2 The demand and supply curves

We have used the term 'market' previously, but what is it? This word can be understood as a certain number of buyers and sellers of a certain good or service. As you might guess, the market demand will be set by buyers and the market supply will be set by the sellers. Markets can be organized, such as a stock or futures market, or unorganized, such as the Forex or OTC markets.

The demand and supply movements respond to many factors depending on their own specific inputs To understand this better, we have the following two subsections to learn about the demand and supply curves separately. Let's find out what they are:

2.1 The demand curve

Whenever you buy something in the supermarket, you face the decision of "how much to buy" and what price you're willing to pay. The "how much to buy" is what economists call "the quantity demanded". The quantity demanded is the total amount of any market good or service that consumers are willing and able to purchase.

Now, you might ask: What determines the quantity demanded of a good or service?

Well, we can think of many reasons, the first and obvious is the "price" of the good or service. The price always determines the quantity demanded. But there are more reasons. Let's find out.

2.2 The demand curve inputs

Besides the price, factors such as personal income, preferences, expectations, and available substitutes influence the quantity demanded of a good or service.

We assume that:

- The more income you have, the higher quantity you demand of any good or service.
- The more you prefer the good, the higher quantity you demand of that good.
- The higher your expectations of the good's quality, the higher quantity you demand of that good.
- Substitute goods: If you see an increase in the price of Californian apples, you might decide to buy Kashmiri apples which have lower prices. Thus you demand a lower quantity of Californian apples.
- Complementary goods: If you see an increase in paper prices, then you might prefer to read books on your computer and decide not to buy a printer, so you reduce the quantity demanded of printers.

You can put these words mathematically, see:

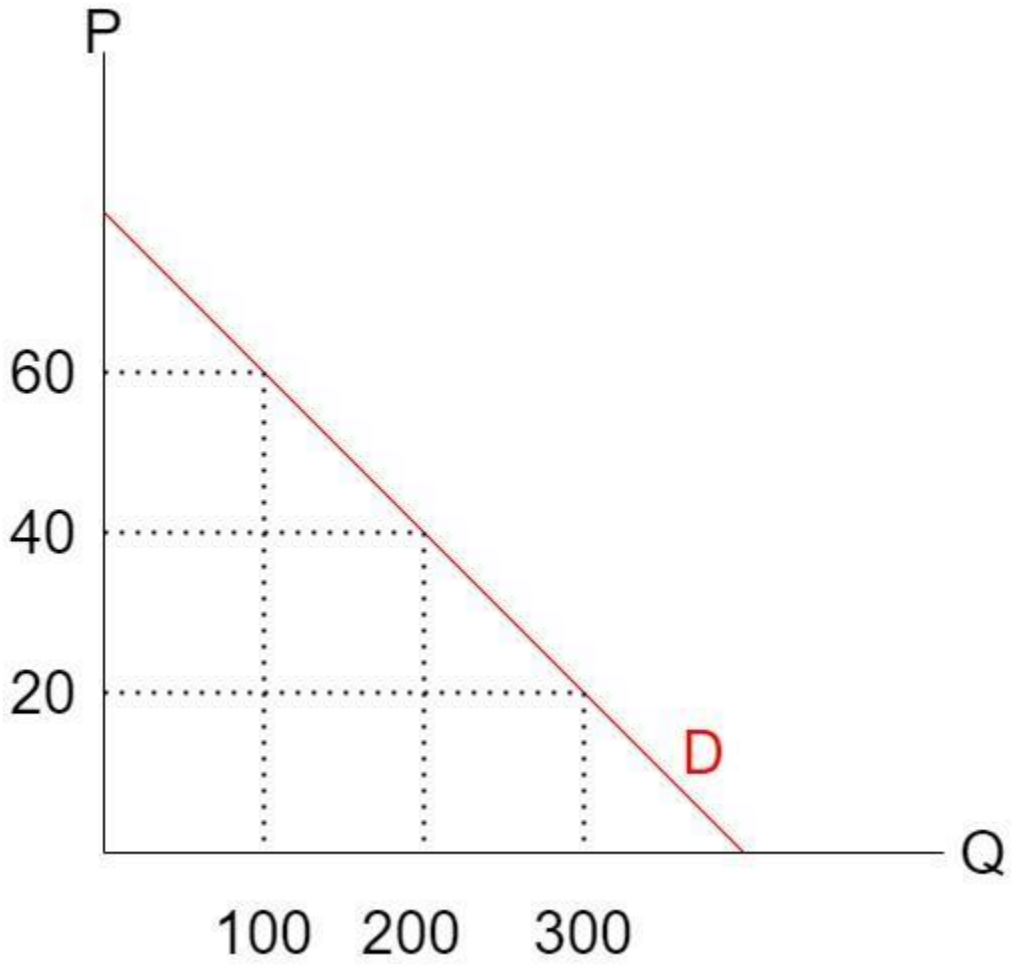
$$Q^D = Q(Price, Income, Preferences, Substitute\ goods, Complementary\ goods, etc.)$$

