Binding & Non-Binding Constraints

by Sophia Tutorial

WHAT'S COVERED

This tutorial will cover binding and non-binding constraints and their impact (or lack of impact) on the market.

Our discussion breaks down as follows:

1. Equilibrium
2. Non-Binding Constraint
3. Binding Constraint
   a. Price Ceiling: Rent Control
   b. Price Floor: Minimum Wage

1. Equilibrium

In most cases, the free market functions wonderfully, because producers have a profit motive to provide consumers what they want at prices they are willing to pay.

Generally speaking, unregulated, free markets, also referred to as laissez-faire markets, produce the best outcome, meaning that the market clears when it reaches equilibrium.

At equilibrium, the market allows for trade to occur between buyers and sellers; every buyer has a seller, and every seller has a buyer.

The quantity being demanded by consumers is the same as the quantity being supplied by producers. There is no surplus, or shortage, of goods or services.

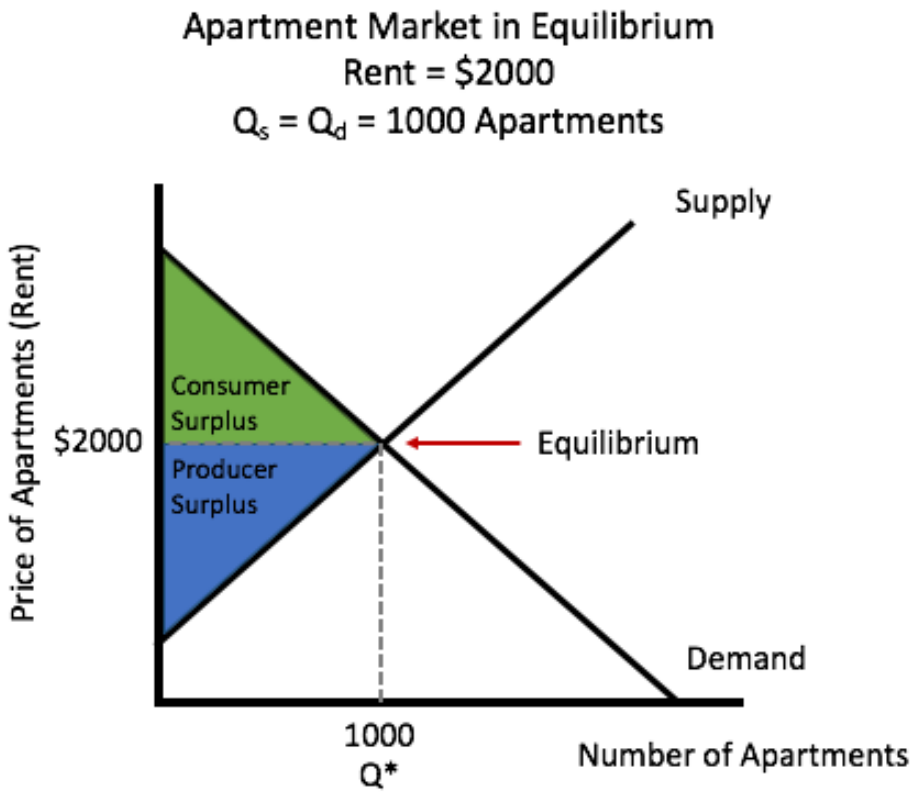
Equilibrium is defined, then, as the price and quantity pair where supply and demand intersect. It is the price and quantity where the market clears.

TERM TO KNOW

Equilibrium
The price and quantity pair at which supply and demand intersect; price and quantity at which the market clears

2. Non-Binding Constraint

This graph represents a market in equilibrium. If we were to allow this apartment market to reach equilibrium, the market would clear when 1,000 apartments are being rented out each month, and landlords are receiving $2,000 per month for each of those 1,000 apartments.



Now, this is quite an expensive rent, and we know in some U.S. cities, rent prices are that high, if not even higher.

Now, some people are clearly unable to afford this kind of high rent. Therefore, the government will often control rent in a certain area by imposing a maximum price that landlords can charge.

However, what would happen if the government set a maximum price above the current level of equilibrium? Suppose they set a maximum price at $2,500 per month, meaning that landlords cannot charge more than $2,500 per month. This action would set a ceiling, or impose a maximum price, above equilibrium.

If you think about it, this would actually have no market impact at all. Landlords only want to charge $2,000, because they know this is the price at which they will be able to rent out their apartments. They know that a certain number of consumers are willing to pay $2,000, and that will clear the market.

Therefore, they will not want to charge anything more than $2,000. Even if the maximum price is set above equilibrium, the equilibrium price will simply be allowed to be reached.

