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## Key points

- **Price ceilings** prevent a price from rising above a certain level.
- When a price ceiling is set below the equilibrium price, quantity demanded will exceed quantity supplied, and excess demand or shortages will result.
- **Price floors** prevent a price from falling below a certain level.
- When a price floor is set above the equilibrium price, quantity supplied will exceed quantity demanded, and excess supply or surpluses will result.
- When government laws regulate prices instead of letting market forces determine prices, it is known as **price control**.

## Introduction

Controversy sometimes surrounds the prices and quantities established by demand and supply, especially for products that are considered necessities. In some cases, discontent over prices turns into public pressure on politicians, who may then pass legislation to prevent a certain price from climbing “too high” or falling “too low”.

Economists can predict how people and firms will react to laws that control price by using the demand and supply model—by the end of this article, you'll be able to make these predictions as well!

## Price ceilings

Laws enacted by the government to regulate prices are called *price controls*. Price controls come in two flavors. A *price ceiling* keeps a price from rising above a certain level—the “ceiling”. A *price floor* keeps a price from falling below a certain level—the “floor”.

We can use the demand and supply framework to understand price ceilings.

In many markets for goods and services, demanders outnumber suppliers. Consumers, who are also potential voters, sometimes unite to convince the government to hold down a certain price.

For example, when rents begin to rise rapidly in a city—perhaps due to rising incomes or a change in tastes—renters may press political leaders to pass rent control laws, a price ceiling that usually works by stating that rents can be raised by only a certain maximum percentage each year.

Let's expand this example by thinking about a hypothetical town. Rent was fairly stable. But then, the town was featured on a top-ten-places-to-live article in a popular magazine. Eventually, rent control laws were passed.

We can use the demand and supply model below to understand how the market changed based on this event.

In the beginning, before the article was published, the equilibrium,  $E_0$  is at the intersection of supply curve  $S_0$  and demand curve  $D_0$  corresponding to an equilibrium price of \$500 and an equilibrium quantity of 15,000 units of rental housing.

When the article inspired more people to want to move to our imaginary town, it shifted the demand curve for rental housing to the right, as shown by the data in the table below and the shift from  $D_0$  to  $D_1$  on the graph. In the new market, at the new equilibrium  $E_1$  the price of a rental unit rose to, \$600 and the equilibrium quantity increased to 17,000 units.



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The graph shows a shift in demand with a price ceiling. The original intersection of demand and supply occurs at  $E_0$ . If demand shifts from  $D_0$  to  $D_1$ , the new equilibrium would be at  $E_1$ —unless a

price ceiling prevents the price from rising. If the price is not permitted to rise, the quantity supplied remains at 15,000. However, after the change in demand, the quantity demanded rises to 19,000, resulting in a shortage.

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#### Rent control

Price	Original quantity supplied	Original quantity demanded	New quantity demanded
\$400	12,000	18,000	23,000
\$500	15,000	15,000	19,000
\$600	17,000	13,000	17,000
\$700	19,000	11,000	15,000
\$800	20,000	10,000	14,000

Now, let's suppose that a bunch of residents were pretty unhappy with paying a 20% increase in their rent. They pressured local politicians to pass a rent control law to keep the price at the original equilibrium of \$500 for a typical apartment.

In the demand and supply model above, the horizontal line at the price of \$500 shows the legally fixed maximum price set by the rent control law. However, the underlying forces that shifted the demand curve to the right are still there. At the fixed maximum price of \$500, the quantity supplied remains at the same 15,000 rental units, but the quantity demanded is 19,000 rental units. In other words, the quantity demanded exceeds the quantity supplied, so there is a shortage of rental housing.

The effects of price ceilings are complex and sometimes unexpected. In the case of rent control, the price ceiling doesn't simply benefit renters at the expense of landlords. Rather, some renters—or potential renters—lose their housing as landlords convert apartments to co-ops and condos. There are actually fewer apartments rented out under the price ceiling—15,000 rental units—than would be the case at the market rent of \$600—17,000 rental units. And, even when housing remains in the rental market, landlords tend to spend less on maintenance and on essentials like heating, cooling, hot water, and lighting.

The first rule of economics is you do not get something for nothing—everything has an opportunity cost. So if renters get “cheaper” housing than the market requires, they tend to also end up with lower quality housing.

Price ceilings are enacted in an attempt to keep prices low for those who demand the product—be it housing, prescription drugs, or auto insurance. But when the market price is not allowed to rise to the equilibrium level, quantity demanded exceeds quantity supplied, and thus a shortage occurs. Those who manage to purchase the product at the lower price given by the price ceiling will benefit, but sellers of the product will suffer, along with those who are not able to purchase the product at all. Quality is also likely to deteriorate.

## Price floors

A price floor is the lowest legal price that can be paid in a market for goods and services, labor, or financial capital. Perhaps the best-known example of a price floor is the minimum wage, which is based on the normative view that someone working full time ought to be able to afford a basic standard of living. The federal minimum wage at the end of 2014 was \$7.25 per hour, which yields an income for a single person slightly higher than the poverty line. As the cost of living rises over time, Congress periodically raises the federal minimum wage.