Where:
Q^D: Quantity demanded

Q(): Demand Function that specifies how the inputs of the function will be formulated.

2.3 The demand curve graph

Now that we understand the factors that influence the quantity demanded of a good or service, let us examine the demand curve graph. You can graph this function where the Cartesian plot will be two-dimensional and will have price and quantity as axes, as is common in economics:



We see in the graph that:
For a price of 60, we demand 100 units of the good.
For a price of 40, we demand 200 units of the good.
For a price of 20, we demand 300 units of the good.

As you can see, our demand curve has a downward slope, meaning, the higher the price, the lesser the quantity demanded. This negative relationship is maintained in almost all goods, that's why economists call

this phenomenon the “law of demand”: ceteris paribus, whenever we see an increase in the prices of any good, we tend to reduce the quantity demanded. Exceptions to this law include veblen goods.

You might ask: What is ceteris paribus? Well, it means, “other things will be understood as constant or equal”. So the law of demand states that whenever we maintain other variables (such as preferences, substitute goods, etc) as not moving or equal, then we can say that the higher the price, the less the quantity demanded.

Please note: Here, in this graph, or in this model, our endogenous variables are the price (P) and the quantity (Q), and our exogenous variables are going to be individual preferences, substitute goods, complementary goods, etc. Keep these two terms in mind for the next units. Exogenous variables are the ones which serve as input to explain a model. Endogenous variables are the ones which are explained by the model.

2.4 A movement over the demand curve and a demand curve shift

The explanation of the quantity demanded over each price is called a movement over the demand curve, i.e., whenever we situate ourselves on the curve and we move along the curve it is called a movement over the demand curve.