This is an example of a **non-binding constraint**, which is a price level bounding that is ineffective relative to the existing market clearing price and quantity combination. As demonstrated in our previous example, the market would simply reach equilibrium if a maximum price is set above equilibrium.

TERM TO KNOW

Non-Binding Constraint

A price level bounding that is ineffective relative to the existing market clearing price and quantity combination

3. Binding Constraint

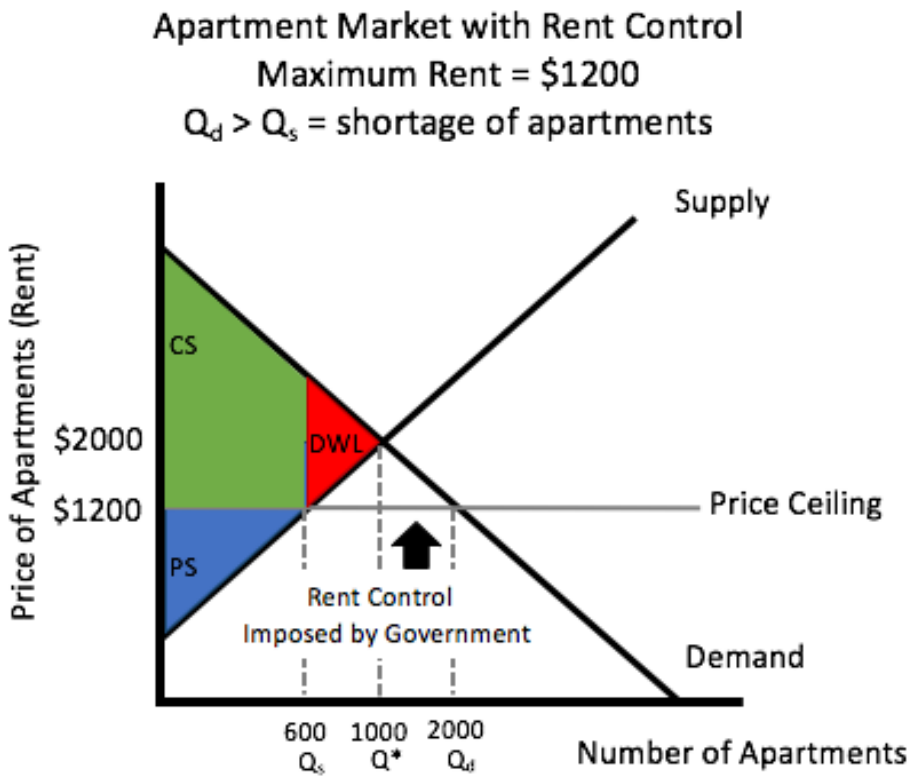
Now, a **binding constraint** is different. A binding constraint is a price level bounding that preempts market clearing.

3a. Price Ceiling: Rent Control

A **price ceiling** is a set price level bounding the highest price at which a good or service can be sold. It is typically initiated by a government or regulatory body.
Let's explore an example of rent control policy, which is a good example of a price ceiling.

Here is our apartment market graph again, where the market was clearing at $2,000 per month in rent. Now, if the government intervened and imposed a ceiling with the maximum allowable rent charged at $1,200, this is a binding constraint.

Now, it is a bit confusing, because you might think a ceiling would be above equilibrium, but consider that in order to be effective as a maximum price, it has to be dropped below equilibrium.



So, in this scenario, landlords cannot charge any higher than $1,200. They can charge lower than $1,200, but they cannot charge higher. Initially, you might think this is a beneficial situation because it will make apartments more affordable. However, it also means that now equilibrium cannot be reached.

As we lower price, we know that the law of demand states that more people will want to rent apartments at this price. Therefore, the quantity of apartments demanded now increases to 2,000.

At the same time, while the government can force landlords to charge a lower price, it cannot force them to rent out all of their apartments. Landlords are less willing to rent at this price, so the quantity supplied falls. We know that the law of supply dictates that as prices fall, the quantity supplied falls. So, now the quantity supplied is only 600.

Notice that the market is no longer clearing. The quantity demanded exceeds the quantity supplied, so what we have in this example is a shortage of 1,400 apartments.

