

# Common Mistakes Using Supply and Demand

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It's easy to see that supply and demand usually cross somewhere and to call where they cross on the vertical axis  $P^*$  and where they cross on the horizontal axis  $Q^*$ . Not surprisingly, it is a lot harder to apply it in analyzing problems and thinking about everyday life. Here are some common mistakes people make when using supply and demand.

### **Mistake #1—Confusing movements along a curve with a shift in the curve**

Suppose the income of consumers decreases and apples are a normal good. What happens to the price of apples? Here is a **flawed** chain of logic: “If income goes down and apples are a normal good, the demand for apples decreases. When the demand for apples decreases, the price of apples goes down. When the price of apples falls, demand increases pushing price back up. So the net effect on the price of apples is uncertain.”

The speaker confuses a shift in demand with a movement along a demand curve. The decrease in income does reduce the demand for apples. The decrease in the demand for apples does reduce the price. But the reduction in price does not increase demand. It increases the quantity demanded—a movement along the curve. At the original price, there is excess supply when demand decreases. Price must fall to eliminate this excess supply. The excess supply is eliminated by the decrease in price—as price falls, quantity supplied decreases, and quantity demanded (along the new demand curve) increases. At the new

equilibrium, there are fewer apples bought and sold and the transactions occur at a lower price.

Remember: changes in price don't shift the demand curve—they are movements along the demand curve.

## **Mistake #2: When something changes to shift the supply curve, you shift the demand curve.**

Suppose the price of artificial sweetener goes up. What is the affect on the quantity bought and sold of diet soda? Here is a **flawed** chain of logic: “When the price of sweetener goes up, supply decreases because the price of an input has increased. This by itself would increase price. But when people see the price of the sweetener go up, they decrease their demand for soda, lowering price. The net effect on the price of diet soda is ambiguous.” This is just a roundabout way of making the same mistake made above but in a more complicated manner.

The speaker could have said: “When the price of soda goes up due to the decrease in supply, this price increase decreases demand and lowers the price of soda.” When I write this way, it is easier to see how the speaker is confusing a movement along the curve with a shift in the curve. The increase in price decreases quantity demanded, it doesn't decrease demand. The supply curve shifts in and to the left, the equilibrium price rises to close the excess demand at the old price; this increase in price reduces quantity demanded, increases quantity supplied;

at the new equilibrium price is higher, and quantity bought and sold is lower.

But let's give the speaker a chance to defend himself: "Look," he says belligerently, "are you trying to tell me that when the price of sweetener goes up people aren't going to buy fewer sodas? And isn't that a decrease in demand?" When the price of sweetener goes up, ultimately people are going to buy fewer sodas. But this is not a decrease in demand. This is due to an increase in the price of soda caused by a decrease in supply caused by that increase in the price of sweetener.

The easiest way to see the flaw in the more sophisticated argument of the speaker is to think of making a trip to the soda machine when sodas are 50¢, before the increase in the price of the sweetener. At the price of 50¢ you buy some number of sodas per week, say 9. Now suppose you read in the paper that the price of sweetener has gone up. IF when you return to the machine the price is still 50¢, are you going to behave any differently? You are still going to buy 9 sodas per week. (I'm assuming you can't store sodas. If you could, the answer is more complicated and more interesting, but we'll delay that analysis for a bit.) You're not going to say, "Well, soda is more expensive because sweetener is more expensive, I'll buy less soda." What will instead happen is that when you arrive at the soda machine sometime after the sweetener price increase, you will see the price is now 60¢, say, and you will purchase fewer sodas. But

this is a movement ALONG your demand curve—a change in your quantity demanded in response to a change in price.

### **Mistake #3—Confusing a Change in the Equilibrium Quantity with a Shift in Supply or Demand**

Once again this mistake is avoided if you keep straight the difference between a shift in the curve and a movement along the curve. Suppose you observe a housing boom in a city. What does supply and demand have to predict about what will happen to price? A common mistake is to say: “If there are more houses, the increase in supply should lower the price of houses.” But an increase in the number of houses is not an increase in supply. An increase in supply is when at every price of housing, builders want to build more houses. An increase in supply could be caused by a decrease in the price of lumber. But observing more houses being built could be due to something else. Suppose a number of new companies have relocated in the city causing an increase in employment and an increase in demand for housing. An increase in demand will also increase the equilibrium number of houses. But houses will be more expensive. The bottom line: an increase in the observed quantity of a good tells you that either demand or supply has shifted. But price could fall or rise depending on whether demand or supply has increased.

