

# Perfectly Competitive Markets

March 25, 2004

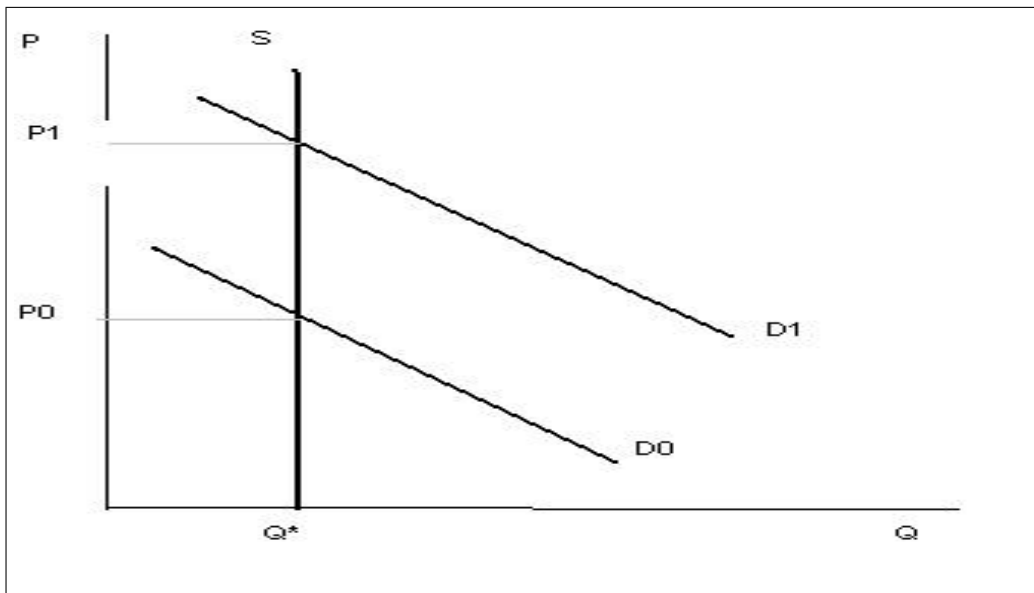
## 1 Timing

### 1.1 Very Short Run

**Definition 1** *Very short run: no supply response is possible.  $Q^s$  is fixed.*

Since  $Q^s$  is fixed, the supply curve is vertical. The only way that the resulting shortage from an increase in demand can be resolved is through an increase in price.

Figure 1: Perfectly Competitive Market in Very Short Run

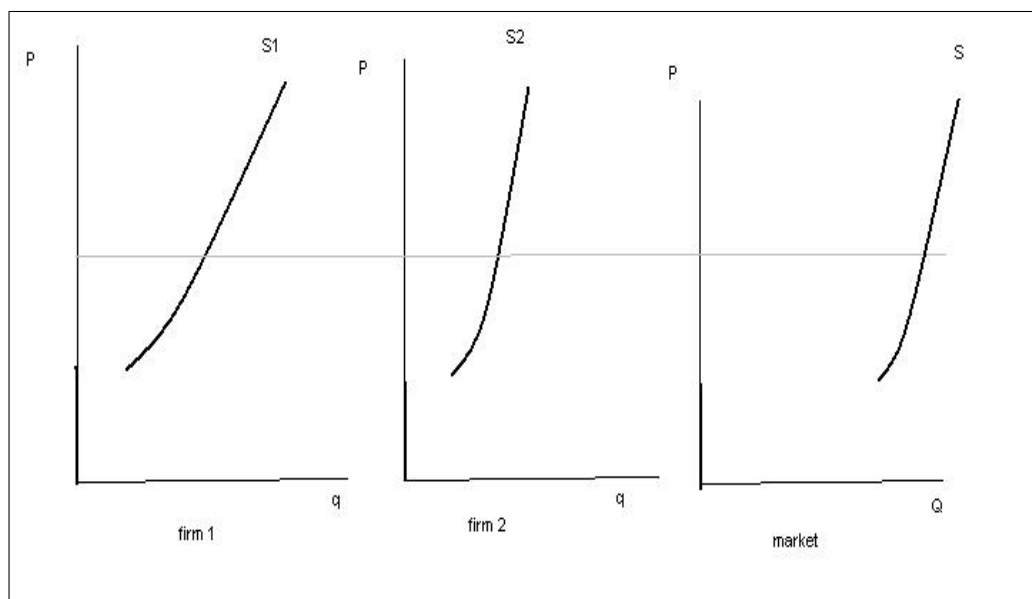


A model of the very short run is not that applicable but for very perishable goods. In general, firms are able to adjust how much they produce.

