NO PREP

Markets & the State

Government's Role in Supply and Demand

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

Name: Period: Date:

Markets & the State: Government's Role in Supply and Demand

Rationale for Government Intervention

In theory, competitive markets allocate resources efficiently: prices rise when demand outstrips supply, signaling producers to increase output; prices fall when supply exceeds demand, signaling consumption to rise. Yet markets sometimes fail to account for broader social impacts—externalities, public goods, and equity considerations—prompting government action. An externality occurs when a transaction imposes costs or benefits on third parties (e.g., pollution from factories imposes health costs on nearby residents). Public goods, such as national defense or basic scientific research, are non-rivalrous (one person's consumption doesn't reduce another's) and non-excludable (cannot easily prevent non-payers), leading private firms to

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Taxes and Subsidies: Shifting Supply Curves

A per-unit tax on producers effectively raises their marginal cost by the tax amount. Graphically, the entire supply curve shifts upward (or leftward) by that amount. Consumers face higher market prices, while producers receive a lower net price (market price minus tax). The result is a higher consumer price, lower producer revenue, and reduced equilibrium quantity. Governments collect tax revenue (the rectangle between price paid and price received), though some trades that would have benefited both parties no longer occur, creating deadweight loss. Conversely, a per-unit subsidy lowers producers' marginal cost by the subsidy amount, shifting supply downward (or rightward). Consumers enjoy lower prices, producers receive

higher net revenue, and equilibrium quantity rises. While total welfare increases through expanded trade, taxpayers bear the subsidy cost, which can lead to debates about budgetary priorities.

Regulations and Public Goods Provision

Beyond taxes and subsidies, governments use regulations—emission standards, safety requirements, licensing rules—to achieve policy goals. Regulations raise production costs, shifting supply inward and typically resulting in higher prices and lower output, though they yield social benefits (cleaner air, safer products). Governments also directly supply public goods, such as lighthouses or road infrastructure, funded by general taxation. Because these goods are non-excludable and non-rivalrous, private markets fail to deliver them at optimal levels.

Key Information: Integrated Policy-Impact Table

Policy Tool	Curve Shift	Net Producer Price	Equilibrium Quantity	Primary Welfare Effect
Per-unit Tax	Supply ↑ by tax amount	↓ (net of tax)	↓	Government revenue; deadweight loss
Per-unit Subsidy	Supply ↓ by subsidy amount	↑ (net of subsidy)	↑	Expanded consumer & producer surplus; fiscal cost
Emissions Regulation	Supply ↑ (higher compliance cost)	↓	↓	Environmental gain; possible reduced market efficiency

Policy Tool	Curve Shift	Net Producer Price	Equilibrium Quantity	Primary Welfare Effect
Public-Good Funding	Demand ↑ (public financing)	N/A	↑ (collective)	Increased social welfare from non-market provision
Price Ceiling (e.g., rent)	Price ≤ ceiling (cap)	→ capped lower	Shortage	Consumer savings for some; housing shortages
Price Floor (e.g., minimum wage)	Price ≥ floor (floor level)	↑	Surplus	Worker income gain for some; unemployment surplus

Case Study Excerpt: Greenvale's Carbon Tax and Renewable Subsidies

In January 2022, Greenvale—a mid-sized industrial economy—introduced a $30 per-ton carbon tax on fossil-fuel emissions to combat climate change. Oil refineries and power plants passed most of the cost to consumers, raising gasoline prices by $0.20 per gallon and electricity rates by 5%. Initial consumption of fossil fuels fell by 5%, reflecting modest elasticity in the short run. Simultaneously, the government used tax revenues to finance subsidies for wind and solar installations, effectively shifting renewable-energy supply downward. By 2024, renewable capacity in Greenvale had doubled and greenhouse-gas emissions from power generation had fallen by 25%. The carbon tax generated $500 million in annual revenue, which funded discounted transit passes and home-weatherization grants for low-income households—mitigating regressive effects. Surveys showed that 70% of residents supported the policy combination, citing both cleaner air and affordable transit. Analysts attribute Greenvale's success to the integrated approach: the tax penalized carbon, curbing fossil-fuel demand, while subsidies and public-transport investments provided sustainable alternatives, balancing efficiency (emissions reduction at lowest cost) and equity (protecting vulnerable groups).

1. Describe how Greenvale's carbon tax and renewable subsidies worked together to reshape the energy market.

2. Explain why reallocating tax revenues to transit and weatherization grants improved policy equity.

Multiple Choice

1. A per-unit subsidy on solar panels shifts the supply curve:

    a) Leftward horizontally

    b) Has no effect

    c) Upward by the subsidy amount

    d) Downward by the subsidy amount

2. Pigouvian (corrective) taxes aim to:

    a) Internalize external costs

    b) Maximize government revenue only

    c) Subsidize consumer spending

    d) Eliminate market demand entirely

3. Public goods are typically:

    a) Rivalrous and excludable

    b) Non-rivalrous and excludable

    c) Non-rivalrous and non-excludable

    d) Rivalrous and non-excludable

Matching

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

Term	Definition
1. ___ Carbon tax	A) Increases effective demand for public transport
2. ___ Subsidy	B) Shifts supply inward by increasing compliance costs
3. ___ Emissions regulation	C) Expands public-good provision (e.g., R&D)
4. ___ Transit voucher program	D) Raises consumer price and lowers net producer price by tax
5. ___ Research grants	E) Lowers consumer price and raises net producer price by subsidy

Fill-in-the-Blank

1. A tax on producers shifts the supply curve _____ by the tax amount.

2. Public goods are _____ (consumption doesn't reduce availability) and _____ (cannot easily exclude non-payers).

3. Recycling tax revenue into subsidies or grants can improve both _____ and _____ outcomes.

Short Answer

Answer each question in 2-4 complete sentences.

1. Explain how Greenvale's carbon tax influenced both fossil-fuel consumption and renewable-energy investment.

_____

_____

_____

2. Discuss why pairing a carbon tax with transit and home-weatherization grants was crucial for policy acceptance.

3. In your own words, contrast the market distortions caused by a price control versus those caused by a corrective tax.