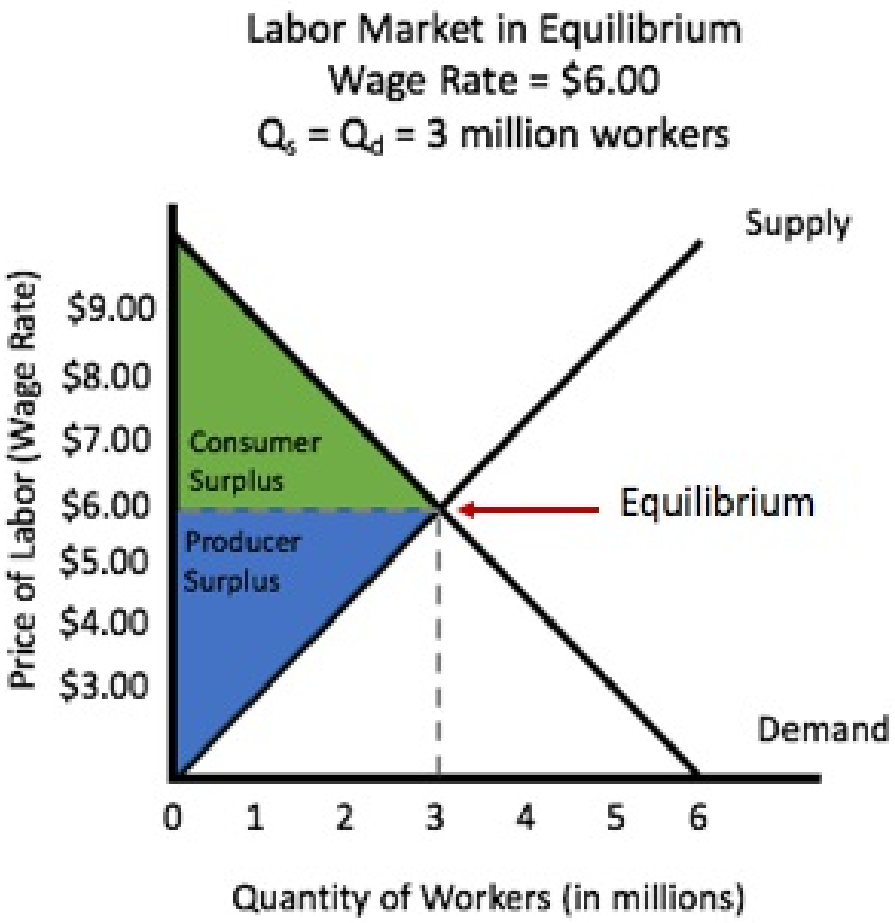
This **shortage** is the opposite of a surplus. This is a situation, often caused by an imposed constraint, that results in a shortage of supply or an excess of demand that is occurring at the market price due to the inability of the market to adjust to market clearing price and quantity.

3b. Price Floor: Minimum Wage

Now let's look at an opposite example of a price floor. A **price floor** is a set price level bounding the lowest price at which a good or service can be sold. Again, typically this will be initiated by a government or regulatory body.
Let's discuss the minimum wage because it is an example of a price floor.

So, now we are looking at the labor market, where supply and demand are slightly different. Supply represents the supply of laborers, while demand represents employers, or those people demanding labor.

In this particular case, if we allowed the market to reach equilibrium, we are suggesting that the wage rate would be $6 per hour.

