Chapter 4 Elasticity of Demand, Part 3

The Importance of Elasticity for Total Revenue

Introduction

You have already learned that price elasticity of demand measures how strongly buyers respond when price changes. That definition is important, but the larger reason you study elasticity is that it helps you predict what happens to a seller's total revenue when price changes. Since total revenue equals price multiplied by quantity sold, every price change creates two effects at the same time: the direct effect of the new price and the quantity effect that comes from how consumers respond. Elasticity helps you decide which effect is stronger.[1]

This makes elasticity a bridge between consumer behavior and business decision-making. Demand still describes the behavior of buyers, but firms use elasticity information when they decide whether a price increase is likely to help or hurt revenue. When demand is elastic, buyers respond strongly, so a higher price usually reduces revenue. When demand is inelastic, buyers respond only weakly, so a higher price usually raises revenue. When demand is unit elastic, the percentage change in price and the percentage change in quantity offset one another, so total revenue remains unchanged in principle.[2]

What Total Revenue Means

Total revenue is the total amount a firm receives from sales before subtracting production costs, wages, rent, taxes, or other expenses. In introductory economics, you can write it simply as:

$$\mathbf{TR = P \times Q}$$

In this formula, TR means total revenue, P means the price per unit, and Q means the quantity sold. Do not confuse total revenue with profit. Profit depends on both revenue and cost, while total revenue looks only at the sales side of the firm's position.[3]

The practical question is straightforward: if a seller changes price, will total revenue rise, fall, or stay about the same? Elasticity helps you answer that question because it tells you whether the quantity response is strong enough to outweigh the price change.

The Revenue Rule by Type of Demand

Demand category	If price rises	If price falls	Why
Elastic (|PED| > 1)	Total revenue falls	Total revenue rises	Quantity changes by a larger percentage than price
Unit elastic (|PED| = 1)	Total revenue unchanged	Total revenue unchanged	Percentage change in quantity matches percentage change in price
Inelastic (|PED| < 1)	Total revenue rises	Total revenue falls	Quantity changes by a smaller percentage than price

Use this table as your guide. The relationship between price and total revenue depends on whether quantity demanded changes more than, less than, or exactly as much as price changes.

Why Elastic Demand Changes Revenue in the Opposite Direction of Price

When demand is elastic, consumers are highly responsive to price. A small price decrease attracts a more than proportional increase in quantity demanded. The firm receives less per unit, but it sells enough additional units to more than make up for the lower price. As a result, total revenue rises when price falls. The reverse is also true. If a seller raises price in an elastic market, the loss in quantity demanded is larger than the gain from the higher price, so total revenue falls.[4]

You will often see this pattern in markets with many close substitutes, a longer period for adjustment, and products that take a noticeable share of a household budget. In those settings, buyers can compare alternatives and change behavior fairly quickly. That is why firms in competitive retail markets, entertainment, travel, and branded consumer goods usually think carefully before raising price.[5]

Why Inelastic Demand Changes Revenue in the Same Direction as Price

When demand is inelastic, buyers do not reduce quantity demanded very much after a price increase. The quantity effect still exists, but it is weaker than the price effect. Therefore, a higher price increases total revenue because the firm receives more per unit while losing relatively few sales. If the firm cuts price in an inelastic market, total revenue falls because the extra quantity sold is not large enough to offset the lower price.[6]

Inelastic demand is more common for necessities, goods with few close substitutes, products that take only a small share of the buyer's budget, or products for which consumers need time to adjust. This helps explain why businesses selling medications, basic utilities, or specialized goods often face different pricing conditions from firms selling luxury goods or highly substitutable consumer products.[7]

Unit Elastic Demand and Revenue Stability

Unit elasticity is the dividing line between elastic and inelastic demand. If demand is unit elastic, the percentage change in quantity demanded exactly offsets the percentage change in price. For example, a 10 percent fall in price would be matched by a 10 percent rise in quantity demanded. In that special case, total revenue remains unchanged. This benchmark is useful because it makes the classification rule clear: less than one means inelastic, equal to one means unit elastic, and greater than one means elastic.[8]

