Perfect Competition in the Long-Run

Warnings and Goals

Long-run, long enough for all inputs to be variable or long enough for entry and exit to take place.

Two approaches:

- Individual firms changing size, the intensive margin, which involves long-run average cost, is done in EC 311/415 at PSU.
- Firms entering and exiting, the extensive margin, is what we will do here.

Yes, we will do some small group practice on drawing the cost curves.

How Long is Long-Run

Long-Run : Long enough for all inputs to be variable or long enough for entry and exit to take place.

- Could be a week – think how fast you can move a food cart from one pod to another.
- Could be 10 years – The aluminum industry saw no entry for 10 years in the lead up to WWII.

There is never a specific time, but if a firm can enter and exit faster and change scale faster – they have an advantage (OODA Loop argument)

Long-Run Equilibrium Defined

- The market is in short-run equilibrium. Supply = Demand.
- Firms earn zero economic profit.

Off to breakout rooms to make cost curves where the firm earns zero economic profit.

Hints

Price should be equal to the minimum of average cost

- Find q^* where $MC = MR$
- Start at q^* go to AC and hang a left.
  - That is AC^*.
  - Box is Total Cost, $TC^* = AC^* q^*$
- Start at Start at q^* go to $AR = P = MR = D_{firm}$ and hang a left.
  - That is AR^*.
  - Box is Total Revenue, $TR^* = AR^* q^*$
- Little box on top is profit. (But has zero area)

Long-Run Equilibrium Graphically

Now change something

Increase the demand for the good.

- Demand increases and therefore price and market transactions increase.
- As price increases the individual firms:
  - Increase output
  - Increase profits
- Then in the long-run
  - Positive profits induce entry.
  - Entry causes an increase in supply (Increase in # of firms)
  - That reduces price and increases market transactions

And Then

- Individual firms then
  - Decrease output as the price falls
  - See decreased profit.
- Until a New Long-run equilibrium is established
  - Supply = Demand
  - Profits are zero

Now, you go do it.

Graphically

Summary of price and quantity changes

- Markets:
  - SR: Price increase and transactions increase.
  - LR: Supply increases which causes prices to fall and market transactions to increase.
- Individual Firms:
  - SR: Production and profits increase.
  - LR: Both production and profits decrease to original

In the end, there are more firms to serve the increased demand.

In Graphs

Now Lets Change the Rental Rate

Think of this as what happens to restaurants when the building rents increase.

- The AC function shifts up
- Individual Firms:
  - Don't change output, MC did not change.
  - Profits fall/become negative
- Then in the long-run
  - Negative profits induce exit.
  - Exit causes an decrease in supply (Decrease in # of firms)
  - That increases price and decreases market transactions

And Then

- Individual firms then
  - Increase output as the price increases
  - Profits improve.
- Until a New Long-run equilibrium is established
  - Supply = Demand
  - Profits are zero

Graphically

Summary of price and quantity changes

- Markets:
  - SR: Price increase and transactions increase.
  - LR: Supply increases which causes prices to fall and market transactions to increase.
- Individual Firms:
  - SR: Production and profits increase.
  - LR: Both production and profits decrease to original

In the end, there are more firms to serve the increased demand.

Now, you go do it.

Graphically

Summary of price and quantity changes

- Individual Firms:
  - SR: Production unchanged but profits decrease.
- Markets:
  - LR: Profit decrease causes firms to exit. Supply decreases which causes prices to rise and market transactions to decrease.
- Individual Firms:
  - Prices increase until profit is again zero.
  - As the prices increase, individual firms increase output.

In the end, there are fewer firms that serve more customers individually, but less collectively. The rent increase is directly reflected in price.

In Graphs

Next Up

Monopoly