**The Supply Curve Shifts**

Now that you've got the basics of the supply curve down, we'll jump into factors which shift the supply curve. Here's the same list I showed you before of important supply shifters. Remember, the most basic one is a change in costs. So really the only question is, how does technological innovations change costs? How do input prices change costs? Taxes and subsidies, expectations, entry or exit of producers? Once we understand how these different elements affect a firm's costs then we know how the supply curve is going to shift. By the way, I've given you a list here but the goal is not to memorize the list. The goal is to understand. And once we do that then we'll be able to **figure out** how any factor affects the supply curve.

 Okay, let's do some examples. **A technological innovation lowers costs and therefore increases the supply.** That means that sellers are willing to supply a greater quantity at a given price or equivalently they're willing to sell a given quantity at a lower price. So let's imagine that we have some **genetically modified** **seeds**. What's the effect of supply? We'll assume that the seeds for example require less **fertilizer**. So let's **graph out** of the effect of this innovation would be on supply.

Here's our old supply curve with the old seeds. Now we have the **innovation**. We have genetically modified seeds which require less fertilizer and create a **reduction** in cost. What does that do to supply? It increases supply and that means that the supply curve moves down and to the right. Why? Well, just **read off** what this means. **An increase in supply means that for any given quantity the firm is now willing to sell that quantity at a lower price than before since their cost have fallen.**

**The minimum price that firms require in order to sell this quantity has decreased.** In fact the minimum price that firms require to sell any quantity has decreased. **Equivalently**, **at any price, now that their cost has fallen the firms are willing to sell more at that particular price.** That's what an increase of supply means. These genetically modified seeds that costs and that increases supply.

Let's look at another important supply shifter, changes in input prices, and let's do in this case a decrease in supply. **An increase in the price of an input will decrease supply.** For example, if the government were to increase **environmental** **regulations** and **requirements** on gasoline, that's going to cost a decrease in supply. It doesn't mean that the government shouldn't do that. Maybe it's **worthwhile** but that will be the effect on supply. Let's take a look. Here's our old supply curve. Now we have increased **rules** and **regulations** which increase costs or there's an increase in the price of some input that reduces supply.

**Reductions** in supply mean that the supply curve **moves up** into the left. Again just **read off** what that means. **A reduction supply means that at any price the firm is now willing to sell a smaller quantity** or equivalently **it means that for any particular quantity where the reduction in supply with higher costs the firm need a higher price.** Because their cost have gone up, the price of the firm requires in order to sell any particular quantity has increased. Remember, this is the minimum price that suppliers require to produce this quantity and with higher costs that minimum price has gone up, that's what a decrease in supply looks like. Higher costs, decrease supply.

Let's look at a **tax**. A **tax** on **output** is equivalent to an increase in costs, and therefore a tax will decrease the supply. Here we go. Suppose that before the tax, firms were willing to sell, let's say, 60 million barrels of oil per day at a price of $40 per barrel. Now we imagine there's $10 tax. How much will firms require in order to sell 60 million barrels of oil per day now that there is a $10 tax? What would be the requirement for that? $50. **In fact**, what a tax does is it shifts the supply curve up by the amount of the tax. In this case, by $10 **everywhere** **along** the supply curve. By the way, notice we actually haven't said anything here about what the effect of the tax will be on prices. In fact we haven't said anything at all about how prices are **determined**. That's going to be in an **upcoming** video on equilibrium.

What we're **emphasizing** now is how a tax or how changes in input prices and **so forth** affect the supply curve. The way we analyze a tax is by shifting the supply curve up by the **amount** of the tax. What about a **subsidy**? A **subsidy** is just the opposite of a tax. **Instead** of the government taking with every unit that you produce, the government gives some amount of money for every unit which is produced. A subsidy is equivalent to a decrease in the firm's costs and therefore it increases supply.