As you study the total-revenue rule, try to learn the meaning before you memorize the numbers. The most important question is not simply, "What number did I get?" The important question is, "Did quantity respond more than price, less than price, or by the same proportion?" Once you understand that logic, the elasticity categories become much easier to remember.[9]

Why Firms Care About Elasticity More Than Buyers Do

Consumers usually do not calculate elasticity ratios while shopping. Firms and suppliers, however, often think about elasticity either directly through data or indirectly through experience. A seller must choose a price, and that price affects revenue, market share, and possibly long-run profit. Because firms need a framework for predicting the revenue consequences of price changes, elasticity becomes an essential planning tool. Modern economics texts therefore teach elasticity not only as a property of demand curves, but also as a guide to pricing decisions.[10]

At the same time, elasticity does not tell a firm everything it needs to know. A revenue increase is not automatically a profit increase. If a lower price raises revenue but requires much higher output and much higher cost, profit may still fall. A firm may also avoid a large price increase even when demand is inelastic if it is worried about customer goodwill, future competition, or regulatory oversight. Revenue analysis is a major step in decision-making, but it is not the final step.[11]

A Simple Numerical Illustration

Suppose a firm sells 100 units at $10 each. Its total revenue is $1,000. If the firm cuts the price to $9 and quantity sold rises to 125 units, total revenue becomes $1,125. In this case, demand is elastic enough that the larger quantity sold outweighs the lower price. By contrast, if the same price cut raises quantity only to 105 units, total revenue becomes $945. That would indicate inelastic demand over that price range. These simple arithmetic comparisons reinforce the broader rule: elasticity tells suppliers whether the quantity response is strong enough to dominate the price change.[12]

Summary

The importance of elasticity of demand for total revenue is that every price change affects a seller in two ways at once. It changes the amount received per unit, and it changes the number of units sold. Price elasticity of demand measures the strength of the quantity response. If demand is elastic, price and total revenue move in opposite directions. If demand is inelastic, price and total revenue move in the same direction. If demand is unit elastic, total revenue remains unchanged. This is why elasticity, although rooted in consumer behavior, becomes one of the most practical tools firms use when evaluating pricing decisions.[13]

Endnotes

1. Steven A. Greenlaw, David Shapiro, and Daniel MacDonald, Principles of Economics 3e (Houston: OpenStax, 2022), chap. 5, especially section 5.3, "Elasticity and Pricing."

2. CORE Econ, The Economy 2.0: Microeconomics, section 7.5, "Demand, elasticity, and revenue."

3. Greenlaw, Shapiro, and MacDonald, Principles of Economics 3e, chap. 5; N. Gregory Mankiw, Principles of Economics, 10th ed. (Boston: Cengage, 2024), chapter on elasticity.

4. OpenStax, section 5.3, explains that with elastic demand a fall in price increases total revenue, whereas a rise in price decreases it.

5. Greenlaw, Shapiro, and MacDonald, Principles of Economics 3e, section 5.1; CORE Econ, section 7.5.

6. OpenStax, section 5.3.

7. Mankiw, Principles of Economics; Hal R. Varian, Intermediate Microeconomics: A Modern Approach, 9th ed. (New York: W. W. Norton, 2014), discussion of demand responsiveness and market behavior.

8. OpenStax, section 5.1.

9. Mankiw, Principles of Economics; R. Glenn Hubbard and Anthony Patrick O'Brien, Microeconomics, 9th ed. (Boston: Pearson, 2023), chapter on elasticity and pricing.

10. CORE Econ, section 7.5; The Economy 2.0 summary of Unit 7.

11. Varian, Intermediate Microeconomics; Robert S. Pindyck and Daniel L. Rubinfeld, Microeconomics, 9th ed. (Boston: Pearson, 2018).

12. This numerical logic parallels the total-revenue test presented in standard principles texts such as OpenStax and Mankiw.

13. Greenlaw, Shapiro, and MacDonald, Principles of Economics 3e, sections 5.1 and 5.3; CORE Econ, section 7.5.

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