

# **Principles of Economics and Business 1**

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## Information regarding Principles of Economics and Business 1

The structure of this summary is quite clear: we start with the most important theories, then add some practice questions and sometimes there is even an advice on how to tackle the most difficult questions on your exam.

### Key elements

The key elements of this course are: Adam Smith, demand and supply curve, competitive markets, equilibrium, incentives.

### About the exam

Let's talk about the exam. The final grade is determined on the basis of a couple of things. You will write individual assignments, two of them (the fourth and the sixth) are marked by your tutor. These two grades will be combined and that given grade accounts for 67% of your final grade.

The other 33% of your grade will lead from your two-hour written end of term examination with open questions and multiple-choice questions. The grade for the written examination should be at least 5.0 to pass the course.

### Most common mistakes

There are a lot of students who make the same mistakes during this course and unfortunately also during the exam. We will discuss a couple of mistakes, so you won't make them. Most of the students forget to draw a figure when they read a question about demand and/or supply. So, when you read that kind of question, please start drawing immediately. Secondly, don't start to learn an evening before the exam. We are sure you have read this before, but this is a really important point. Read all the stuff during the weeks before the exam and start about ten days before your exam.

### How can we help?

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## Chapter 1: The big ideas

Today's society is built on its complexity in organization. Economists refer to complexity as **differentiation**. As a result of the production of different goods, **specialization**, the process of grouping cooperative labour in specific tasks, is required to avoid waste: a specialized worker can produce more of one certain product than an all-round worker. Because of this specialization, every single economic market depends on another market. This connection between these different markets is the foundation of the discussed big ideas of economists.

A few of these big ideas will be discussed in this chapter. Ideas such as; incentives can be given in order to improve the quality or quantity of the work done. Employees, as well as principals, will be offering more precise or quicker labour in return.

### **Self-interest and the social interest go hand in hand at good institutions**

Under the right conditions, it is possible to improve the social wealth or welfare, while those who pursue their own interest are better off as well. Imagine an employer who decreased his prices in order to sell more products and ends up with more profit. Under the right circumstances, e.g. in a recession, he does not only lower the price for the consumers, but he can also lower the unemployment rate because of this increased production (there are more workers needed). He can also give his employees a higher income.

### **Trade-offs are made in every market**

Sometimes the government or a health care institution has to make a decision: should they test the new drug extensively or should they release the new drug immediately after a few tests? The sooner they release the drug, the lower the costs of research will be. These costs will influence the drug price and as a result of that some people won't be able to afford this certain drug and might not be saved. On the other hand, the short time period of research might not be enough to judge whether the drug is safe, which might result in deaths. A trade-off has to be made. Economists will have to consider the **opportunity costs**, the value of the opportunities lost (in this case it is about lives), to determine when they have to release the drug.

### **Thinking on the margin is a requirement when you make a trade-off**

Marginal costs, the costs of one unit more or less, will give an insight into the decision whether or not you release the drug. In this case one 'unit' has to be seen as one test. If they decide to do one more test, the costs will increase by e.g. \$2,000,000. The consumer might be paying for these costs. With this information, economists can make better decisions.

Specialization increases production, production increases the amount of trades.

Imagine the autarkic agrarian society of the Dark Ages. Specialization barely existed anymore and as a result the total production of a society was almost equal to the production of the farms and trade routes were globally disappearing. Nowadays, we have specialists all over the world, mass production and international trade routes.

### **Governments should not print too much money**

Printing money can be a useful economic policy to prevent **inflation**, the increase in the general level of prices. Inflation occurs when the supply of money increases (in other words: the product demand increases). When the government tries to intervene in the economic situation by printing (too much) money, inflation could turn into hyperinflation and as a result a hefty sum of 1 million dollars could very well be worth less than a penny.

### **Central banking is not always the solution to prevent a specific economic situation**

The Fed's (Federal Reserve) main task is to combat recessions. This central bank of the United States has multiple options to fulfil its task. Sometimes the Fed cannot do anything to prevent a recession due to a lag between the decision of the Fed and the results of its decision.

## Chapter 2: The power of trade and comparative advantage

This chapter will focus on the benefits of trade such as the difference of preferences, the division of knowledge and specialization, and comparative advantages.

### Trade and preferences

Trading is all about preferences. A teenager has other preferences than an adult. This difference is also seen in markets. The willingness to pay for a certain product can be higher for a teenager than for an adult. For example, the teenager would pay \$100 for a skateboard, while the adult does not even want it. If the adult still has his skateboard he can sell this skateboard to the teenager: he probably does not use the skateboard anymore. The adult would probably set his price under the average price of \$50. The teenager, as well as the adult has a 'profit' (later on it would be called consumer and producer surplus) of \$50. We say that value has been created.

