

Econ 203 consumer theory

- Application of income and substitution effects
- Individual to market demand
- Demand elasticities

Gas tax and rebate program to reduce consumption of fossil fuels

Idea: because of income and subst'n effects, can alter consumption patterns by selective tax and rebate programs.
- Increase tax on gasoline, redistribute tax revenue by lump-sum transfer to consumers - effect on consumers?

Two goods: x_1 = gasoline, x_2 = "all other goods"

Initial budget set: $\{p_1, 1, M\}$, optimal bundle A

New budget set: $\{(p_1 + t), 1, M\}$, optimal bundle B

taxes paid = $t x_1^B$

in diagram: vertical distance between budget lines at B;
why?

Now: rebate taxes paid to consumer, so final budget set is $\{p_1 + t, 1, M'\}$, where $M' = M + tx_1^B$

- consumer buys bundle C

Individual has same money income at A and C, but chooses different bundles, with less gasoline - so tax-rebate policy had desired effect;

Individual worse off at C than at A: same income, but bundle A no longer attainable: money income and utility different.

If subsidy larger, allows purchase of A, will consumer choose A? Better or worse off (than at A)?

Suppose program is costly to administer?
Federal and Alberta Gov'ts surplus/rebate proposals?

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From individual to market demand

Suppose have demand curves for good 1 from two individuals.
What is MARKET demand, if only these two people?

Example: suppose Krystyn has demand $x_1 = 8 - 2p_1$

and Leigh has demand $x_1 = 8 - p_1$

Total demand? If good is free? Maximum price?

Krystyn's max price = 4, Leigh's max = 8;
for $0 \leq p < 4$, both in market; for $4 \leq p \leq 8$, only Leigh.

$$\text{Market demand} = \begin{cases} x_1 + x_2 = 16 - 3p_1 & 0 \leq p \leq 4 \\ x_2 = 8 - p_1 & 4 \leq p \leq 8 \end{cases}$$

for $p > 8$?

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Key points, here?

1. Aggregation is of individual *demand* curves, not *inverse demand* curves.
2. Graphically? Horizontal summation of curves.
3. Slope of market demand? Kink where individuals enter/leave.

Demand elasticity

1. What is it?
2. Why do we care?
3. How calculate it/them?

Elasticity measures responsiveness of quantity demanded in response to changes in exog variables determining demand: own price, cross price, income.

- measured in % to give better idea of impact

Def'ns:

1. Own price elasticity of demand: % change in quantity demanded from a 1% change in own price:

$$\eta = \frac{\Delta Q/Q}{\Delta P/P} = \frac{\Delta Q}{\Delta P} \frac{P}{Q}$$

=slope of demand curve x (P/Q)

Range of own price elasticity? $-\infty < \eta < 0$

elastic: $-\infty < \eta < -1$

unit elasticity: $\eta = -1$

inelastic: $0 < \eta \leq 0$

Features?

1. Linear demand curve - elasticity decreases as qty increases
2. Relation to total expenditure?

2. Cross-price elasticity: shift in demand curve

$$\eta_{xz} = \frac{\Delta Q_x / Q_x}{\Delta P_z / P_z}$$

- positive or negative
- competition policy: what is a market?

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3. Income elasticity of demand: $\varepsilon = \frac{\Delta Q / Q}{\Delta M / M}$

- positive or negative
- normal or inferior goods.

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