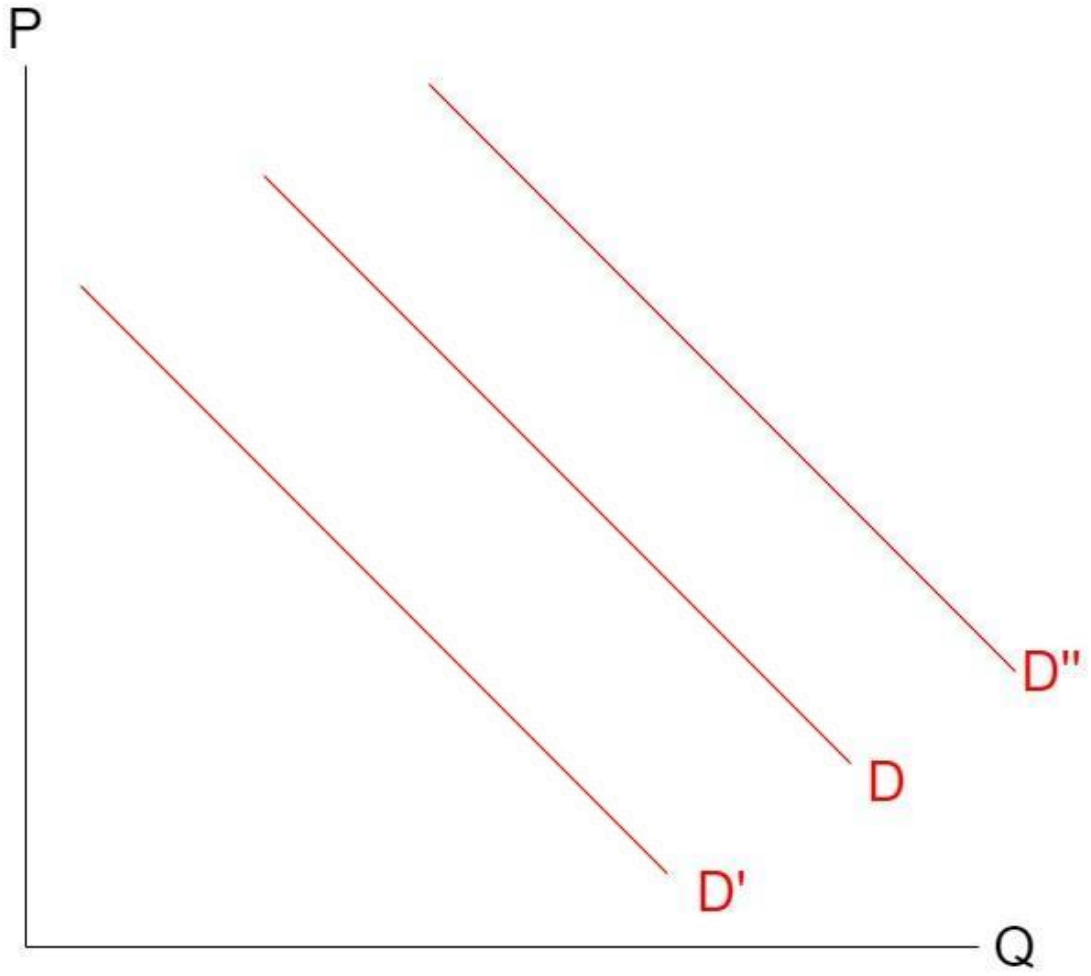
Other things equal, whenever there’s a price change, which is our endogenous variable, will make us move over the demand curve. But there’s another type of situation, which is called a demand curve shift. What about a change in our preferences? How will the curve move?

Are you ready?

Since our preferences variable is an exogenous variable which is not represented in our Cartesian graph, you will see a shift of the demand curve, i.e., a displacement of the demand curve towards the right or the left. Let’s state an example of this cause-and-effect relationship:

If the consumer preferences increase for the good, then we will see a shift of the demand curve from D to D’’.
If the consumer preferences decrease for the good, then we will see a shift of the demand curve from D to D’.

Let’s check it out in the graph:



2.5 The supply curve

Imagine this time you want to sell fish to supermarkets. In this case, you face the decision of "how much to sell" and "what price to assign to your good". The two things to consider are embedded in what is called the quantity supplied. The quantity supplied is the total amount of any market good or service that firms or individual sellers are willing and able to sell.

As for the supply curve: What determines the quantity supplied of a good or service? Let's find out in the next section.

2.6 The supply curve inputs

As you might expect, there are different things to consider as inputs between the quantity supplied and the quantity demanded. You can say that the quantity supplied depends on the price of the good or service, input prices, technology, expectations, the competition, etc. Let's see some examples.

For example, in the bread market, we assume that

- The lesser the prices of flour or yeast (the prices of the inputs), the higher the quantity supplied.
- A new technological progress in the efficiency of the bread oven would increase the quantity supplied.
- The higher the expectations in the overall economy, the higher the quantity of bread supplied.
- The lesser the number of competitors in the bread market, the higher the quantity of bread supplied.