### Specialization, productivity, and the division of knowledge

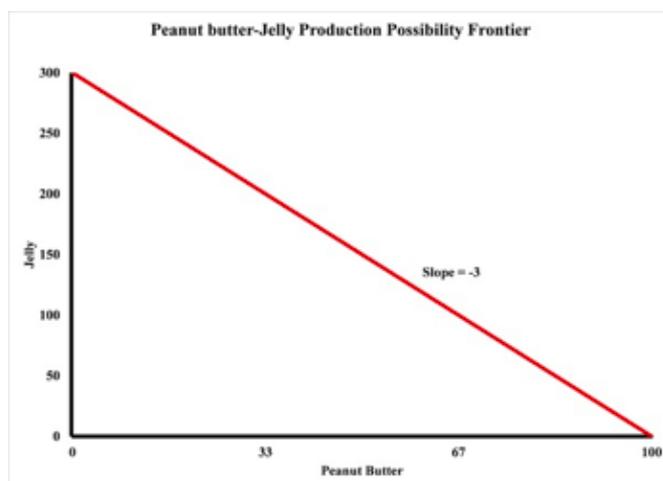
Specialization however, vastly increases productivity, which increases trade and also creates value on a bigger scale because specialization makes it possible to master the production of a certain good (the specialized workers have no other job then making that certain product, so they will be better at producing it than someone who also produces another product).

### Comparative advantages

Every country in the world has its **comparative advantages**, the ability to produce goods or services at a relatively lower price than other trade partners. It is possible that the trade partners produce that specific good at an absolute lower price, but they might have higher **opportunity costs**, the benefit of an action that is given up in exchange for another action. Because of these comparative advantages, every country can make a profit out of trading, even though a country is able to produce everything at a lower absolute price.

#### *The production possibility frontier*

Imagine a country that produces peanut butter and jelly. The graph of the **Production Possibility Frontier** (PPF), the possibilities of production without trade, is as follows:



Source: Don Sillers, 4<sup>th</sup> of July 2017

Without trade, there cannot be produced more than these options, and it also shows the production capacity (100 units of peanut butter or 300 units of jelly, or any combination of these two). The total labour force of this country is equal to 100 units. So, producing 300 units of jelly requires 100 labour units. Country B also produces peanut butter and jelly with a labour force of 50 units. They can produce 200 jelly units or 200 peanut butter units.

Even though country B has absolute advantages, there will still be a profit for both when they decide to trade. Country A will specialize in jelly. Country B will specialize most of its units in peanut butter. Now trades can be made: country A trades e.g. 200 units of jelly for 100 units of peanut butter.

Both are better off, and value has been created: country A has 100 units of peanut butter and 200 units of jelly, which is outside of its PPF. Also, country B has profited: he traded 100 units for 200 (for him the products were produced with the same labour force!).

Imagining that total production is equal to total income (because it is the value that we create), you can also bring wages to the surface.

### **Trade and globalization**

Not everybody profits from trade. There will always be goods with a decreased demand because of trades. For example, the peanut butter in country A. The producers of peanut butter in this country have lost their jobs. It is because trade increases the level of globalization. The world is getting smaller and as a result, multinationals will be settling all around the globe to make as much profit as possible.

## Chapter 3: Supply and demand

This chapter focuses on the decision of the best feasible option with regards to trade. This is done by using the cost-benefit analysis.

### Two kinds of optimization: a matter of focus

The first principle of economics is that according to economists, people tend to make most of their choices by selecting the best feasible option. That is, people tend to optimize. It is assumed by economists that people don't *always* successfully optimize, but they do try. Thus, one could say that people aren't *perfect* optimizers because this would be quite complex.

We will now look at an example that will be used throughout the chapter. Consider that you have to choose an apartment. There are large cities and a great number of rental apartments, and all apartments have their own characteristics that need to be taken into account, like location and views. *Trade-offs* are important in this situation and how one can optimally evaluate such trade-offs will be discussed.

There are two techniques of *cost-benefit analysis* that can be used for optimization.

- Optimization in *levels*: This analysis is based on the *total* net benefit of different alternatives. The best alternative will be chosen;
- Optimization in *differences*: This analysis is based on the *change* in net benefits in the case one switches from one alternative to the other. The marginal comparisons are used in order to choose the best alternative.

Regardless of which technique is being used, the outcome should be the same. Suppose we have two slightly different bags full of Halloween candy (only one candy differs in the second bag from the first bag). According to the optimization in levels technique, we should choose the bag that offers us the greatest total enjoyment (the best benefit). We analysed both bags in isolation. Now we look at optimization in differences. We can take the two bags of candy and reorder the candy. Since all the candy in the bags is the same except for one candy, it is straightforward that we take a look at those two candy bars. You will choose the bag that has the one that gives you the highest value of the two candy bars. Here we made our choice on the basis of differences between the two bags. This second technique is often faster and easier to use.

### *Do people really optimize?*

Previous research showed that optimization is a good model of economic behavior in most situations, but not in all. Behavioural economics identifies the economic and psychological factors that explain human behaviour, so this identifies certain situations in which people fail to optimize.

People tend to fail when they have self-control problems or when they have to carry out a new task. On the other hand, people tend to perform well on optimization when they have a lot of experience.

