

Experiment 8: Entry and Equilibrium Dynamics

Everyone is a demander of a meal. There are approximately equal numbers of values at ★24, ★18, ★12 and ★8. These will change, due to a random development, after 8.2.

Everyone gets the chance to open a restaurant each round. To open a restaurant, you must sign up with the market manager at the beginning of the experiment for which you would like to open. There is a signup sheet with the market manager. Note that restaurants last two periods.

A restaurant costs ★20 per period (fixed and sunk cost) to open and can sell up to 4 meals. The ingredients (variable cost) cost ★5 per meal. Thus total cost of a restaurateur depends on the number of meals served:

Per Period Average and Total Costs

Meals	0	1	2	3	4
Total Cost	20	25	30	35	40
Average Cost	∞	25	15	11.7	10

Here is the typical restauranteur sheet.

You are both a diner and a potential restaurant owner. This is the sheet for your dining values. Your value is given below. In experiments 8.3, 8.4 and 8.5, it depends on a number X which will be announced during class, after experiment 8.2 ends. X is either -8 or $+8$, with equal probability.

Diner's Name:			
Experiment	Value	Restauranteur	Price of Meal
8.1	★24		★
8.2	★18		★
8.3	★ $8 + X$		★
8.4	★ $12 + X$		★
8.5	★ $8 + X$		★

Restaurant Startup Form

A restaurant costs ★40 to open, and lasts for two periods. In each period, you can serve four diners. Each meal costs ★5 to make. You are permitted, but not required, to feed yourself. (In period 8.5, you may open a restaurant for one period, at a cost of ★20).

Opened:8._____ Restaurateur:			
8.____	Diner's Name	Diner's Value	Price of Meal
1		★	★
2		★	★
3		★	★
4		★	★
8.____	Diner's Name	Diner's Value	Price of Meal
1		★	★
2		★	★
3		★	★
4		★	★

Timing of the experiments:

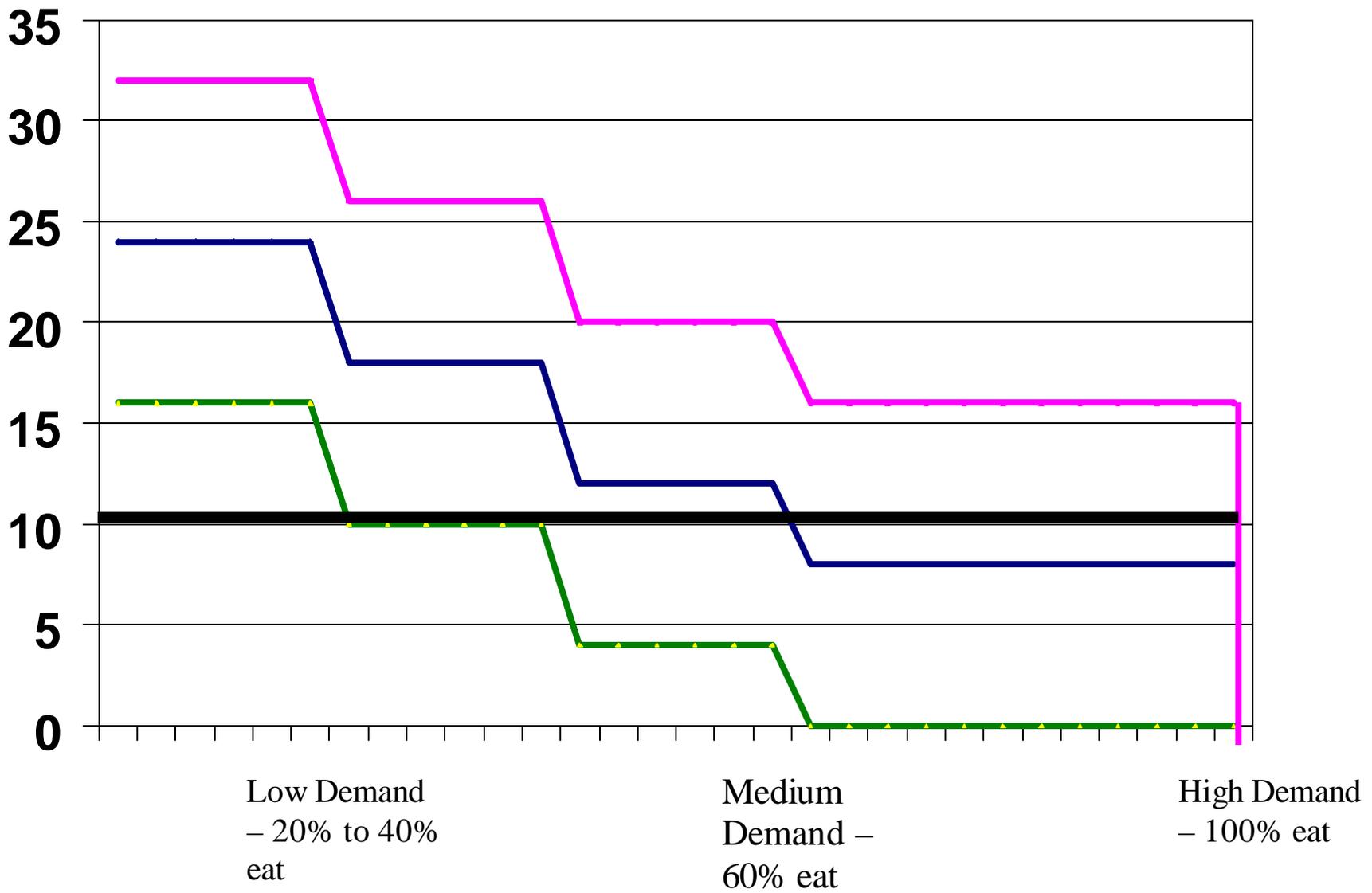
1. Restaurant sign-up
2. X announced (8.3 only)
3. Let's Eat!