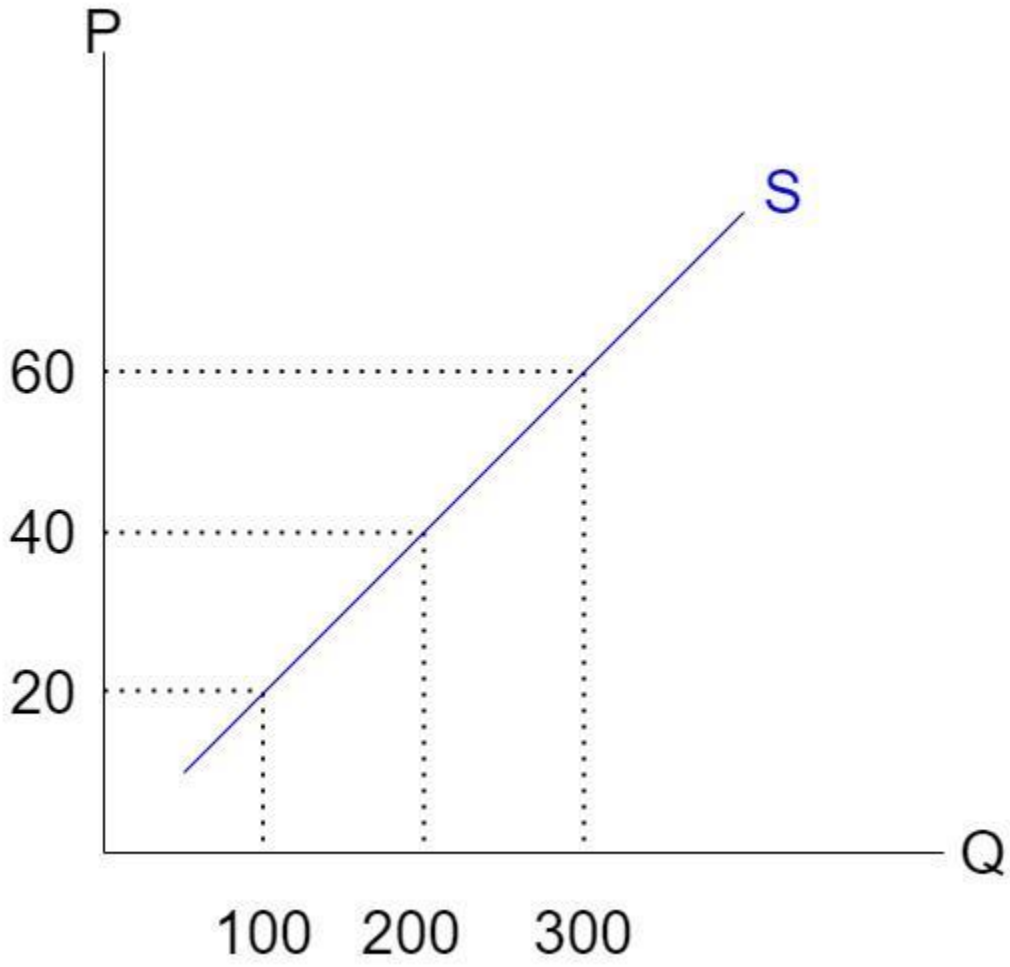
You can formulate the quantity supplied in math terms as

$$Q^S = Q(Price, Input\ prices, Technology, Expectations, N° Competitors, etc.)$$

Where:
Q^S: Quantity supplied
Q(): Supply Function that specifies how the inputs of the function will be formulated.

2.7 The supply curve graph

We learned about the quantity demanded function and the variables that influence it. Let's learn how to graph it. You can graph this function where the Cartesian plot will be two-dimensional and will have price and quantity as axes, as is common in economics:



We see in the graph that:
For a price of 20, the firm supplies 100 units of the good.
For a price of 40, the firm supplies 200 units of the good.
For a price of 60, the firm supplies 300 units of the good.

This time, our supply curve has an upward slope, i.e., the higher the price, the higher the quantity supplied. This positive relationship is maintained in almost all goods, that's why economists call this phenomenon the "law of supply": ceteris paribus, whenever we see an increase in the price of any good, we tend to see an increase in the quantity supplied.

Once again, in this graph, or in this model, our endogenous variables are the price (P) and the quantity (Q), and our exogenous variables are going to be the market price, the input prices, technology progress, suppliers' expectations, the number of competitors, etc. Suppliers are all the firms which offer a product or service. For example, Apple offers smartphones, Microsoft offers the operating system Windows, Mitsubishi offers cars, etc.