### Optimization in levels

We return to the example about renting an apartment. We will omit factors like how long it takes to walk to the neighbours or whether there is a park nearby for simplicity reasons. However, in practice they *are* important. We also assume the benefits of each apartment are the same, which makes it easier to compute a cost-benefit analysis as we only have to look for the alternative with the lowest cost. The search for an apartment has been narrowed to four apartments:

Apartment	Commuting time (hours per month)	Rent (\$ per month)
<b>Very close</b>	5 hours	\$1,180
<b>Close</b>	10 hours	\$1,090
<b>Far</b>	15 hours	\$1,030
<b>Very far</b>	20 hours	\$1,000

Now we need to sum up the costs for every apartment to find which one is the best to rent. The total cost consists of the *direct costs* of rent and the *indirect cost* of commute time. The commuting time and the rent has to be in a common unit of account, for example in dollars per month. The rent is already given in dollars per month, so we only need to convert commuting time.

We assume the opportunity cost of commuting time is equal to \$10 per hour. **Opportunity costs** refer to a benefit that a person could have received, but gave up, to take another course of action. In this case, the time spent on commuting cannot be spent on an alternative activity. Suppose the total commute takes 20 hours every month and the opportunity cost of time is still \$10 per hour. The dollar cost of that commute can then be calculated as follows:

$$\left(\frac{20 \text{ hours}}{\text{month}}\right) \left(\frac{\$10}{\text{hour}}\right) = \left(\frac{\$200}{\text{month}}\right)$$

We can now compute the commuting time for the four apartments by using the same calculations as above but then with different hours per month of commuting time.

Apartment	Commuting time (hours per month)	Commuting cost (\$ per month)	Rent (\$ per month)	Total cost: Rent + commuting (\$ per month)
<b>Very close</b>	5 hours	\$50	\$1,180	\$1,230
<b>Close</b>	10 hours	\$100	\$1,090	\$1,190
<b>Far</b>	15 hours	\$150	\$1,030	\$1,180
<b>Very far</b>	20 hours	\$200	\$1,000	\$1,200

The 'total cost' column can be calculated by adding together the commuting cost per month and the rent per month. Apartment 'Far' seems to be the best choice as this apartment has the lowest total cost. This best feasible choice between apartments is the **optimum**, in other words, it is the best optimal choice.

So far, optimization in levels involves taking three steps:

- Translate all costs and benefits into common units, like dollars per month;
- Calculate the *total* net benefit of each alternative;
- Pick the alternative with the highest net benefit.

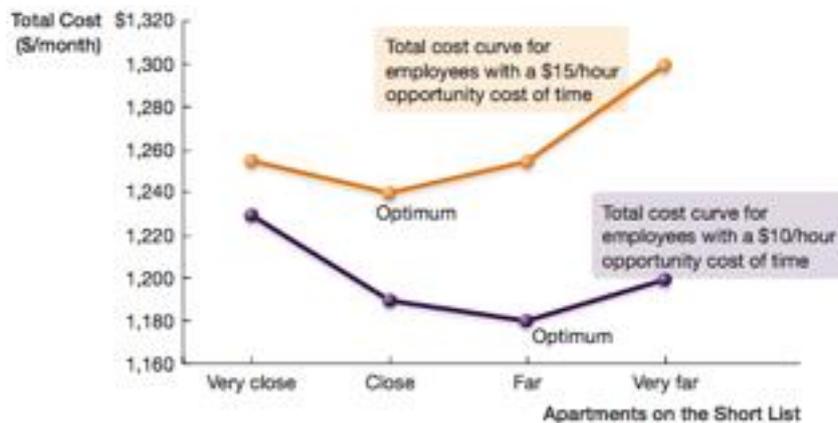
#### *Comparative statics*

Economic models predict how the choices of people change when something in the environment changes. **Comparative statics** is the comparison of economic outcomes before and after some economic variable is changed. We will now conduct a *comparative statics analysis* for our apartment example, as we want to see what happened when the opportunity cost of time is changed.

Suppose the opportunity cost of time is now \$15 per hour instead of \$10 per hour. This amount can rise when one's hourly wage would rise, for example. We make the same calculations as in the previous table, but now we use \$15 opportunity cost per hour.

Apartment	Commuting time (hours per month)	Commuting cost (\$ per month)	Rent (\$ per month)	Total cost: Rent + commuting (\$ per month)
<b>Very close</b>	5 hours	\$75	\$1,180	\$1,255
<b>Close</b>	10 hours	\$150	\$1,090	\$1,240
<b>Far</b>	15 hours	\$225	\$1,030	\$1,255
<b>Very far</b>	20 hours	\$300	\$1,000	\$1,300

Apartment 'Close' is now the best choice. This makes sense because when the opportunity cost of time increases, it becomes more valuable for the commuter to choose an apartment that reduces the amount of time spent commuting, thus the apartment that is closest to his\her job in the city center.



Source: *Modern principles of Economics*, Cowen, T. & Tabarrok, A., p. 81

The purple line in the figure above represents the total cost curve for the commuter with an opportunity cost of \$10 per hour and the orange line for an opportunity cost of \$15 per hour. There are two important properties visible in the figure:

1. The total cost curve with opportunity cost of \$10 per hour lies below the total cost curve of \$15 per hour, for every apartment;
2. The optimal apartment switches from 'Far' to 'Close' as the opportunity cost of time rises from \$10 per hour to \$15 per hour.