Questions:

What average price of meals do you need to insure a profit?

What is the lowest price a restaurateur will accept?

Should you ever not eat in your own restaurant?



Goals of Experiment 8

1. Firms face fixed and variable (depend on quantity sold) costs.
2. Firms will not sell for less than their variable costs.
3. Firms will sell for less than their average total cost (that is, the sum of their average variable and average fixed costs). Such firms make *accounting* losses.
4. When prices are below average total cost, the firms will exit the industry. Some exit is immediate if prices are below minimum average variable cost.
5. Prices above average total cost induce entry (Experiment 8.4), bringing prices down to average total cost.
6. If entry takes time, there will be a short run and long run supply curve. The long run supply curve is more elastic than the short run supply curve.
7. The short run supply is zero below minimum average variable cost, and follows the marginal cost curve for prices above min AVC.
8. The long run supply curve is just the minimum average total cost.
9. Dynamic response to demand shifts are given as follows. In the short run, the path of prices and quantities follows the short run supply curve to the intersection of short run supply and demand. Then price and quantity follow demand to the intersection of long run supply and demand.

Perfect Competition Dynamics

Perfect competition is an extreme case, the business person's ultimate nightmare. There are so many firms that no single firm can unilaterally affect the price. All firms are selling an identical product: a firm that prices higher than others *sells nothing*. Consumers know where the lowest price is available.

The point of all this is that these firms will be *price takers* - no firm can affect the price.

It is important to distinguish between the *industry or market demand curve* and the *firm demand curve*.

The demand facing a firm is more elastic than the industry demand. This occurs because the demand facing a single firm includes a lot of substitutes: the products of its competitors as well as other products, while the industry demand includes fewer substitutes.

In a perfectly competitive industry, the demand facing firms is perfectly elastic, horizontal.

Price takers necessarily can't set price.

What can they do?