## 1.2 Short Run

**Definition 2** *Short Run: Firms can change how much they are producing but no new firms can enter the market.*

Figure 2: Perfectly Competitive Market Supply in Short Run



Recall from the previous chapter that a firm's supply curve is just the  $MC$  curve greater than or equal to the  $AVC$ . In the short run then, the market supply curve will just be the sum of all individual firm supply curves.

The typical comparative statics from your principles class are what are relevant here.

## 1.3 Long Run

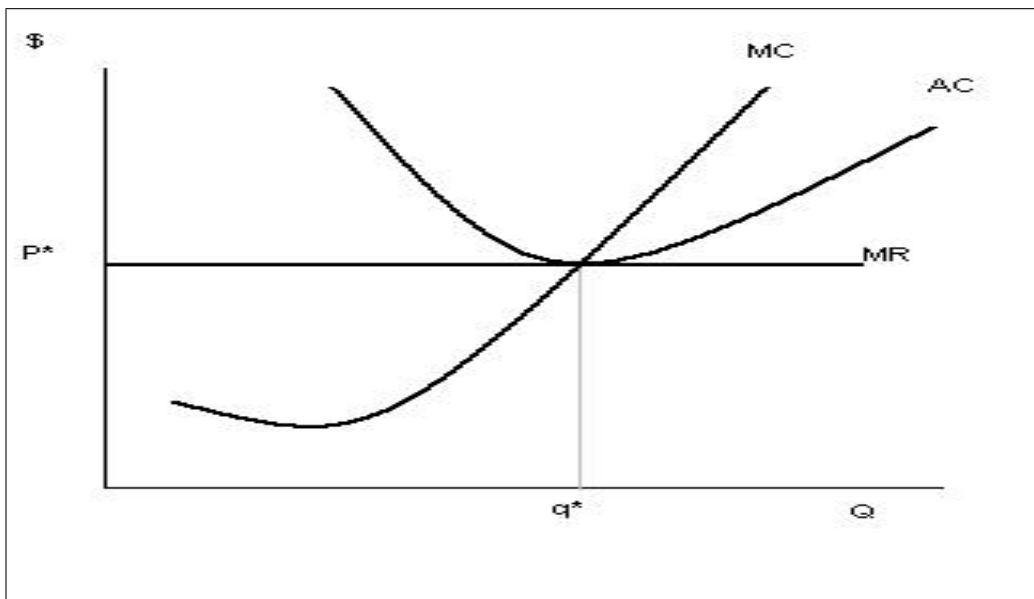
**Definition 3** *Long run: Firms can change how much they are producing and new firms can enter the market.*

Recall from principles that supply is more elastic in the long run than in the short run. Since the supply curve is the  $MC$  curve above  $AVC$ , the long run firm supply (and thus  $MC$ ) should be flatter than the short run supply. The fact that supply is more elastic in the long run than in the short run means that a firm is more responsive to a price change in the long run than in the short run. In addition to the fact that market response is more flexible in the long run than the short run because firm's supply functions are more responsive, market response is also more responsive in the long run because new firms can enter.

For the moment we assume that all firms have the same technologies and thus the same costs; they are identical. The perfectly competitive model assumes free entry and exit; nothing prevents

a firm from entering the market. From the firm perspective, the long-run equilibrium looks like the following. Profits are zero (firms have no incentive to either enter or exit) and the firm is profit-maximizing ( $MR = MC$ ).