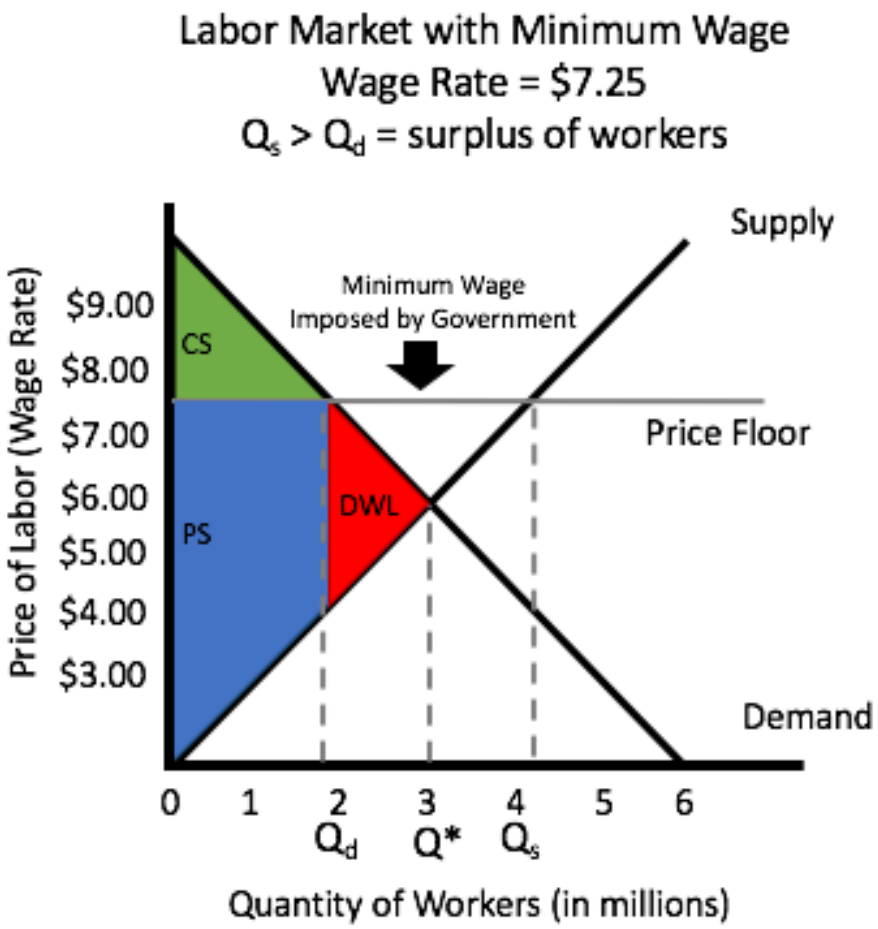


However, we know that the government does not allow companies, legally, to pay workers $6 per hour. We have minimum wage law in our country, which will prevent this market from establishing equilibrium.

HINT

Note, before we move on, that there is no deadweight loss at equilibrium, with consumer and producer surplus maximized.

Now, in order for a price floor to be effective, it must be set above equilibrium. Remember, this is the minimum that the government will allow employers to pay their workers. Therefore, employers can certainly pay people more than $7.25, but they cannot pay people the $6 wage that is clearing the market. The minimum employers can pay is $7.25.



Most people in our country would agree that we do need minimum wage law. However, it is going to create another issue, because the market will not be allowed to clear at this wage rate.

We know that as prices rise, the quantity supplied will increase. Therefore, more workers are willing to supply their labor at the higher wage, but again, while the government can force employers to pay minimum wage, it cannot force employers to hire as many workers or to maintain workers at full time.

So, employers are less willing to hire and the quantity demanded for labor falls. Again, now we have a gap between the quantity supplied and the quantity demanded. This time, we have quantity supplied greater than the quantity demanded, which creates a **surplus** of labor.

A surplus is a situation, often caused by an imposed constraint like minimum wage, that results in excess of supply or a shortage of demand, occurring at the market price due to the inability of the market to adjust to the market clearing price and quantity.

TERMS TO KNOW

Binding Constraint
A price level bounding that pre-empts market clearing

Price Ceiling
A set price level bounding the highest price at which a good or service may be sold; typically initiated by a government or regulatory body—ex., rent control policy

Shortage (Market)

The opposite side to a surplus. A situation, often caused by an imposed constraint, that results in a shortage of supply occurring at the market price due to the inability of the market to adjust to market clearing price and quantity.

Price Floor
A set price level bounding the lowest price at which a good or service may be sold; typically initiated by a government or regulatory body—ex., minimum wage

Surplus (Market)
A situation, often caused by an imposed constraint, that results in excess of supply occurring at the market price due to the inability of the market to adjust to market clearing price and quantity

SUMMARY

We began today's lesson by discussing how in free markets, **equilibrium** is the price and quantity pair where supply and demand intersect, or the market clears. We learned about how government policies can alter market outcomes. **Binding constraints** like **price ceilings** and **price floors** do not allow equilibrium to be reached. Ceilings are going to create shortages, where the quantity demanded is greater than the quantity supplied. Floors will create surpluses, where the quantity supplied is greater than the quantity demanded. Remember, neither of them allows equilibrium. We also learned that a **non-binding constraint** is one that has no market impact at all.

Source: Adapted from Sophia instructor Kate Eskra.

TERMS TO KNOW

Binding Constraint
A price level bounding that pre-empts market clearing.

Equilibrium
The price and quantity pair at which supply and demand intersect; price and quantity at which the market clears.

Non-Binding Constraint
A price level bounding that is ineffective relative to the existing market clearing price and quantity combination.

Price Ceiling
A set price level bounding the highest price at which a good or service may be sold; typically initiated by a government or regulatory body—ex.rent control policy.

Price Floor
A set price level bounding the lowest price at which a good or service may be sold; typically initiated by a government or regulatory body—ex. Minimum wage.

Shortage (Market)
The opposite side to a surplus. A situation, often caused by an imposed constraint, that results in a shortage

of supply occurring at the market price due to the inability of the market to adjust to market clearing price and quantity.

Surplus (Market)
A situation, often caused by an imposed constraint, that results in excess of supply occurring at the market price due to the inability of the market to adjust to market clearing price and quantity.