**Optimization in differences: marginal analysis**

Optimization in differences breaks an optimization problem down by looking at how costs and benefit change when one moves hypothetically from one alternative to the other.

Economists use the word *marginal* to point out differences between alternatives. This difference usually represents one ‘step’ or ‘unit’ more. A **marginal analysis** is a cost-benefit calculation that focuses on the difference between a feasible alternative and the next feasible alternative. The costs and benefits are compared. Using marginal analysis will never change the final outcome of which (in our example) apartment is best, but it does change the way we think about optimizing in comparison to optimization in levels where we compared apartment by looking at the *total* costs.

*Marginal cost*

We assume once again that the opportunity cost of time is \$10 per hour and we will focus on what will change as we hypothetically ‘move’ from one apartment to another. The commuting cost in the table below is calculated the same way as before. The ‘Marginal commuting cost’ column shows that value of the extra monthly commuting that is created when one moves from one apartment to another further away from the city centre.

For ‘Close’, the marginal commuting cost can be calculated by  $\$200 - \$150 = \$50$  and the marginal rent cost can be calculated by  $\$1,000 - \$1,030 = -\$30$ .

Apartment	Commuting cost	Marginal commuting cost	Rent cost	Marginal rent cost	Total cost	Marginal total cost
<b>Very close</b>	\$50		\$1,180		\$1,230	
		\$50		-\$90		-\$40
<b>Close</b>	\$100		\$1,090		\$1,190	
		\$50		-\$60		-\$10
<b>Far</b>	\$150		\$1,030		\$1,180	
		\$50		-\$30		\$20
<b>Very far</b>	\$200		\$1,000		\$1,200	

In general, the **marginal cost** is the extra cost that is generated by moving from one feasible alternative to another feasible alternative.

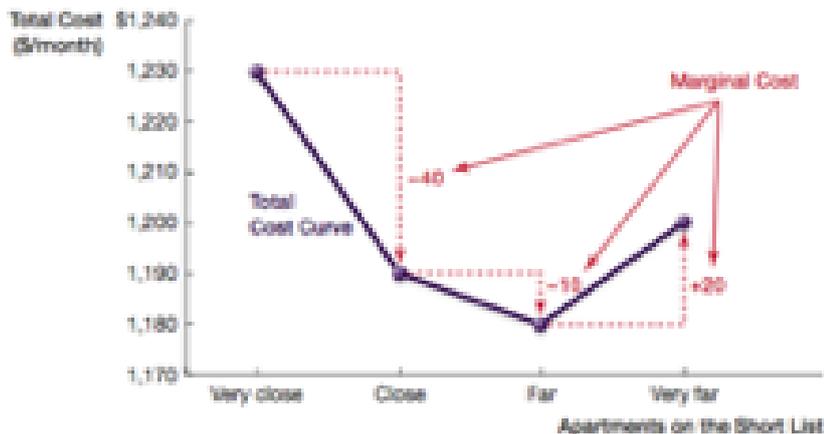
The marginal total cost is calculated by  $\$50 - \$90 = -\$40$ , when we look at 'Very close'. There are two methods to get to the value of  $-\$40$ , which will always give the exact same results:

$$\text{Marginal commuting cost} + \text{marginal rent cost} = \$50 + -\$90 = -\$40$$

$$\text{Total cost of Close} - \text{total cost of Very close} = \$1.190 - \$1.230 = -\$40$$

We can use the last column in the table above for optimization. The first move, when we move from 'Very close' to 'Close', has a marginal cost of  $-\$40$  per month. This move is thus reducing costs, so it is worth taking it. The second move has a marginal cost of  $-\$10$  which is thus also worth taking. The move from 'Far' to 'Very far' gives us  $\$20$  extra costs so we will not be taking this step. We can therefore conclude that 'Far' is the optimum, the best feasible choice.

This example illustrates the **principle of optimization at the margin**, which states that an *optimal* feasible alternative has the property that moving to another alternative makes you better off and moving away to another alternative makes you worse off. The graph below shows the total costs and the marginal costs for every apartment. Optimization can be found at the lowest point in the graph (thus 'Far'), representing the lowest total cost.



Source: *Modern principles of Economics*, Cowen, T. & Tabarrok, A., p. 84

To sum up, there are three steps that need to be taken for optimization in differences (also known as optimization at the margin):

1. Translate all the costs and benefits into common units, like dollars per month (the same as in optimization in levels);
2. Calculate the marginal consequences when you move from one alternative to another;
3. Apply the principle of optimization at the margin by choosing the best alternative with the property that moving to it makes you better off and moving away from it makes you worse off.

## Chapter 4: How supply and demand determine prices

This chapter focuses on how buyers and sellers respond to changes of the price of a good or service.

### Markets

A **market** is a group of economic agents who are trading a good or service, and the rules and arrangements for trading. A market can have a specific location, but this is not necessary. When we look at the dispersed market for gasoline, we see that there is a gas station on every corner.