Price floors are sometimes called price supports because they support a price by preventing it from falling below a certain level. Around the world, many countries have passed laws to create agricultural price supports. Farm prices, and thus farm incomes, fluctuate—sometimes widely. So even if, on average, farm incomes are adequate, some years they can be quite low. The purpose of price supports is to prevent these swings.

The most common way price supports work is that the government enters the market and buys up

the product, adding to demand to keep prices higher than they otherwise would be.

We can take a look at the demand and supply model below to understand better the effects of a government program that creates a price above the equilibrium. This particular model represents the market for wheat in Europe.

In the absence of government intervention, the price of wheat would adjust so that the quantity supplied would equal the quantity demanded at the equilibrium point  $E_0$  with price  $P_0$  and quantity  $Q_0$ . However, policies to keep prices high for farmers keep the price above what would have been the market equilibrium level—the price  $P_f$  shown by the horizontal line in the diagram. The result is a quantity supplied in excess of the quantity demanded— $Q_s - Q_d$ . When quantity supplied exceeds quantity demanded, a surplus exists.



The graph shows an example of a price floor which results in a surplus. The intersection of demand,  $D$ , and supply,  $S$ , would be at the equilibrium point  $E_0$ . However, a price floor set at  $P_f$  holds the price above  $E_0$  and prevents it from falling. The result of the price floor is that the quantity supplied,  $Q_s$ , exceeds the quantity demanded,  $Q_d$ . There is excess supply, also called a surplus.

Image credit: *Figure 2* in "[Price Ceilings and Price Floors](#)" by OpenStaxCollege, [CC BY 4.0](#)

Our example is hypothetical, but the concept plays out in the real world as well. If a government is willing to purchase excess agricultural supply—or to provide payments for others to purchase it—then farmers will benefit from the price floor, but taxpayers and consumers of food will pay the costs.

## Do price ceilings and floors change demand or supply?

Neither price ceilings nor price floors cause demand or supply to change. They simply set a price that limits what can be legally charged in the market.

Remember, changes in price do not cause demand or supply to change. Price ceilings and price floors can cause a different choice of quantity demanded along a demand curve, but they do not move the demand curve. Price controls can cause a different choice of quantity supplied along a supply curve, but they do not shift the supply curve.

## Summary

Price ceilings prevent a price from rising above a certain level. When a price ceiling is set below the equilibrium price, quantity demanded will exceed quantity supplied, and excess demand or shortages will result.

Price floors prevent a price from falling below a certain level. When a price floor is set above the equilibrium price, quantity supplied will exceed quantity demanded, and excess supply or surpluses will result.

Price floors and price ceilings often lead to unintended consequences.

## Self-check questions

- What is the effect of a price ceiling on the quantity demanded of the product? What is the effect of a price ceiling on the quantity supplied? Why exactly does a price ceiling cause a shortage?

[\[Show solution.\]](#)

A price ceiling—which is below the equilibrium price—will cause the quantity demanded to rise and the quantity supplied to fall. This is why a price ceiling creates a shortage.

- Does a price ceiling change the equilibrium price?

[\[Show solution.\]](#)

A price ceiling is just a legal restriction. Equilibrium is an economic condition. People may or may not obey the price ceiling—the actual price may be at or above the price ceiling—but the price ceiling does not change the equilibrium price.

- What would be the impact of imposing a price floor below the equilibrium price?

[\[Show solution.\]](#)

A price ceiling is a legal maximum price, but a price floor is a legal minimum price and, consequently, it would leave room for the price to rise to its equilibrium level. In other words, a price floor below equilibrium will not be binding and will have no effect.

## Review questions

- Does a price ceiling attempt to make a price higher or lower?
- How does a price ceiling set below the equilibrium level affect quantity demanded and quantity supplied?
- Does a price floor attempt to make a price higher or lower?
- How does a price floor set above the equilibrium level affect quantity demanded and quantity supplied?

## Critical thinking questions

- What are the effects of raising the minimum wage? The answer is more complex than the idea that producers lose and workers gain. Who benefits and who loses, and what exactly do they gain and lose? To what extent does the policy change achieve its goals?
- Agricultural price supports result in governments holding large inventories of agricultural products. Why do you think the government cannot simply give the products away to people living in poverty?
- Can you propose a policy that would induce the market to supply more rental housing units?

## Problems

A low-income country decides to set a price ceiling on bread so it can make sure that bread is affordable to people living in poverty.

The conditions of demand and supply are given in the table below.

**What are the equilibrium price and equilibrium quantity before the price ceiling? What will the excess demand or the shortage—quantity demanded minus quantity supplied—be if the price ceiling is set at \$2.40? At \$2.00? At \$3.60?**

Price	Qd	Qs
\$1.60	9,000	5,000
\$2.00	8,500	5,500
\$2.40	8,000	6,400
<b>\$2.80</b>	<b>7,500</b>	<b>7,500</b>
\$3.20	7,000	9,000
\$3.60	6,500	11,000
\$4.00	6,000	15,000

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