

Supply and Demand

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1. One assumption of the supply and demand model is that all goods bought and sold are identical. Why do you suppose economists commonly make this assumption? Does the supply and demand model lose its usefulness if goods are not identical?
1. Economists make this assumption, along with many others, in order to capture the meaningful relationships of the real world in simplified models. The models then can predict how variables within these relationships change in response to economic factors. If goods are not identical, many predictions of the model will still prove to be correct. However, we would be less confident in the predictions resting most heavily on that assumption.
2. List the assumptions of the supply and demand model. Then, for each assumption, give one example of a market in which the assumption is satisfied, and one example of a market in which that assumption is not satisfied. Is it reasonable to use the supply and demand model when assumptions are violated?

2. *Assumption 1.* We focus on supply and demand in a single market. This assumption is satisfied if we look at the market for hotel rooms in Lincoln, Nebraska, which is likely to be independent of the market for hotel rooms in other cities. This assumption is not satisfied if we look at the market for gold in Lincoln, Nebraska, which would be dependent on gold's global supply and demand.

Assumption 2. All goods sold in the market are identical. This assumption is satisfied if we look at the market for a commodity such as crude oil. If we look at shoes, the fact that there are countless distinctions between different types and styles of shoes means that the assumption is not satisfied.

Assumption 3. All goods sold in the market sell for the same price, and everyone has the same information. This assumption is satisfied in a market such as retail gasoline stations. Although gas prices differ by a few cents per gallon between retailers, they match one another within a fairly close range. And prices are visible to anyone in the vicinity of the gas station. An example of a market where this assumption is not satisfied would be home furnishings. A furniture item such as a desk, for example, could have a significant price range, with the price of the most expensive desk being multiple times higher than that of an inexpensive one.

Assumption 4. There are many buyers and sellers in the market. This assumption is satisfied in the market for fresh fruit, where there are many small orchards supplying produce and many consumers shopping for peaches, apples, oranges, and pears. In contrast, the market for intercity passenger rail transportation in the United States has only one seller: Amtrak. Such a market would not satisfy the assumption.

The supply and demand model can still be useful even when these four assumptions are not met, because the basic economic relationships captured in the model apply even outside the boundaries of such assumptions.

- *3. The demand for organic carrots is given by the following equation:

$$Q_O^D = 75 - 5P_O + P_C + I$$

where P_O is the price of organic carrots, P_C is the price of conventional carrots, and I is the average consumer income. Notice how this isn't a standard demand curve that just relates the quantity of organic carrots demanded to the price of organic carrots. This demand function also describes how other factors affect demand—namely, the price of another good (conventional carrots) and income.

- a. Graph the inverse demand curve for organic carrots when $P_C = 5$ and $I = 10$. What is the choke price?
- b. Using the demand curve drawn in (a), what is the quantity demanded of organic carrots when $P_O = 5$? When $P_O = 10$?
- c. Suppose P_C increases to 15, while I remains at 10. Calculate the quantity demanded of organic carrots. Show the effects of this change on your graph and indicate the choke price. Has there been a change in the demand for organic carrots, or a change in the quantity demanded of organic carrots?

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