We will see how markets use prices to allocate goods and services. Prices act as a device that selects the sellers who can produce goods at the lowest costs and the buyers who have a particular value to the goods.

### Competitive markets

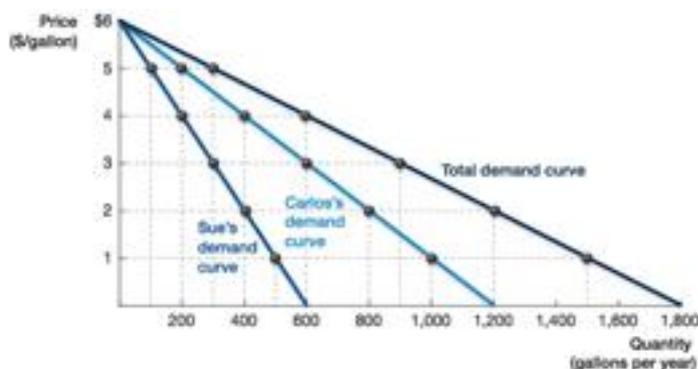
When all sellers and buyers deal with the same price, this price is known as the **market price**. The features of a **perfectly competitive market** are the following:

- All sellers sell an identical good or service;
- Any individual buyer or seller does not have enough power individually to affect the market price.

We can thus say that in a *perfectly competitive market*, everyone accepts the market price, and no one can bargain to get a better price. These kinds of markets are very rare, if they even exist. Many markets are nearly perfectly competitive though (like the markets for gasoline), which is why they are very interesting.

### How do buyers behave?

We make the assumption that buyers are price-takers. This means that they take the price of a product or service as a given and treats it as a take-it-or-leave-it offer. The **quantity demanded** is the amount of a good that buyers are willing to purchase at a given price. When we look at the gasoline market, we might expect that consumers will buy less gasoline when the price for gasoline increases. The table underneath represents the quantity Sue and Carlos demand at different prices for gasoline, holding all else equal. This table is called a *demand schedule*. '**Holding all else equal**' implies that everything else in the economy is held constant, except for the price of gasoline.



Source: *Modern principles of Economics*, Cowen, T. & Tabarrok, A., p. 98

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### *Demand curves*

When we plot a demand schedule, we create a **demand curve**. In other words, the demand curve plots the demand schedule. Notice what the x-axis and the y-axis represent: the quantity and the price respectively, like how it is most often represented. The price and the quantity of gasoline are *negatively related*, which means that these two variables are moving in opposite direction. When one goes up, the other goes down, and vice versa. We often see that demand curves have a negative relationship: quantity demanded rises when the price falls. This is called the **Law of Demand**.

### *Willingness to pay*

**Willingness to pay** is the highest price that a buyer is willing to pay for an extra unit of a good, in this case, a gallon of gasoline. One extra gallon of gasoline can also be called a marginal gallon. When we look at figure 4.2, Sue is willing to pay \$2 for her 400<sup>th</sup> gallon of gasoline. Since the demand functions are downward sloping, the more gasoline someone has, the less this person is willing to pay for an extra gallon of gasoline. This is called **diminishing marginal benefit**: as one consumes more of a good, their willingness to pay for an additional unit declines.

### *From individual demand curves to aggregated demand curves*

To obtain the worldwide demand for gasoline, all the individual demand curves need to be added together. The process of adding these demand curves together is called the **aggregation** of individual demand curves. When we take another look at the previous figure, we see that at a price of \$4, Sue has a quantity demanded of 200 gallons per year and Carlos 400 gallons per year. Together, this adds up to 600 (as can be seen at the 'total demand curve'). Remember that we are putting the quantities together, not the prices.

### *Building the market demand curve*

Economists call the total demand curve the **market demand curve**, which is the sum of the individual demand curves of all the potential buyers and it plots the relationship between the total quantity demanded and the market price, holding all else equal.

### *Shifting the demand curve*

There are a couple of things that influences the demand curve:

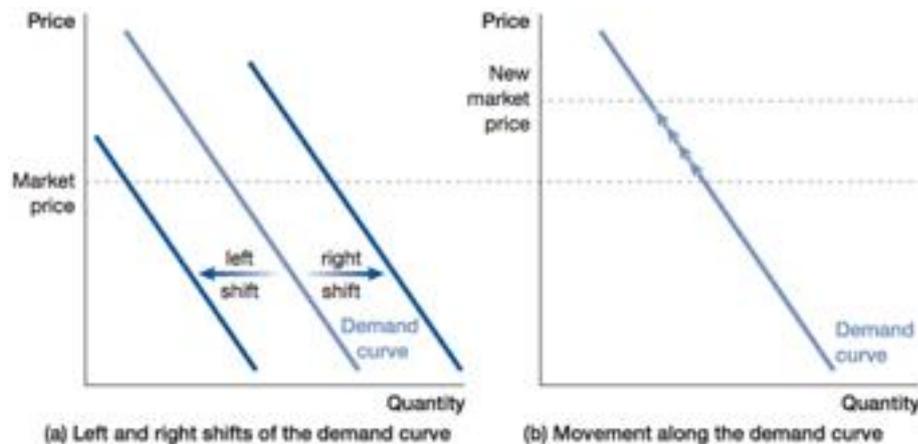
- Tastes and preferences;
- Income and wealth;
- Availability and prices of related goods;
- Number and scale of buyers;
- Buyers' beliefs about the future.

