Introduction to Economics I
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Elasticity

Elasticity is a measure of a variable's sensitivity to a change in another variable.

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Price elasticity of demand

How does demand for a product respond when its price changes?

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Price elasticity of demand

$$\text{Elasticity} = \frac{\%\ \text{change in quantity}}{\%\ \text{change in price}}$$

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Price elasticity of demand

$\mathbf{e_{pd}}$**: price elasticity of demand**

- perfectly elastic demand: $-\infty$ or [∞].
- perfectly inelastic demand: 0.
- elastic demand: $\mathbf{e_{pd}} < -1$ [or $\mathbf{e_{pd}} > 1$].
- inelastic demand: $-1 < \mathbf{e_{pd}} < 0$ or [$0 < \mathbf{e_{pd}} < 1$].
- unitary elasticity: -1 [or 1].

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Factors Affecting Demand Elasticity

There are three main factors that influence a good's price elasticity of demand:

1. **Availability of Substitutes:**
2. **Necessity:**
3. **Time:**

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Availability of Substitutes: In general, the more good substitutes there are, the more elastic the demand will be. For example, if the price of a cup of coffee went up by $0.25, consumers might replace their morning caffeine fix with a cup of strong tea. This means that coffee is an elastic good because a small increase in price will cause a large decrease in demand as consumers start buying more tea instead of coffee. However, if the price of caffeine itself were to go up, we would probably see little change in the consumption of coffee or tea because there may be few good substitutes for caffeine. Most people in this case might not willing to give up their morning cup of caffeine no matter what the price. We would say, therefore, that caffeine is an inelastic product. While a specific product within an industry can be elastic due to the availability of substitutes, an entire industry itself tends to be inelastic. Usually, unique goods such as diamonds are inelastic because they have few if any substitutes.

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- **Necessity:** As we saw above, if something is needed for survival or comfort, people will continue to pay higher prices for it. For example, people need to get to work or drive for any number of reasons. Therefore, even if the price of gas doubles or even triples, people will still need to fill up their tanks.

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- **Time:** The third influential factor is time. If the price of cigarettes goes up $2 per pack, a smoker with very few available substitutes will most likely continue buying his or her daily cigarettes. This means that tobacco is inelastic because the change in price will not have a significant influence on the quantity demanded. However, if that smoker finds that he or she cannot afford to spend the extra $2 per day and begins to kick the habit over a period of time, the price elasticity of cigarettes for that consumer becomes elastic in the long run.

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elasticity of supply

A measure of the response of quantity of a good supplied to a change in price of that good.

Positive in output markets (law of supply).