The Monopolist's Demand Curve

$$\frac{P - MC}{P} = -\frac{1}{\eta}$$

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Lectures in Microeconomics-Charles W. Upton

The Monopolist's Demand Curve

 Want to develop some key propositions about the demand curve

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The Monopolist's Demand Curve

- Want to develop some key propositions about the demand curve
- Many of these center on elasticities

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The Monopolist's Demand Curve

- Want to develop some key propositions about the demand curve
- Many of these center on elasticities
- Then some applications

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The Monopolist's Demand

Marginal Revenue and Elasticity

· Recall our definition of point elasticity

$$\eta = Slope \frac{P}{O}$$



The Monopolist's Demand Curve

Marginal Revenue and Elasticity

• Recall our definition of point elasticity

$$\eta = Slope \frac{P}{Q}$$

• In the case of a linear demand function

$$Q = a - bP$$

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Marginal Revenue and Elasticity

• Recall our definition of point elasticity

$$\eta = Slope \frac{P}{Q}$$

Slope = -b

• In the case of a linear demand function

$$Q = a - bP$$

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Marginal Revenue and Elasticity

• A more general definition

$$\eta = \frac{dQ}{dP} \left(\frac{P}{Q} \right)$$

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Restating the Elasticity

$$\eta = \frac{dQ}{dP} \left(\frac{P}{Q} \right)$$

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Restating the Elasticity

$$\eta = \frac{dQ}{dP} \left(\frac{P}{Q} \right)$$

$$\frac{1}{\eta} = \left(\frac{1}{\frac{dQ}{dP}}\right) \left(\frac{Q}{P}\right)$$

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Restating the Elasticity

$$\frac{1}{\eta} = \left(\frac{1}{\frac{dQ}{dP}}\right) \left(\frac{Q}{P}\right)$$

$$P\frac{1}{\eta} = \left(\frac{1}{\frac{dQ}{dP}}\right) \left(\frac{Q}{P}\right) P$$

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The Monopolist's Demand Curve

Restating the Elasticity

$$P\frac{1}{\eta} = \left(\frac{1}{\frac{dQ}{dP}}\right) \left(\frac{Q}{P}\right) F$$

$$P\frac{1}{\eta} = \left(\frac{dP}{dQ}\right)Q$$

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Marginal Revenue and Elasticity

- The Monopolist cares about MR.
- There is a relation between MR and elasticity.

$$R = PQ$$

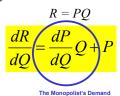
$$\frac{dR}{dQ} = \frac{dP}{dQ}Q + P$$

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The Monopolist's Demand Curve

Marginal Revenue and Elasticity

- The Monopolist cares about MR.
- There is a relation between MR and elasticity.



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Marginal Revenue and Elasticity

$$\frac{dP}{dQ}Q = MR - P$$

$$MR = \frac{dP}{dQ}Q + P$$

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The Monopolist's Demand

Marginal Revenue and Elasticity

• The Monopolist cares about MR.

R = dR

• There is a relation between MR and elasticity.

$$\frac{dP}{dQ}Q = MR - P$$

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Marginal Revenue and Elasticity

$$\frac{dP}{dQ}Q = MR - P$$

$$MR = \frac{dP}{dO}Q + P$$

$$MR = P\frac{dP}{dQ}\frac{Q}{P} + P$$



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Marginal Revenue and Elasticity

$$\frac{dP}{dO}Q = MR - P$$

$$MR = \frac{dP}{dQ}Q + P$$

$$MR = P\frac{dP}{dQ}\frac{Q}{P} + P$$

$$MR = P \left[\frac{dP}{dQ} \frac{Q}{P} + 1 \right]$$



Marginal Revenue and Elasticity

$$\frac{dP}{dQ}Q = MR - P$$

$$MR = \frac{dP}{dQ}Q + P$$

$$MR = P \frac{dP}{dQ} \frac{Q}{P} + P$$

$$MR = \left(\frac{dP}{dQ}\frac{Q}{P} + 1\right)$$

$$MR = P(\frac{1}{\eta} + 1) = P(1 + \frac{1}{\eta})$$

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The Monopolist's Demand Curve First Elasticity Relation

$$MR = P\left(1 + \frac{1}{\eta}\right)$$

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The Monopolist's Demand Curve

Second Elasticity Relation

$$MR = P\left(1 + \frac{1}{\eta}\right)$$

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Second Elasticity Relation

$$MR = P\left(1 + \frac{1}{\eta}\right)$$

$$MR = MC$$

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Second Elasticity Relation

$$|MR| = P(1 + \frac{1}{\eta})$$

$$MR = MC$$

$$MC = P\overline{\left(1 + \frac{1}{n}\right)}$$

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The Monopolist's Demand Curve Second Elasticity Relation

$$P\left(1+\frac{1}{\eta}\right)=MC$$

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Second Elasticity Relation

$$P = \left(\frac{MC}{1 + \frac{1}{\eta}}\right)$$

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Third Elasticity Relation

$$P\left(1+\frac{1}{\eta}\right)=MC$$

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Third Elasticity Relation

$$P(1 + \frac{1}{\eta}) = MC$$
$$P + P(\frac{1}{\eta}) = MC$$

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Third Elasticity Relation

$$P + P\left(\frac{1}{\eta}\right) = MC$$

$$P - MC = -P\left(\frac{1}{\eta}\right)$$

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Third Elasticity Relation

$$P - MC = -P\left(\frac{1}{n}\right)$$

$$\frac{P - MC}{P} = -\frac{1}{n}$$

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The Monopolist's Demand Curve

Third Elasticity Relation

$$\frac{P - MC}{P} = -\frac{1}{\eta}$$

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A Summary

$$MR = P\left(1 + \frac{1}{\eta}\right)$$

$$\frac{P - MC}{P} = -\frac{1}{\eta}$$

$$P = \left(\frac{MC}{1 + \frac{1}{\eta}}\right)$$

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The Monopolist's Demand Curve

End

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