When one of these factors change, the demand curve shifts.

When someone's **preference** changes, for example global warming becomes really important to you, your willingness to buy gasoline declines. This results in a left shift in the demand curve because a lower quantity is demanded by the same prices as before. We can see this in figure 4.4 on the next page. Someone's taste can also change. Imagine that you start dating someone who lives in another town and the most convenient way of traveling is by car. This increases your transportation needs and the demand curve will shift to the right.

Important to remember:

- The **demand curve shifts** only when the quantity demanded changes at a given price level;
- If the price of a good changes and its demand curve has not shifted, a **movement along the demand curve** will be the result.



Source: *Modern principles of Economics*, Cowen, T. & Tabarrok, A., p. 100

When someone gets a higher **income**, he or she will be able to buy more/more expensive goods, resulting in a higher willingness to buy gasoline for example. When we talk about a **normal good**, an increase in income will cause the demand curve to shift to the right. But consider a product like Spam, which is canned, precooked meat. When one's income rises, they will buy less of these products. This is called an **inferior good**, as rising incomes shifts the demand curve to the left.

When a city decides to lower the *price* of public transportation, there might be more people using public transportation instead of their own cars. This results in a shift to the left in the demand curve for gasoline. Public transportation and gasoline are **substitutes**, the fall in the price of one leads to a left shift in the demand curve of the other. On the other hand, imagine lift ticket prices in a ski resort decreases. This leads to more visitors and to a higher demand curve for gas. These goods are **complements**, the fall in the price of one leads to a right shift in the demand curve for the other.

The demand curve shifts to the right when the total *number of buyers* increases, and the opposite happens when the number of buyers decreases.

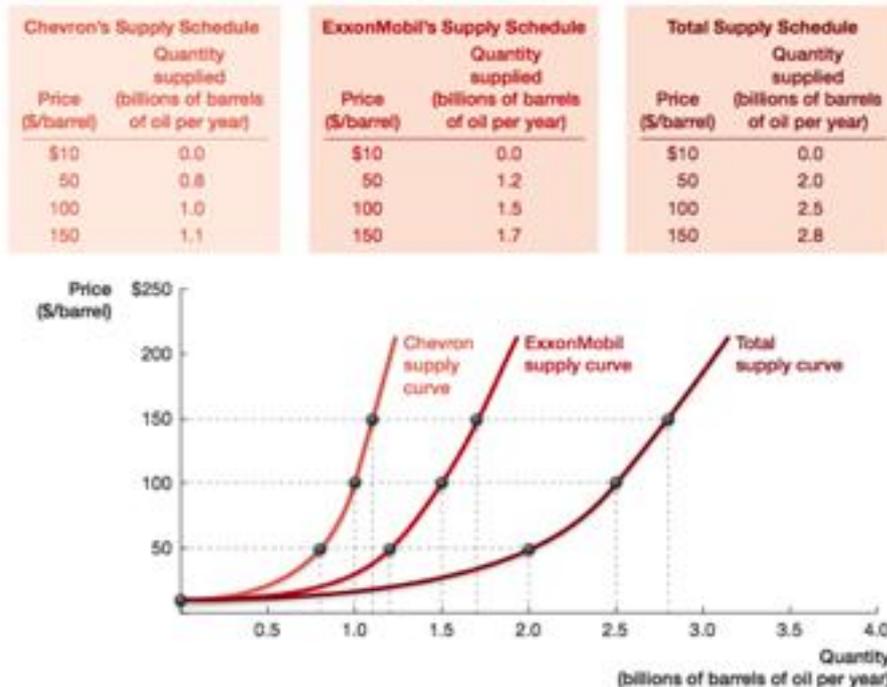
Imagine that your neighbours are losing their jobs at the beginning of an economy-wide slowdown. This might cause others to get worried and start to cut their spending back. This results in a left shift of the demand curve for gasoline.

### How do sellers behave?

**Quantity supplied** is the amount of a good or service that sellers are willing to sell at a given price. When the price of gasoline increases, suppliers increase their willingness to supply gasoline as they can make a bigger profit.

### Supply curves

A **supply curve** is a table that reports the quantity supplied at different prices, holding all else equal. An example of a supply curve is given in the figure given on the next page. In contradiction to demand curves, supply curves are upward sloping. The price of gasoline and the quantity supplied are **positively related** because the two variables move in the same direction. The quantity supplied, and the prices are almost always positively related, which is called the **Law of Supply**.



Source: *Modern principles of Economics*, Cowen, T. & Tabarrok, A., p. 103

### Willingness to accept

When we look at figure above, we see that ExxonMobil's is willing to accept \$100 to produce its 1.5 billionth barrel of oil. This is exactly what the supply curve tells us, which is called the **willingness to accept**. It is the lowest price that a seller is willing to get paid to sell an extra unit of a good. Willingness to accept is the same as the marginal cost of production.