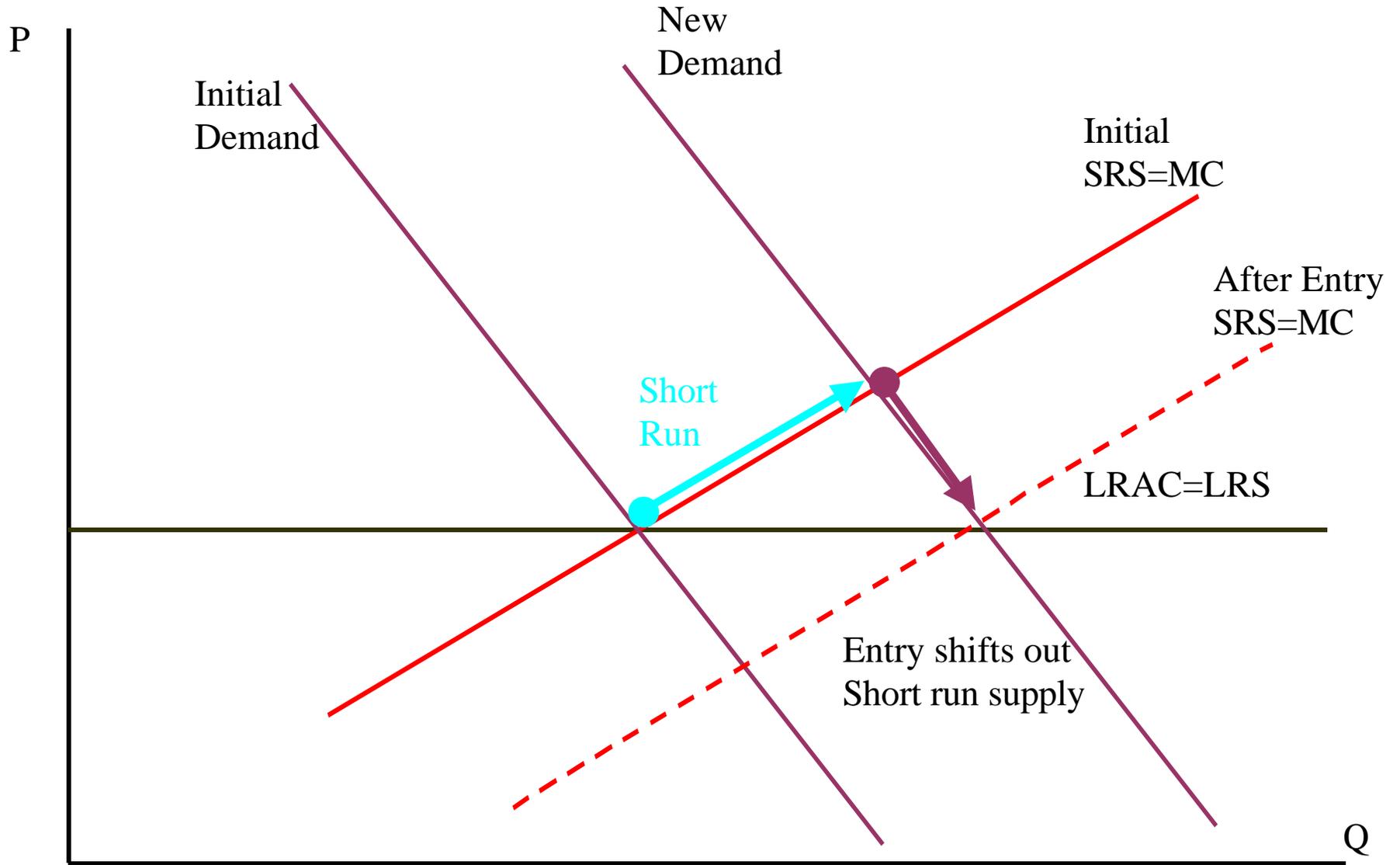
- they can exit the industry or stay in it
- they can shut down or produce
- they can decide how much to produce

