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## Key points

- The key concept when thinking about how to collect the most revenue is the price elasticity of demand.
- The price elasticity of demand also plays a key role in determining if a firm can pass the cost of key input price increases to consumers or benefit from reductions in input costs.

## Elasticity and pricing

Studying elasticities is useful for a number of reasons, pricing being most important. Let's start by looking at the elasticities of some common goods and services.

The table below shows a selection of demand elasticities for different goods and services drawn from a variety of different studies by economists, listed in order of increasing elasticity.

Goods and services	Elasticity of price
Housing	0.12
Transatlantic air travel, economy class	0.12
Rail transit, rush hour	0.15
Electricity	0.20
Taxi cabs	0.22
Gasoline	0.35
Transatlantic air travel, first class	0.40
Wine	0.55
Beef	0.59
Transatlantic air travel, business class	0.62
Kitchen and household appliances	0.63
Cable TV, basic rural	0.69
Chicken	0.64
Soft drinks	0.70
Beer	0.80
New vehicle	0.87
Rail transit, off-peak	1.00
Computer	1.44
Cable TV, basic urban	1.51
Cable TV, premium	1.77
Restaurant meals	2.27

Note that necessities such as housing and electricity are inelastic, while items that are not necessities such as restaurant meals are more price sensitive. If the price of the restaurant meal increases by 10%, the quantity demanded will decrease by 22.7%. A 10% increase in the price of housing will cause a slight decrease of 1.2% in the quantity of housing demanded.

## Does raising price bring in more revenue?

Imagine that a band on tour is playing in an indoor arena with 15,000 seats. To keep this example

simple, assume that the band keeps all the money from ticket sales. Assume further that the band pays the costs for its appearance, but that these costs—travel, setting up the stage, and so on—are the same regardless of how many people are in the audience. Finally, assume that all the tickets have the same price—the same insights apply if ticket prices are more expensive for some seats than for others, but the calculations become more complicated.

The band knows that it faces a downward-sloping demand curve; that is, if the band raises the price of tickets, it will sell fewer tickets. How should the band set the price for tickets to bring in the most total revenue, which in this example—because costs are fixed—will also mean the highest profits for the band? Should the band sell more tickets at a lower price or fewer tickets at a higher price? The key concept in thinking about collecting the most revenue is the price elasticity of demand. Total revenue is price times the quantity of tickets sold. Imagine that the band starts off thinking about a certain price, which will result in the sale of a certain quantity of tickets. The three possibilities are laid out in the table below.

If demand is . . .	Then . . .
Elastic	A given % rise in price will be more than offset by a larger % fall in quantity so that total revenue— $(P \times Q)$ —falls.
Unitary	A given % rise in price will be exactly offset by an equal % fall in quantity so that total revenue— $(P \times Q)$ —is unchanged.
Inelastic	A given % rise in price will cause a smaller % fall in quantity so that total revenue— $(P \times Q)$ —rises.

If demand is elastic at the band's chosen price level, then the band should cut the price because the percentage drop in price will result in an even larger percentage increase in the quantity sold, thus raising total revenue. However, if demand is inelastic at that original quantity level, then the band should raise the price of tickets because a certain percentage increase in price will result in a smaller percentage decrease in the quantity sold—and total revenue will rise. If demand has a unitary elasticity at the chosen quantity, then a moderate percentage change in the price will be offset by an equal percentage change in quantity—so the band will earn the same revenue whether it, moderately, increases or decreases the price of tickets.

What if the band keeps cutting price—because demand is elastic—until it reaches a level where all 15,000 seats in the available arena are sold? If demand remains elastic at that quantity, the band might try to move to a bigger arena so that it could cut ticket prices further and see a larger percentage increase in the quantity of tickets sold. Of course, if the 15,000-seat arena is all that is available or if a larger arena would add substantially to costs, then this option might not work.

A few bands are so famous, or have such fanatical followings, that demand for tickets may be inelastic right up to the point where the arena is full. These bands can, if they wish, keep raising the price of tickets. Some of the most popular bands could actually make more revenue by setting prices so high that the arena is not filled—but those who buy the tickets would have to pay very high prices. However, bands sometimes choose to sell tickets for less than the absolute maximum they might be able to charge, often in the hope that fans will feel happier and spend more on recordings, t-shirts, and other paraphernalia.

## Can costs be passed on to consumers?

Most businesses face a day-to-day struggle to figure out ways to produce at a lower cost—one pathway to their goal of earning higher profits. In some cases, however, the price of a key input over which the firm has no control may rise.

For example, many chemical companies use petroleum as a key input, but they have no control over the world market price for crude oil. Coffee shops use coffee as a key input, but they have no control over the world market price of coffee.

If the cost of a key input rises, can the firm pass those higher costs along to consumers in the form

of higher prices? Or, on the other hand, if new and less expensive ways of producing are invented, can the firm keep the benefits in the form of higher profits, or will the market pressure them to pass the gains along to consumers in the form of lower prices? The price elasticity of demand plays a key role in answering these questions.

cigarettes smoked by adults, so the elasticity of demand for cigarettes is 0.3. If society increases taxes on companies that make cigarettes, the result will be—as shown in diagram A below on the left—that the supply curve shifts from  $S_0$  to  $S_1$ . However, as the equilibrium moves from  $E_0$  to  $E_1$ , these taxes are mainly passed along to consumers in the form of higher prices. These higher prices ,

## Review questions

- If demand is elastic, will shifts in supply have a larger effect on equilibrium quantity or on price?
- If demand is inelastic, will shifts in supply have a larger effect on equilibrium price or on quantity?
- If supply is elastic, will shifts in demand have a larger effect on equilibrium quantity or on price?
- If supply is inelastic, will shifts in demand have a larger effect on equilibrium price or on quantity?

## Critical-thinking questions

- Would you expect supply to play a more significant role in determining the price of a basic necessity like food or a luxury like perfume? Explain. *Hint: Think about how the price elasticity of demand will differ between necessities and luxuries.*
- A city has built a bridge over a river and it decides to charge a toll to everyone who crosses. For one year, the city charges a variety of different tolls and records information on how many drivers cross the bridge. The city thus gathers information about elasticity of demand. If the city wishes to raise as much revenue as possible from the tolls, where will the city decide to charge a toll? In the inelastic portion of the demand curve, the elastic portion of the demand curve, or the unit elastic portion? Explain.

## Practice problem

Assume that the supply of low-skilled workers is fairly elastic, but the employers' demand for such workers is fairly inelastic. If the policy goal is to expand employment for low-skilled workers, is it better to focus on policy tools to shift the supply of unskilled labor or on tools to shift the demand for unskilled labor? What if the policy goal is to raise wages for this group? Explain your answers with supply and demand diagrams.

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