NO PREP

Supply's Sensitivity

Understanding Price Elasticity of Supply

Includes: Student reading, case study, differentiated questions, teacher key

Name: Period: Date:

Supply's Sensitivity: Understanding Price Elasticity of Supply

Defining Supply Elasticity

Price elasticity of supply measures how responsive producers are to price changes: it's the percentage change in quantity supplied divided by the percentage change in price (%ΔQS / %ΔP). When elasticity exceeds 1, supply is elastic—small price increases yield proportionally larger output expansions. When elasticity is less than 1, supply is inelastic—output barely budges even when prices rise. Unitary elasticity (equal to 1) means output changes proportionally with price. Grasping supply elasticity helps firms plan capacity investments and guides policymakers in anticipating how markets will react to taxes, subsidies, or price supports.

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Short Run vs. Long Run Elasticities

In the short run, many production inputs are fixed. Factories operate at existing capacity, and land or equipment cannot be quickly added, so supply is relatively inelastic. Over the long run, firms can adjust all inputs: build new plants, hire more workers, or adopt new technologies, rendering supply more elastic. For example, a factory may struggle to boost output immediately if machinery is running at full tilt (short-run), but over months it can install additional production lines (long-run). Recognizing these temporal differences allows analysts to predict how quickly supply can respond to price changes. This table illustrates why some industries (from clothing manufacturing to digital services) can scale up swiftly, while others, like heavy machinery, require extended lead times.

Real-World Variations

Agricultural goods often exhibit inelastic supply in the short run due to planting and harvesting cycles; farmers cannot instantly increase crop acreage in response to price spikes. However, in the long run, they may invest in irrigation or greenhouse

technology, making supply more elastic. In contrast, digital products like e-books or software can scale almost unlimitedly at low incremental cost, showing highly elastic supply even immediately after a price rise.

Key Information: Key Factors Influencing Supply Elasticity

Factor	Makes Supply More Elastic	Makes Supply More Inelastic
Input mobility	Easily reallocate labor and capital	Specialized machinery with limited use
Spare capacity	Excess capacity to ramp up production	Plants already at full capacity
Stockpiling potential	Ability to hold inventories	Perishable goods or inventory constraints
Production time frame	Quick production cycles (e.g., textiles)	Long, complex processes (e.g., shipbuilding)

Case Study Excerpt: Vaccine Production During a Pandemic

In early 2021, global health agencies forecast a massive surge in vaccine demand to combat a novel virus. Initial contract manufacturers had limited capacity, and production facilities ran at full tilt, reflecting short-run inelastic supply. When vaccine prices rose from $5 per dose to $15, doses supplied only increased by 10% over the first quarter, yielding an elasticity of approximately 0.05. Over the following year, vaccine makers expanded capacity by building modular fill-finish plants and licensing additional manufacturers, transforming global supply capacity. Input suppliers—vial and reagent producers—also ramped up output through overtime shifts and new facilities. By mid-2022, production had quadrupled, and elasticity approached 1.2, indicating elastic supply. Countries that had struggled with shortages early in the pandemic now accessed ample doses at moderate prices. This dramatic shift underscores how long-run adjustments—new infrastructure, regulatory approvals, and supply-chain expansions—can turn an initially inelastic supply into an elastic one.

1. What factors caused vaccine supply to be inelastic in the short run?

_____

_____

2. Identify the changes that led to supply becoming elastic over the following year.

_____

_____

Multiple Choice

1. If a 10% price increase leads to a 20% rise in output, supply is:
    a) Elastic
    b) Unitary elastic
    c) Perfectly inelastic
    d) Inelastic

2. In the short run, a perishable fruit's supply is most likely:
    a) Perfectly elastic
    b) Unitary elastic
    c) Inelastic
    d) Elastic

3. Over the long run, firms can adjust capacity, so supply elasticity generally:
    a) Becomes zero
    b) Rises
    c) Falls
    d) Remains unchanged

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ Spare capacity	A) More inelastic—approval processes slow capacity expansion
2. ___ Input specificity	B) More elastic—can increase output without new investment
3. ___ Production lead time	C) More elastic—stockpiled goods smooth short-run supply
4. ___ Inventory flexibility	D) More inelastic—requires specialized resources
5. ___ Regulatory barriers	E) More inelastic—long setup delays reduce responsiveness

Fill-in-the-Blank

1. Price elasticity of supply equals the percentage change in _____ divided by the percentage change in _____.

2. Industries with lengthy plant construction times typically have _____ supply in the short run.

3. Maintaining _____ allows firms to meet sudden demand spikes without altering production immediately.

Short Answer

Answer each question in 2-4 complete sentences.

1. Explain why digital products often show highly elastic supply immediately after a price rise.

_____

_____

_____

2. Describe how modular fill-finish plants transformed vaccine supply responsiveness over the pandemic.

3. Contrast how short-run inelasticity and long-run elasticity affect price volatility.