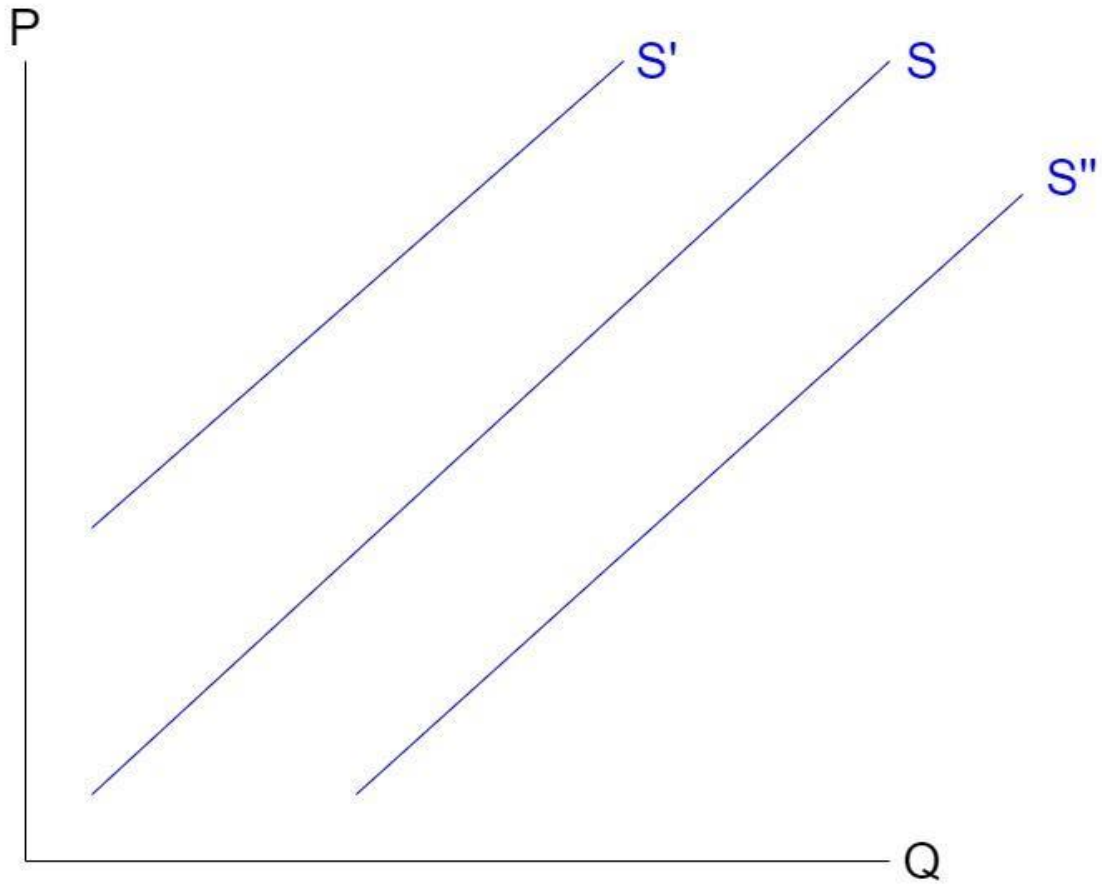
2.8 A movement over the supply curve and a supply curve shift

This is similar to what we saw with the demand curve. The explanation of the quantity supplied over each price is called a movement over the supply curve, i.e., whenever we situate ourselves on the curve and we move over the curve it is called a movement over the supply curve.

A supply curve shift will happen whenever our exogenous variables change, which in turn, will make the supply curve shift to the left or right, i.e. a supply curve displacement will occur whenever the exogenous variables change. Let's state an example of the cause-and-effect relationship:

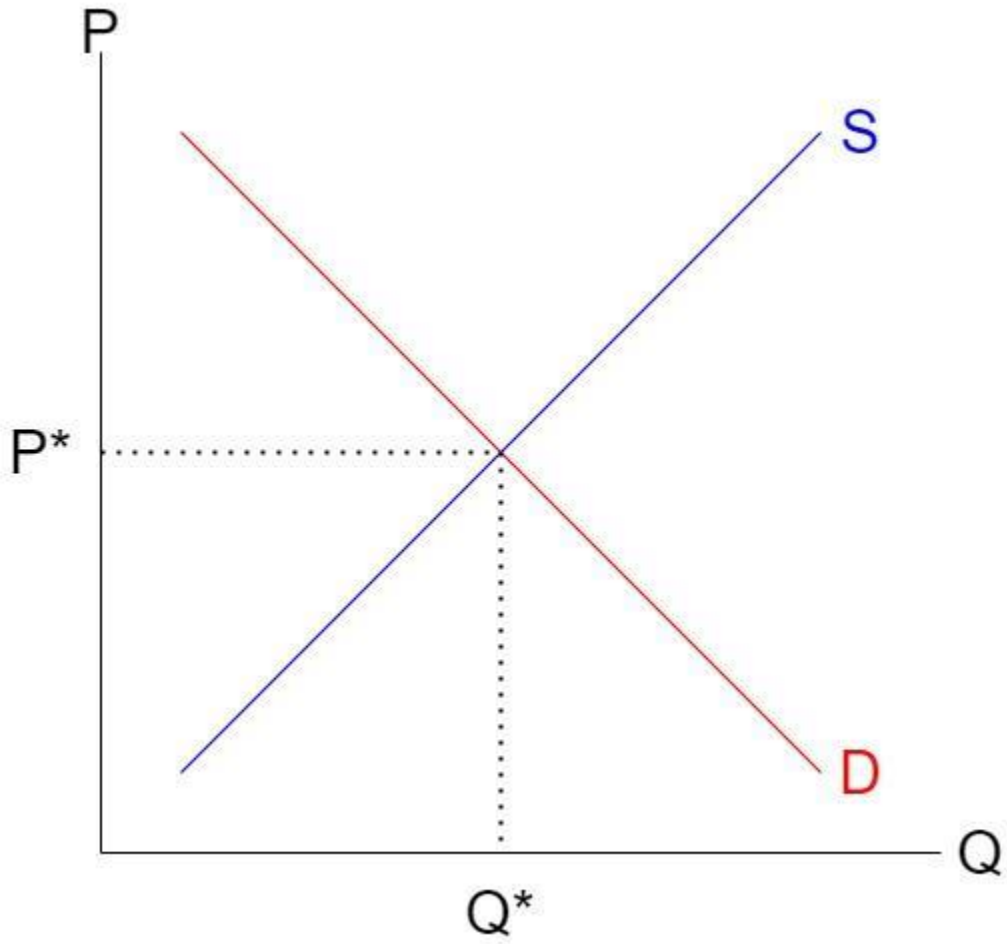
If there is a decrease in input prices, then we will see a shift of the supply curve from S to S''.
If there is an increase in input prices, then we will see a shift of the supply curve from S to S'.

Let's check it out in the graph:



2.9 Equilibrium

In economics, as in physics, usually you will find the concept of equilibrium applied to almost all phenomena related to markets. The equilibrium of any market is given by the intersection of the supply and demand curves.