### From the individual supply curve to the market supply curve

This works the same as we did when we added up the quantity demanded. When we add up the quantity supplied, we create the **market supply curve**. This is the sum of the individual supply curves of all the potential sellers. It plots the relationship between the total quantity supplied and the market price, holding all else equal.

At a price of \$100, the quantity supplied by Chevron is 1 billion barrels and the quantity supplied by ExxonMobil is 1.5 billion barrels. Together they add up to 2.5 billion barrels, which can be seen when we look at the total supply curve if we have a price of \$100.

### Shifting the supply curve

There are four major variables that influence the supply curve:

- Prices of inputs used to produce the good;
- Technology used to produce the good;
- Number and scale of sellers;
- Seller's beliefs about the future.

An **input** is a good or service used to produce another good or service. When the prices of inputs increase, some products might not be profitable to produce anymore. This results a shift to the left of the supply curve.

Again, important to remember:

- The **supply curve shifts** only when the quantity supplied changes at a given price;
- If a good's own price changes and its supply curve did not shift, a **movement along the supply curve** will be the result.

When an **innovation** causes the production of a good to be cheaper, the supply curve will shift to the right.

If there are **fewer suppliers** in a particular industry, the supply curve shifts to the left.

The demand for natural gas during winters is very high, as natural gas is used for home heating. Natural gas producers use much of their summer natural gas production as a supply for the winter. This creates a shift of the supply curve to the left in the summer.

### Supply and demand in equilibrium

A competitive market is a market that is perfectly competitive. In these markets, a price will be formed right where the quantity supplied, and quantity demanded are the same. To find this point, we need to put the demand curve and the supply curve in one graph.



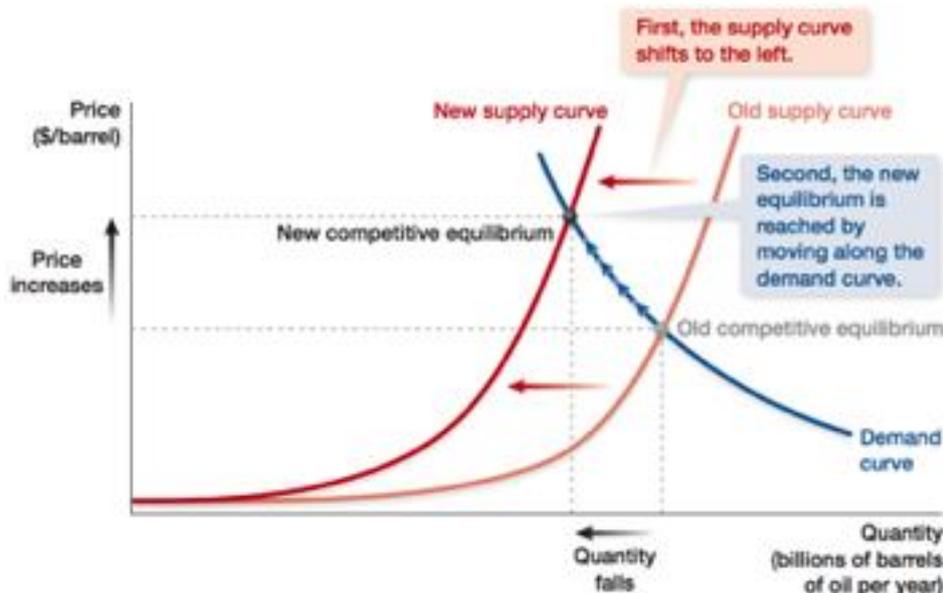
Source: *Modern principles of Economics*, Cowen, T. & Tabarrok, A., p. 108

The **competitive equilibrium** is the crossing point of the supply curve and the demand curve. The **competitive equilibrium price** equates quantity supplied and quantity demanded and amounts \$100 in this example. The **competitive equilibrium quantity** is the quantity that corresponds to the competitive equilibrium price. In this case, this is at 35 billion barrels.

The figure above illustrates a market that is not in equilibrium because the price is at \$140 instead of at \$100. Since the market price is above the competitive equilibrium price, there is more quantity supplied than quantity demanded. So, we have **excess supply** in this situation. When the price would be \$60, we have the opposite situation: there is more quantity demanded than quantity supplied, creating **excess demand**.

#### Curve shifting in competitive equilibrium

Suppose a very big oil exporter suddenly stopped producing oil. This leads to a shift of the supply curve to the left (step 1), as can be seen in the figure on the next page. Oil has now become scarcer and as a result, the price of oil needs to increase (step 2). We can also see that the price has increased because the new intersection of the two curves lies at a higher price level and at a lower quantity level.



Source: *Modern principles of Economics*, Cowen, T. & Tabarrok, A., p. 109

It might also be the case that both curves will shift, depending on the situation, creating a new equilibrium quantity and equilibrium price.