**Go ahead** and graph the effect on the supply curve of the subsidy to save fast food producers. Suppose it's aimed at helping them **export** **overseas**. What would be the effect of a subsidy on a supply curve for fast food producers? I'm not actually going to show you that. If you have any **trouble** graphing it, go back and look at the tax example. A subsidy is just a tax in **reverse**.

Expectations. This one is a little trickier but expectations can also shift the supply curve. Imagine for example the firm **expect** a higher price for a good in the future, that increases the cost of supplying the good now, the **opportunity cost**. Since there's an increase in cost, that decreases the current supply of the good. This is perhaps **easier v**to see if firms can **store** the good. Suppose firms **believe** that the price is going to be higher in the future, therefore they're going to want to produce more today. But **instead** of selling today, they're going to want to store the good in order to sell it in the future when the price is higher. This will become more **important** when we come back later and talk about **speculation**.

 Let's see how this works with the **diagram**. Here's the supply curve **currently**. Now firms **come to believe** that prices are going to be higher in the future. So what do they do? They take some of their current supply and they put that supply into **storage**. They **remove** it from the current market. Since that quantity is **no longer** being supplied on today's market, today's supply curve decreases. **The entry and exit** of new producers is another important supply shifter. It's **pretty easy** to see that with entry, that **implies** more sellers in the market that increases supply. Exit **implies** fewer sellers in the market, decreasing supply.

What will happen to the supply of **lumber** with a free trade deal with Canada? This actually happened of course. Here's the domestic supply curve, the U.S. supply curve **without** the free **trade deal**. Now we get NAFTA, we get the free trade deal and what that means is, that any price there are now more suppliers. So there's a greater quantity supplied at each particular price. **In addition**, Canadian firms will have lower costs in their American **counterparts**. Not all of them but some of them are going to have lower costs. That means that at any quantity there's a lower price for the same quantity. As **entry** increases supply and for **exit**, the process just works in reverse.

Our final supply curve shifter changes in **opportunity cost** is perhaps the **trickiest** because we're usually thinking about cost in terms of dollar costs. But we have to keep in mind that the **fundamental** **concept** of cost is opportunity cost. Let's apply this and I think it will become **fairly** easy to understand. Inputs which are used in production have opportunity costs. It can be used to produce many different things. And sellers will choose to employ their inputs in the production of the highest priced final good.

For example, what happens to the supply of **soy** **beans** when the price of **wheat** increases? **Here's a hint**. **Farmers** can use their **land** to grow soy beans or to grow wheat. Farmers have a choice about their use of land. So what happens to the supply of soy beans when the price of wheat increases? Let's look at this with the graph. Here's our **initial** supply curve for soy beans. It will **label** this low **opportunity cost**, that means that the price of wheat is low. There's not much **else** useful to do with this land other than to grow soy beans. However, when the price of wheat goes up, well then the opportunity cost of growing soy beans has gone up.

 When the price of wheat was low the cost of growing **soy** beans was low because what else were you going to do with the land? Now that the price of wheat has gone up, there's an **alternative**, there's an opportunity. The farmers could instead grow wheat, that means that farmers are going to **take** some of their land **out** of soy bean production and move it into wheat production. So to produce the same quantity of soy beans the farmers are going to require a higher price because their cost are now higher, their alternative, their opportunity cost is higher. How to put it differently. At the same price of soy beans, farmers are now going to be willing to supply fewer soy beans because they've got other things to do with their land such as growing wheat.

Here again is our list of important supply shifters. These are not the only supply shifters. There could be lots of things which shift supply. I am giving you this list however; these are some of the most important ones. But to understand how **to go about** solving these problems, keep the general **procedure** in mind. **Figure out first**, what's the effect of this change on costs? Once you know the effect of the change on costs, you know how to shift the supply curve. If cost decrease that's an increase in supply. If cost increase that's a decrease in supply. So **whatever** shifter you'd get, **figure out** what the effect of that is on costs and then **work out** the effect on the supply curve, **draw the diagram**, and you'll be fine. Thanks. - If you want to test yourself, click Practice Questions or if you're ready to move on, just click Next Video.