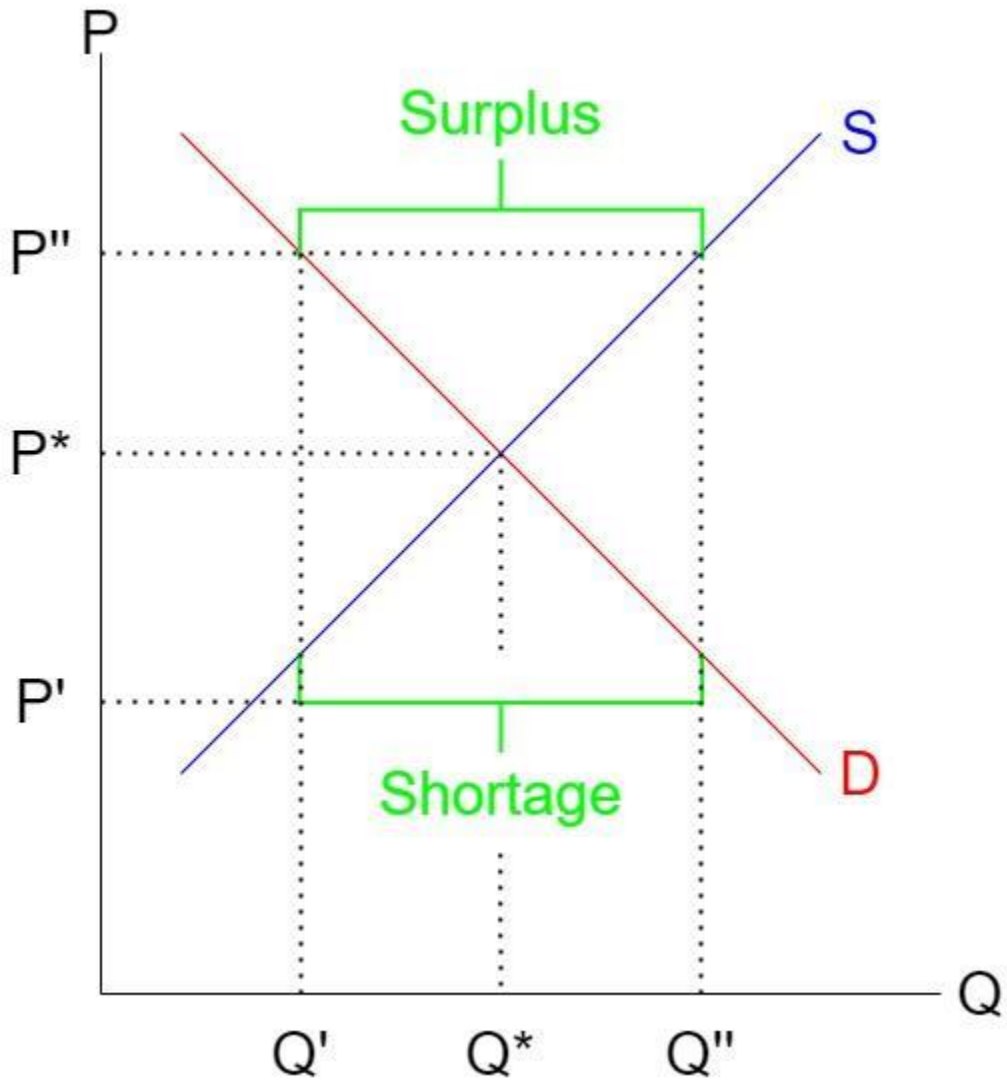
In equilibrium, you will have the best price P* that will make buyers and sellers agree on the quantity demanded and supplied called Q*.

What would happen if the quantity demanded is higher than the quantity supplied or vice versa?

Let's define the cause-effect relationship:

- Whenever the quantity supplied is higher than the quantity demanded, then there's a surplus. Thus, more people are trying to sell than trying to buy. This will put downward pressure on the market price, turning the market price again to P*.
- On the other hand, whenever the quantity demanded is higher than the quantity supplied, there there's a shortage. Thus, more people are trying to buy than trying to sell. This will put upward pressure on the market price, turning the market price again to P*.

Both surplus and shortage situations can be graphically represented as the following plot:



When there's a surplus, we might be in a situation where the quantity demanded is Q' and the quantity supplied is Q'', and the price will be P''. This situation cannot persist in time so the price will move upward and return to the market price P*. On the other hand, when there's a shortage, we might be in a situation where the quantity demanded is Q'' and the quantity supplied is Q', and the price will be P'. This situation cannot persist in time so the price will move upward and return to the market price P*.

2.10 Concepts applied in trading

We're going to try to apply all the concepts learned here in a trading context. You can draw some conclusions on financial markets.

1. An increase/decrease in an asset price can happen for many reasons:
    a. The overall economy expectations
    b. An increase/decrease in investors' income
    c. Technological progress on the internet connections to the stock market
2. While trading commodity futures, you have to know the intricacies of the underlying asset to make better bets on the direction of these derivatives' prices.
3. There is also an interrelationship between the stock market and the bond market. What happens in the stock market can cause changes in the bond market and vice versa.
4. An increase in the number of retail traders in the financial markets, puts upward pressure on asset prices.
5. The increase in the number of investors makes the financial market a more competitive one.
6. Stock fundamentals can have a huge impact on its prices. You need to look at them to decide whether to trade them.
7. A higher price in an asset doesn't necessarily mean an improvement of the intrinsic value.