Lerner Index Notes

After Wednesday’s discussion, I thought it may help you if I wrote some notes that are germane to the Lerner Index. Just keep in mind that the Lerner Index is a measure of market power for a monopolist. You may be tempted to think that a monopoly automatically is profitable. Not so, a monopolist need not have high profit margins. As the Lerner Index demonstrates, profit margins depend on the elasticity of demand facing the monopolist.

The following notes are designed to assist your understanding of the LI and monopoly.

1. Marginal revenue and elasticity

\[ MR = P \left(1 + \frac{1}{\varepsilon}\right) \]

Let \( \varepsilon = \frac{\% \Delta q}{\% \Delta p} = \frac{q}{\Delta p} \Rightarrow \lim_{\Delta q \to 0} \left( \frac{\Delta q}{\Delta p} \right) = \frac{dq}{dp} = \frac{dq}{dp} \frac{p}{p} \text{ and } MC = c \)

A. Large \( \varepsilon \Rightarrow \text{elastic demand, } \% \Delta q > \% \Delta p \) which means that consumers can find substitutes when a monopolist increases the price.

B. Small \( \varepsilon \Rightarrow \text{inelastic demand, } \% \Delta q < \% \Delta p \) which means that consumers can’t find substitutes when a monopolist increases the price.

2. Lerner Index derivation

\[ MR = MC \Rightarrow P \left(1 + \frac{1}{\varepsilon}\right) = c \]

Solve for \(-\frac{1}{\varepsilon}\)

\[ P \left(1 + \frac{1}{\varepsilon}\right) = c \Rightarrow P + \frac{P}{\varepsilon} = c \]

\[ \frac{P}{\varepsilon} = c - P \]

\[ -\frac{1}{\varepsilon} = \frac{P - c}{P} \quad \text{Lerner Index} \]
3. The Lerner index is a measure of market power for a monopolist.

Recall from your principles course that:

A. If a good is elastic, \(|\varepsilon|>1\).

\[ LI = \frac{1}{|\varepsilon|} = \frac{P-c}{P} \Rightarrow LI < 1 \text{ and } \frac{P-c}{P} (\text{the profit margin is small}). \]

When profit margins are low, market performance is high.

B. If a good is elastic, \(|\varepsilon|<1\).

\[ LI = \frac{1}{|\varepsilon|} = \frac{P-c}{P} \Rightarrow LI > 1 \text{ and } \frac{P-c}{P} (\text{the profit margin is large}). \]

When profit margins are high, market performance is low.

4. Lerner Index Graph

Understanding the Lerner Index is easier to understand when we look at it in a graph. When firms S (Inelastic Demand) and F (Elastic Demand) set their marginal revenues equal to their marginal costs, they produce \(Q_s\) and \(Q_f\).

A. Elastic demand has a small LI (little market power) \(\Rightarrow\) low price-cost margins \(\therefore\) High market performance.

B. Inelastic demand has a large LI (large market power) \(\Rightarrow\) high price-cost margins \(\therefore\) Low market performance.