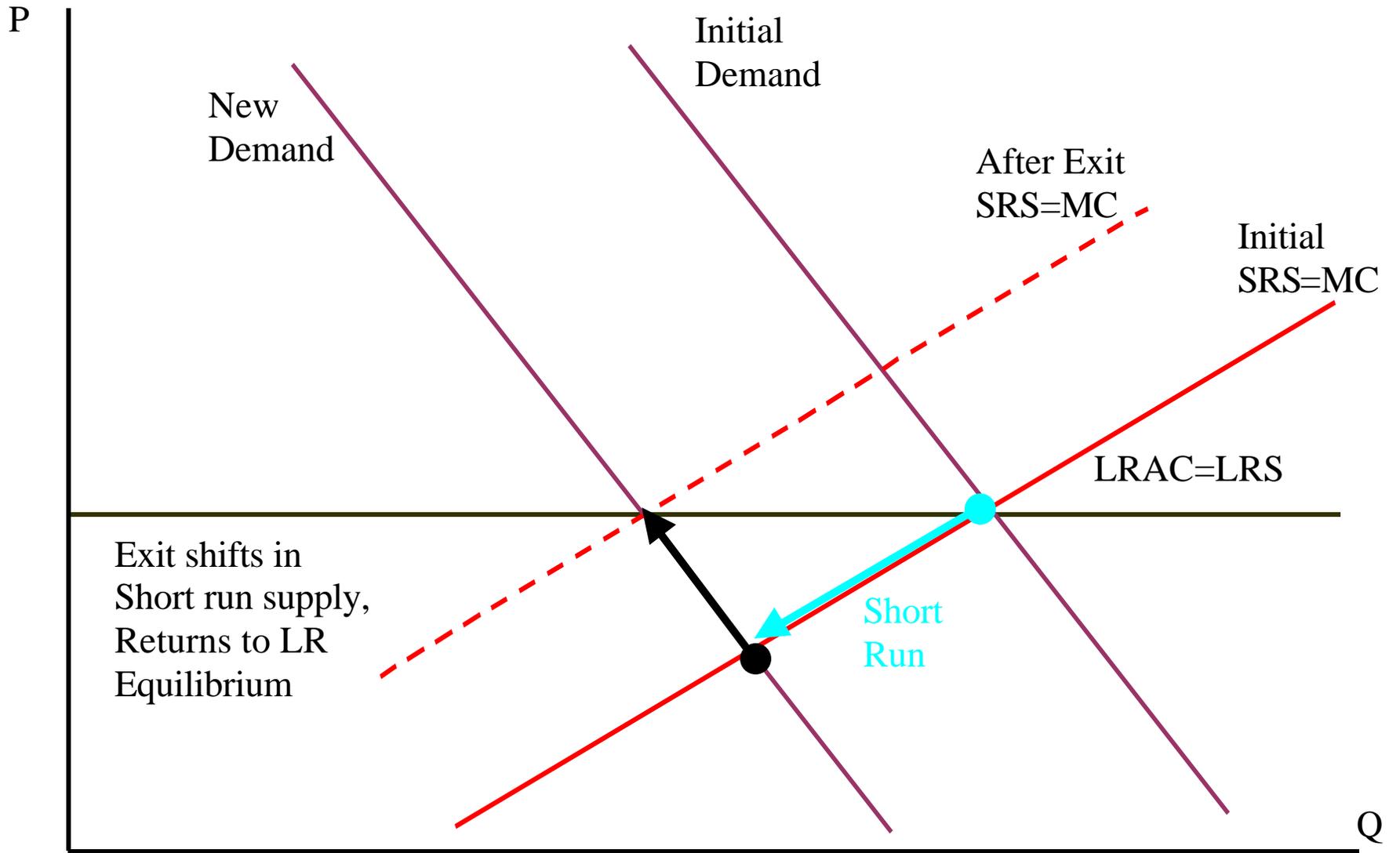
Because the firms are price takers, their production decisions don't affect the price. Therefore, firms want to produce an extra unit if the marginal cost is less than the price. Thus, in a competitive industry, *price equals marginal cost*.

In the short run, this may mean the firm makes profits, or breaks even, or makes losses.

Shut downs occur when the price goes below the average variable cost, not the average total cost.

In the short run, supply is horizontal to the output at minimum average variable cost, and then increases along the marginal cost.





In the long run, price below the minimum average total cost will force exit.

