

Elasticity

- How sensitive buyers and sellers are to market conditions
Instead of studying direction of variable change, can study the size of change.

Elastic = quantity demanded changes significantly after price change

Inelastic: " " " only a small amount "

Generally, goods become more elastic over time as consumers are able to find substitutes or more able to adjust for price changes

Price Elasticity of Demand

$$E_d = \frac{Q_d \cdot \% \Delta}{P \cdot \% \Delta} \quad \begin{array}{l} \text{Quantity} \\ \text{demanded} \end{array} \text{ percentage change} \\ \text{price percentage change}$$

e.g. parking price increase by 50% $\Rightarrow \frac{-25\%}{+50\%} = -0.5$
result, 25% less people park there

$E_d = -0.5$ } Change was small, thus inelastic
Inverse relationship because negative

But issue with Percentage formula: 100 \rightarrow 80 = 20% change
80 \rightarrow 100 = 25% change

Can fix using The Midpoint Method

Midpoint Method - another way to find elasticity

Old price = P_1

New price = P_2

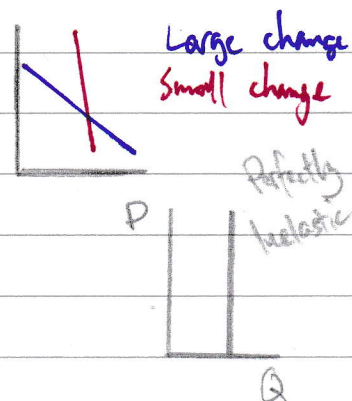
Old quantity = Q_1

New quantity = Q_2

$$E_d = \frac{(Q_2 - Q_1) / \left(\frac{Q_2 + Q_1}{2}\right)}{(P_2 - P_1) / \left(\frac{P_2 + P_1}{2}\right)} \quad \left(\frac{\Delta Q_d / \text{average of } Q}{\Delta P / \text{average of } P} \right)$$

Graphing Price Elasticity

Elastic = sensitive to price changes
Graph relatively flatter



Inelastic = not sensitive to price changes
Graph relatively steeper

Elasticity and slope of demand curve are related, but not the same
With a linear demand curve:

Slope will be the same at all points

Elasticity will be different at all points

As move down and RIGHT along ^{linear} demand curve, gets more inelastic

Total Revenue → related to Elasticity

Total Revenues = Price \times Quantity purchased

Firms interested in increasing total revenues.

Need to know whether to increase/decrease price to increase revenue

Showing trade-offs graphically: Increase price - higher price, sell less
Decrease price - lower price, sell more

Income Elasticity

$$E_I = \frac{\% \Delta Q_d}{\% \Delta I}$$

Buy a lot more as
 $E_I \uparrow$ Laptops
Holidays

Luxuries



$E_I \uparrow$, Normal goods \uparrow

$E_I \uparrow$, Inferior goods \downarrow

Instant ramen
Fast food
Cheap clothes

Buy a bit more as
 $E_I \uparrow$

Necessities

Good tp
Good clothes
Restaurants

Cross-price elasticity - measures the responsiveness of the quantity demanded of one good to a change in price of another good

$$E_3 = \frac{\% \Delta Q_d}{\% \Delta P}$$

Supply Elasticity

Measures the responsiveness of the quantity supplied to change in price

If price of a good increases, will a firm produce more of that good?
- Increase production?

A firm that has production flexibility = more elastic supply
if able to } = has extra capacity
= maintain inventory
= relocate easily

Immediate run - no adjustment

Short run = As more time passes, firm is

Long run able to adjust to market changes

Supply becomes more elastic over time