#### What would happen if the government tried to dictate the price of gasoline?

We have seen that in competitive markets, the outcome will be the competitive equilibrium, but only as long as prices are allowed to respond to situations. Laws, regulations or social norms, however, restrict some markets. In these cases, the price or quantity cannot take on every value.

For example, the US government had capped the price of gasoline during the oil crisis of 1973-74. This means that quantity demanded exceeds quantity supplied, creating excess demand. Long lines were created at gasoline stations and the stations frequently ran out of gasoline. Consumers tried to find a way beyond the rules to get more gasoline because, for example, they did not have enough to go to their work every day.

## Definitions

<b>Differentiation</b>	Complexity.
<b>Specialization</b>	The process of grouping cooperative labour in specific tasks.
<b>Opportunity costs</b>	The value of the opportunities lost.
<b>Inflation</b>	The increase in the general level of prices.
<b>Comparative advantages</b>	The ability to produce goods or services at a relatively lower price than other economic agents.
<b>Opportunity costs</b>	The benefit of an action that is given up in exchange for another action.
<b>Production Possibility Frontier (PPF)</b>	The possibilities of production without trade.
<b>Comparative statics</b>	The comparison of economic outcomes before and after some economic variable is changed.
<b>Marginal analysis</b>	A cost-benefit calculation that focuses on the difference between a feasible alternative and the next feasible alternative.
<b>Principle of optimization at the margin</b>	An optimal feasible alternative has the property that moving to another alternative makes you better off and moving away to another alternative makes you worse off.
<b>Market</b>	A group of economic agents who are trading a good or service, and the rules and arrangements for trading.
<b>Market price</b>	The price that both sellers and buyers have to follow.
<b>Perfectly competitive market</b>	A market in which sellers sell an identical good or service, and where any individual buyer or seller has no individual influence on the market price.
<b>Quantity demanded</b>	The amount of a good that buyers are willing to purchase at a given price.

<b>Demand curve</b>	A graph which shows the quantity demanded at a different price points.
<b>Law of demand</b>	The quantity demanded rises when the price falls.
<b>Willingness to pay</b>	The highest price that a buyer is willing to pay for an extra unit of a good.
<b>Diminishing marginal benefits</b>	As one consumes more of a good, their willingness to pay for an additional unit declines.
<b>Aggregated demand/Market demand curve</b>	All the individual demand curves together.
<b>Normal good</b>	An increase in income will cause the demand curve to shift to the right.
<b>Inferior good</b>	An increase in income will cause the demand curve to shift to the left, due to a lower willingness to pay for the good.
<b>Substitutes</b>	An increase in the price of product A results in an increase in the demand of product B and vice versa.
<b>Complements</b>	An increase in the price of product A results in a decrease in the demand of product B.
<b>Supply curve</b>	A graph which shows the quantity supplied at different price points.
<b>Law of supply</b>	The quantity supplied and the prices are almost always positively related.
<b>Willingness to accept</b>	The lowest price that a seller is willing to be paid to sell an extra unit of a good.
<b>Aggregated supply/Market supply curve</b>	All the individual supply curves together.
<b>Input</b>	Good or services used to produce another good or service.
<b>Competitive equilibrium</b>	The crossing point of the supply curve and the demand curve.
<b>Competitive equilibrium price</b>	The given price at the crossing point of supply and demand.

**Competitive equilibrium quantity**

The quantity at the crossing point of supply and demand.

**Excess supply**

More quantity supplied than quantity demanded.

**Excess demand**

More quantity demanded than quantity supplied.

## Practice Questions

1. The following are four of the ten Big Ideas, described in Chapter 1 of Cowen & Tabarrok. Which of them is least applicable to the theory of Adam Smith?
  - A. Incentives
  - B. Power of Trade
  - C. Institutions matter
  - D. Thinking on the margin
  
2. Kind of advantage gained by offering greater value to customers as compared to competitors is classified as
  - A. Competitive advantage
  - B. Corporate advantage
  - C. Branding advantage
  - D. Premium advantage
  
3. When marginal revenue exceeds marginal cost, a firm should produce more.  
  
Yes / No
  
4. The market demand curve shows...
  - A. The effect on market supply of a change in the demand for a good or service.
  - B. The quantity of a good that consumers would like to purchase at different prices.
  - C. The marginal cost of producing and selling different quantities of a good.
  - D. The effect of advertising expenditures on the market price of a good.
  
5. The market supply curve shows...
  - A. The effect on market demand of a change in the supply of a good or service.
  - B. The quantity of a good that firms would offer for sale at different prices.
  - C. The quantity of a good that consumers would be willing to buy at different prices.
  - D. All of the above are correct.

6. If the price of a good increases while the quantity of the good exchanged on markets increases, then the most likely explanation is that there has been...
- A. An increase in demand.
  - B. A decrease in demand.
  - C. An increase in supply.
  - D. A decrease in supply.

## Answers to practice questions

1. C
2. A
3. Yes
4. B
5. B
6. A

**Note: more practice questions and explanations to the answers can be found in the complete summary for Principles of Economics and Business 1!**

## Epilogue

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