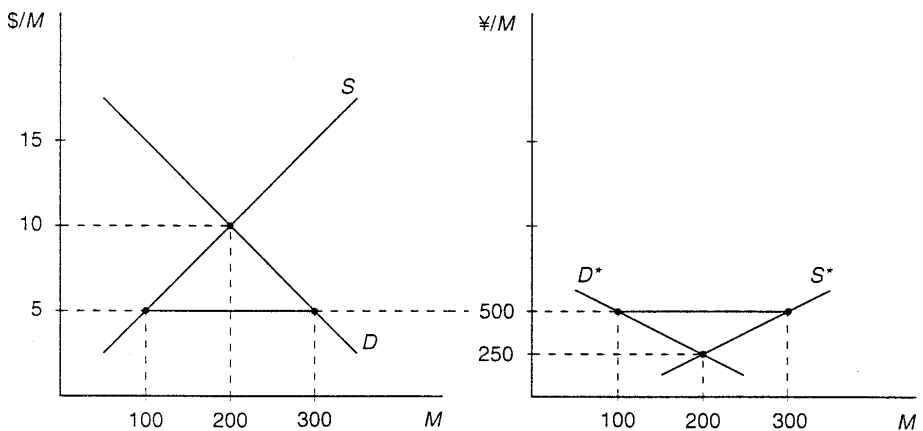


Figure 1.4
The International Market for Manufactures (M)

Free trade takes place where the excess demand from one country equals the excess supply from the other country. At a price of \$5/M, excess demand of 200 from the home country equals excess supply of 200 from the foreign country. the foreign country will export 200 units of manufactures to the home country. Asterisks are used for the foreign country.

International trade seeks the price where excess demand from one country equals excess supply from the other. At any other price the amount one country is willing to export will not equal the amount the other country wants to import.

A price of \$5 clears the international market in Figure 1.4. The home country imports $200 - 100 = 100$ units at a price of \$5 or 500 yen. This is a home import market. Domestic firms produce 100 units at the international price. Domestic production falls from 200 to 100 with the opening of international trade and the lower price. Domestic consumers enjoy lower prices with international trade and increase the quantity demanded from 100 to 200 units. On the foreign side, production rises from 100 to 200 with the increase in price from 250 yen to 500 yen. Foreign consumers suffer higher prices, cutting their level of consumption from 200 to 100.

International trade creates winners and losers. In an export market, domestic firms are better off but consumers suffer. In an import market, domestic industry suffers while consumers enjoy benefits. Efficiency is improved through international trade. Global benefits outweigh global costs, and there are overall gains from trade. There is overwhelming evidence favoring free trade.

International markets arise when prices vary across nations and clear at prices where the excess demand in importing nations matches the excess supply from exporting nations.

In practice, international traders are concerned with *transport costs*, including the costs of shipping, storage, insurance, and delivery. If each unit of M in Figure 1.4 cost \$6 to transport from the foreign country, imported goods would cost $\$5 + \$6 = \$11$, more than the domestic price. An importer who disregards transport costs would soon be out of business. For simplicity transport costs are assumed to be zero in Figure 1.4 and through most of the text.

EXAMPLE 1.3 *Origins of US Exports*

Export records are kept at the state level in the US. The top 10 states are listed below by merchandise exports in 1997 in \$billion reported by the Department of Commerce. Percentages of exports to different parts of the world are based on the locations of ports. Production may not occur in these states, but exports reflect regional production. California, Texas, and New York together account for over one third of all exports. California and Washington are located on the Pacific Rim and trade heavily with Asia. Texas trades heavily with Mexico. New York is on the Atlantic and exports to the EU. Michigan, Ohio, and Illinois have ports on the Great Lakes and export to Canada. Florida trades heavily with the Caribbean and Latin America.

	total	% NAFTA	% Americas	% EU	% Asia
US	\$595 bil	33%	10%	27%	36%
CA	17%	21%	4%	19%	48%
TX	9%	48%	11%	11%	20%
NY	8%	27%	15%	37%	24%
MI	6%	68%	5%	13%	8%
IL	6%	29%	9%	26%	24%
WA	5%	9%	3%	28%	47%
OH	4%	48%	8%	14%	30%
FL	4%	13%	56%	13%	13%
NJ	4%	24%	10%	24%	24%
PA	3%	9%	11%	28%	21%

The model of international markets has been repeatedly tested in actual international markets. This fundamental model of international markets is the most widely accepted theory. International economists rely on the scientific method to build, test, and revise trade theory.

EXAMPLE 1.4 *World Trade in Business Services*

World trade in business services in 1998 was \$1.3 trillion, 23% of merchandise trade. The US is a major trader of services and more can be expected in the future. Shares of world trade in business services from the WTO are listed.

	exports	imports
US	18%	13%
UK	8%	6%
Germany	6%	10%
France	6%	5%
Japan	5%	9%
Italy	5%	5%
Latin America	4%	5%

Problems for Section A

A1. Draw the shift in the demand curve for the manufactured good in the home country if the quantity demanded at every price in Figure 1.1 increases by 200. Find the new domestic market equilibrium price and quantity in a market diagram similar to Figure 1.3.

- A2.** Predict what happens to the international price and quantity traded of the manufactured good in Figure 1.4 with an improvement in technology in the domestic market.
- A3.** Suppose the domestic wage of manufacturing labor rises with a new labor contract. Draw a new domestic supply curve and show what happens in the international market of Figure 1.4.
- A4.** Create a diagram similar to Figure 1.4 in which demand in both nations is identical and trade arises because of differences in supply. Create another diagram in which supply is identical across nations but differences in demand lead to trade.

B. EXCESS SUPPLY AND EXCESS DEMAND

Excess supply and excess demand are tools that simplify the analysis of international markets. The difference between quantity demanded and quantity supplied at any price is *excess demand*. The difference between quantity supplied and quantity demanded at any price is *excess supply*. Using these concepts, the international market in Figure 1.4 can be reduced to a much simpler diagram with two curves.

Excess Demand

The national excess demand in Figure 1.5 is derived from the home market diagram in Figure 1.4. At the domestic market clearing price of \$10, excess demand XD at home is zero. At lower prices, excess demand is positive. At \$5, XD is 200 with home firms producing 100 units and home consumers buying 300 units. The home country is willing to import 200 units at an international price of \$5.

An increase in domestic demand shifts the home country's XD curve. Suppose an increase in demand drives the domestic price up to \$12.50. Excess demand increases as in Figure 1.6. XD is zero at \$12.50. This increase in XD makes the home country more willing to import the good. At \$10 the quantity imported would jump from zero to 100. Decreased supply resulting from higher costs would also cause XD to rise.

An increase in domestic supply has the opposite effect on XD . The home country becomes less willing to import the manufactured good. At any price, XD falls. This decrease can be visualized by a shift from XD' to XD in Figure 1.6. At \$5, home imports would drop from 200 to 100. The increased domestic supply and falling XD move the economy away from importing. Decreased demand or increased supply causes XD to fall.