Figure 3: Zero Profits in the Long Run



In fact, the above just shows a static result; it shows us after all the adjustments what firm’s production decision and profit looks like. We need to consider the dynamics of how firms end up earning zero profits. As suggested above, firms earn zero profits in the long run because other firms have an incentive to enter when current firms are earning positive profits and current firms have an incentive to exit when earning negative profits. Because the market is perfectly competitive, there are no barriers to prevent entry. This raises the question of how firm entry/exit might affect costs.

### 1.3.1 Effect of firm entry/exit on costs

**Definition 4** *Increasing cost industry: As firms enter, production costs increase*

The basic intuition behind this is that as the number of firms increases, it increases competition for inputs, driving up input prices and thus costs. An increase in  $TC$  causes an increase in  $ATC$  and  $MC$ .

**Definition 5** *Constant cost industry: As firms enter, there is no change to production costs*

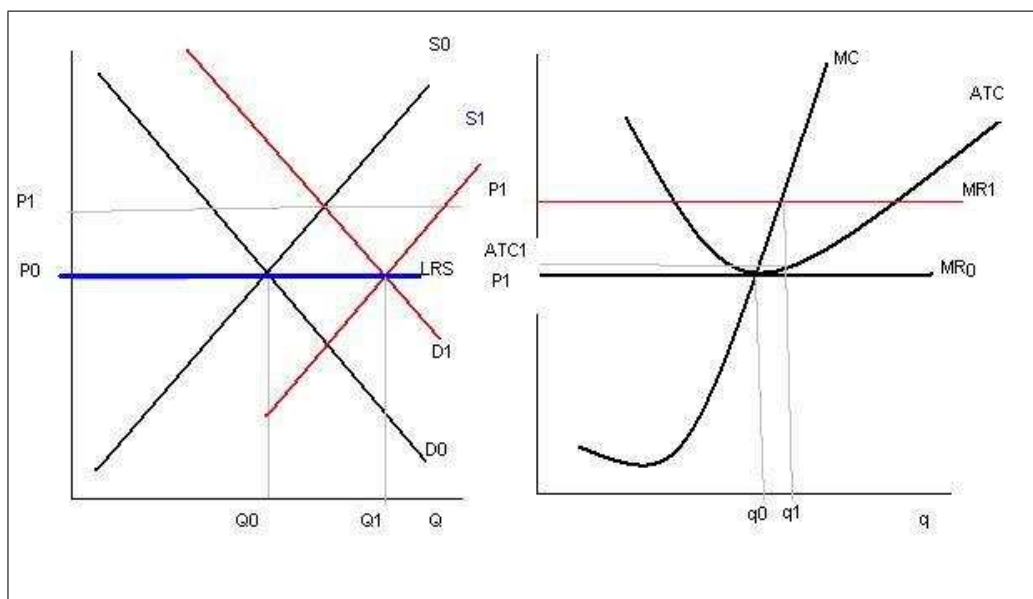
The typical explanation for this is that this particular market only consumes a small share of the input market. So an increase in the number of these firms does not affect input prices. Example: increase in number of Chicago taxis wouldn’t affect car prices.

**Definition 6** *Decreasing cost industry: As firms enter, production costs decrease*

The basic idea here is that as the number of firms increase, there becomes a large enough critical mass that inputs become cheaper or infrastructure increases.

**Constant Cost Industry** We'll start with the constant cost industry as it is the easiest and the one you're most familiar with from principles.

Figure 4: Constant Cost Industry



Imagine that we begin with zero profits  $(p_0, q_0)$ . Now demand increases. This causes the price to increase to  $P_1$ , thus resulting in a new marginal revenue,  $MR_1$ . Firms profit maximize and produce where  $MR_1 = MC$ , at  $q_1$ . They are now earning positive profits. Other firms see this and enter the market. This is seen as a rightward shift of the supply curve, which lowers the price and reduces profits. Firms will continue to enter until profits are zero. Note that when profits are zero, firms are again producing the same amount as they did before the demand increase ( $q_0$ ). However, there are now more firms in the market. We can see this because the total amount produced in the market,  $Q_1$ , is greater than the amount originally produced in the market,  $Q_0$ .