

Equilibrium in Perfectly Competitive Markets

(Assume for simplicity that all firms have access to the same technology and input markets, so they all have the same cost curves.)

Market Supply in the Short Run

To derive the market supply curve from the supply curves of the individual firms, we add up the quantities supplied by all the firms at any price. Thus, horizontally sum the marginal cost curves of all the firms in the market.

To find the market equilibrium, find the intersection of the market supply curve and the market demand curve.

Market Supply in the Long Run

In the long run, with free entry and exit, how many individual firm supply curves do we add up?

If the price is below $\min(\text{ATC})$, then the quantity supplied is zero. Any firms that are in the industry would exit if the price stayed that low.

If we have $P = \min(\text{ATC})$, then firms are indifferent between: (i) staying out of the market and (ii) entering, and producing the quantity at which $P = \min(\text{ATC})$. Thus, any and all quantities are on the market supply curve at that price.

If we have $P > \min(\text{ATC})$, then entry by new firms is profitable. An infinite quantity would be supplied if the price stayed that high.

Market Equilibrium in the Long Run

In the long run, the market price is determined solely by cost considerations, $P = \min(\text{ATC})$.

If we have $P > \min(\text{ATC})$, there are profit opportunities, new firms would enter, and market forces will push down the price until $P = \min(\text{ATC})$.

If we have $P < \min(\text{ATC})$, firms are making losses, firms would exit, and market forces will push up the price until $P = \min(\text{ATC})$.

If we have $P = \min(\text{ATC})$, then whatever quantity is demanded would be willingly supplied, and we are in equilibrium.

The demand curve only determines the equilibrium quantity and not the price in the long run.

Notice that, if we are in long run equilibrium, we are also in short run equilibrium.

In the long run we have $P = \min(ATC)$ and firms that have entered choose the quantity at which ATC is minimized. Because the MC curve intersects ATC at $\min(ATC)$, the same quantity is the one at which the price equals MC.

Another way to see that long run equilibrium entails short run equilibrium is the following. In the long run, firms have more options. They can exit the industry, change their capital input, or change their labor input. If firms do not want to do any of these things because we are in long run equilibrium, then they do not want to change their labor input, which is their only option in the short run.

A Shift in Demand

Suppose we begin in a position of short run and long run equilibrium, and demand increases.

Short Run response:

We immediately move to a new short run equilibrium, at the intersection of the new demand curve and the short run market supply curve.

The price goes up, each firm increases its quantity by equating price and MC, and the equilibrium quantity supplied and demanded goes up.

Now existing firms are receiving economic profits, so we are not in long run equilibrium.

Long Run response:

Over time, more and more firms will enter the industry, and as new firms contribute their marginal cost curves, the short run supply curve shifts to the right.

As new firms enter, we go through a sequence of short run equilibria with higher and higher quantities, and lower and lower prices.

The economy stops adjusting when the price falls back to $\min(ATC)$, and we are back in long run equilibrium.

Notice that in the long run, an increase in demand does not provide firms with profits or increase the price. Also, production occurs at the efficient scale. All the surplus goes to consumers: consumer sovereignty.

Is it realistic that the long run supply curve is flat?

The long-run supply curve might be upward sloping if:

1. Some resource used in producing the good will rise in price as the industry expands. For example, as the demand for aluminum increases, firms will bid up the price of bauxite as the industry expands. Existing firms face a higher marginal cost of production.
2. Different firms face different costs, and the most profitable firms enter first. For example, as the demand for wine increases, some additional land will be converted into vineyards and more wine supplied, but only as wine prices increase.

Conclusions about Perfect Competition

Marginal cost pricing is essential in determining how firms should choose output. In practice, it is easier for firms to calculate their average cost than their marginal cost, but marginal cost is what they need to know.

In measuring marginal cost, expenditures like increased maintenance and repairs should be attributed to the output that creates these costs. The timing of when the bill must be paid is irrelevant.

Marginal cost pricing is useful in setting up “transfer prices” within the firm. Example of AT&T secretarial pool.

Zero profits. You can't just sit around. Profits are transitory, and competition is fierce to be better than the “marginal firm.”

A big, but imitable innovation is not as profitable as a smaller innovation that cannot be imitated. Product vs. Process.

There is a tension between the invisible hand and the incentive to imitate. This is why we have patent laws. In a dynamic sense, allowing some market power could be beneficial.