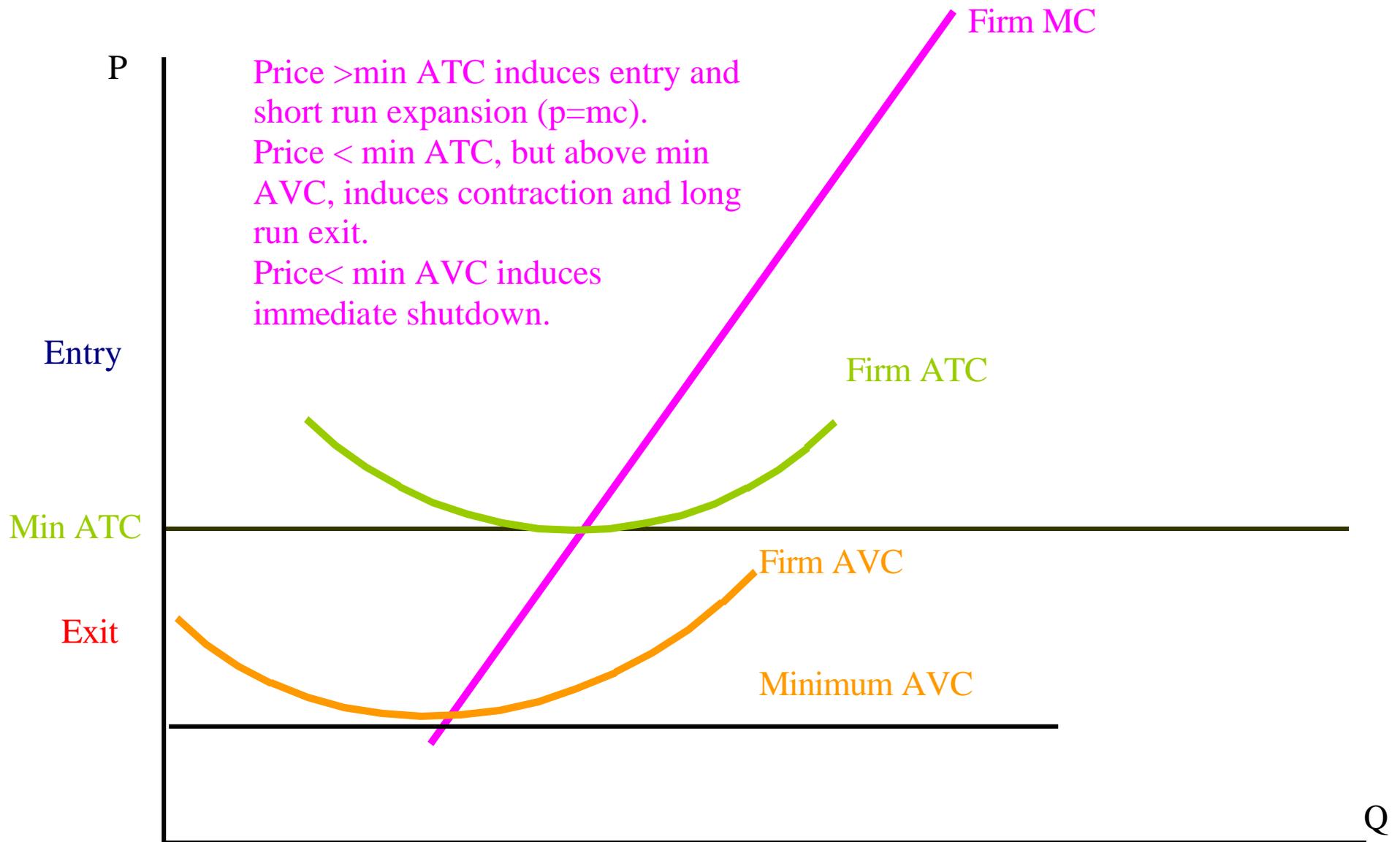
Price above the minimum average total cost will induce entry of new firms because there are profits to be had.

Thus, over the long run, *price equals the minimum average total cost*.

Must the long run industry supply be horizontal?

The typical example is when the expansion of the industry drives up input prices, so that the costs of all the firms go up as industry output increases, even though any single firm can unilaterally increase its output without affecting input prices. In this case, LRAC may be increasing.

Similarly, if lots of production reduces input prices, because of economies of scale, LRAC will be decreasing.



Our economic system is based on competition. Promoting competition is the law - the antitrust laws [Sherman Act and Clayton Act]. Why? What is good about competition?

Competition forces firms to minimize cost.

Competition produces the largest gains from trade possible.

There is a caution here: if consumption of the good has bad effects on others - called (negative) external effects or negative externalities, then competition produces *too much of the good*.

In the long run, competition awards all the benefits to consumers.

The best example of perfect competition is farms.

There is no need to copy this!

<i>Year</i>	<i>percent working on farms</i>
<i>1830</i>	70.5
<i>1840</i>	68.6
<i>1850</i>	63.7
<i>1860</i>	58.9
<i>1870</i>	53.0
<i>1880</i>	49.4
<i>1890</i>	42.6
<i>1900</i>	37.5
<i>1910</i>	31.0
<i>1920</i>	27.0
<i>1930</i>	21.4
<i>1940</i>	17.0
<i>1950</i>	11.5
<i>1960</i>	5.9
<i>1970</i>	2.9
<i>1980</i>	2.7
<i>1990</i>	2.5

What are the effects of low interest loans to farmers? Low interest loans cut farmers' costs, which they promptly pass right back to the consumer. There is no reason to think these loans or other subsidies *benefit the farmer*.

Price supports do benefit farmers.

The problem with restricting entry - the current generation benefits, but not future generations, and consumers now and in the future must pay.