## **Mistake #4–Confusing What People Are Willing To Pay With What They Have To Pay and Confusing What Firms Would Like to Charge With What They Have to Charge**

This is also a subtle variation on some of the above mistakes. Let's take two examples in the gasoline market to illustrate this mistake. Suppose Exxon has an oil spill. Very little oil is lost but there is massive environmental damage. Exxon incurs large costs of cleanup and compensation to fishermen. What happens to the price of Exxon gasoline? The bad economist speaks: "Exxon gasoline has to get more expensive. Exxon will raise its prices to cover the cost of the oil spill. Consumers are willing to pay more because they realize Exxon's costs have gone up."

The speaker makes two serious mistakes here. Exxon wants to charge more to cover its costs of the oil spill, but it always wants to charge more—it doesn't take an oil spill to bring out Exxon's desire for higher prices. What stops Exxon from charging more without an oil spill? Competition. If Exxon charges more for gasoline it loses customers to other brands. The same force of competition stops Exxon from raising its price when there IS an oil spill. Perhaps Exxon's desire for higher prices is more intense after its costs have risen, but it will be just as impotent as before in carrying out this desire.

"But," says the speaker, "people will be willing to pay higher prices if Exxon has higher costs." Oh really? They are willing to

pay more in a sense—if the price of gasoline goes up, most people ARE willing to keep buying SOME gasoline, though they will buy less. But just because they are willing to pay more, they don't have to. They will turn to other brands. Imagine going to buy a pair of shoes at your local mall. You go to the store you usually go to and find that the prices seem awfully high. Asking a salesman about the prices, he shrugs and says, “Yeah, sorry about that. But the boss's daughter was married last month and he's kind of strapped for cash. So you'll understand why he's increased all prices by 30%. And you won't mind paying a higher price will you?”

Are you willing to pay a higher price? You might be, even if you've never met the daughter and missed the wedding. It's possible you might still get positive consumer surplus from purchasing the shoes even though the price is 30% higher. But your consumer surplus is even higher if you go next door and buy the shoes from a different store in the mall at a lower price. You're willing to pay more, but you don't have to.

A more sophisticated version of this mistake occurs when considering the effect of a large oil spill that significantly affects the total amount of crude oil available for refining. A decrease in the amount of crude oil means a decrease in the quantity of gasoline in the future when the crude oil would have been refined. But there is no less gasoline now simply because there is less crude oil now. Oil companies would like to increase their prices, using the oil spill as an “excuse.” Are consumers willing to

pay more because of the spill? By itself, the spill has no effect on consumer's willingness to pay for gasoline. Consumers are willing to pay more for gasoline, but they are always willing to pay more for gasoline. IF the price of gasoline rises, people will buy less gasoline. If the price of gasoline rises, oil companies will want to supply more gasoline. Unless something shifts the supply or demand curve, the desire of gasoline companies to increase their prices is not going to make prices go up. If prices do go up, there will be excess supply and price will come back down. To see this more dramatically, suppose oil companies showed a video of an enormous oil spill. Does this shift out consumers' demand curves and allow a higher equilibrium price of gasoline? NO.

## Storable Goods

Because gasoline can be stored, an oil spill today CAN affect the price of gasoline today. When a good can be stored, the price tomorrow can affect the supply curve today. If the price of gasoline is expected to be higher tomorrow than it is today, then profits can be made by buying gasoline today at a low price today and storing it, and selling it tomorrow when the price is higher. An oil spill today, if it is large enough, can create an expectation that the supply will be lower tomorrow, so price of gasoline is expected to be higher tomorrow. This expectation of a higher price tomorrow means profits can be made by storing gasoline. The amount supplied this period goes down, and price goes up. TRY AND DRAW A GRAPH TO CAPTURE

THIS STORY. You can actually show that the act of storage of gasoline is beneficial to society. Speculators, people who buy commodities now hoping that their price is going to rise, provide an important service to society—they smooth out shortages so the path of prices is smoother than it would otherwise be. We could show how this produces a net gain.

Now let's try this same story with the video of the spill. If suppliers show the video, they can only raise prices if there is less gasoline available today. There would be less gasoline if suppliers responded to the video by storing gasoline. But if they store gasoline today hoping to sell it for a higher price tomorrow, then they will find out they are wrong. Unless there is an actual spill, there is no profit to be made from storage. What role does the video play in this story? (None at all—it just shows the fallaciousness of thinking that consumers will pay a higher price and keep buying the same quantity if they think the higher price is “justified.” Of course producers could all get together anyway and withhold supply today even without the video. What makes this hard to do?