

These slides are by courtesy of Prof. 李稻葵 and Prof. 郑捷.

Chapter Twenty-Four

Industry Supply

Industry Supply

- ❖ Assume competitive market.
 - ❖ All firms are price-takers
- ❖ The industry supply is the aggregation of the supply of individual firms.
 - Short-run: Short run supplies and fixed number of firms
 - Long-run: Long run supplies and potentially flexible number of firms

Short-Run Supply

- ❖ In the short-run, the number of firms in the industry is fixed.
- ❖ Let $S_i(p)$ be firm i 's short-run supply function.
- ❖ The industry's short-run supply function is

$$S(p) = \sum_{i=1}^n S_i(p).$$

Long-Run with Free Entry

- ❖ In the long-run, entry and exit are possible.
- ❖ Positive profit induces other firms to enter the industry, **if we assume free entry**.
- ❖ Entry increases industry supply, which causes market price to fall.
- ❖ When will entry stop?
 - When profit = 0.

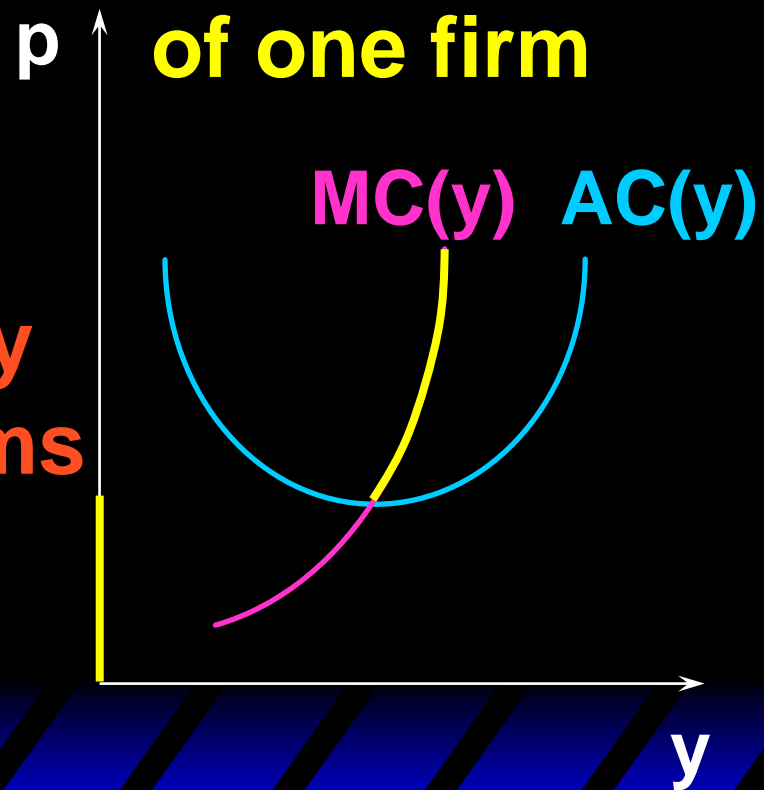
Long-Run with Free Entry

Suppose the industry contains only two identical firms.

The Market

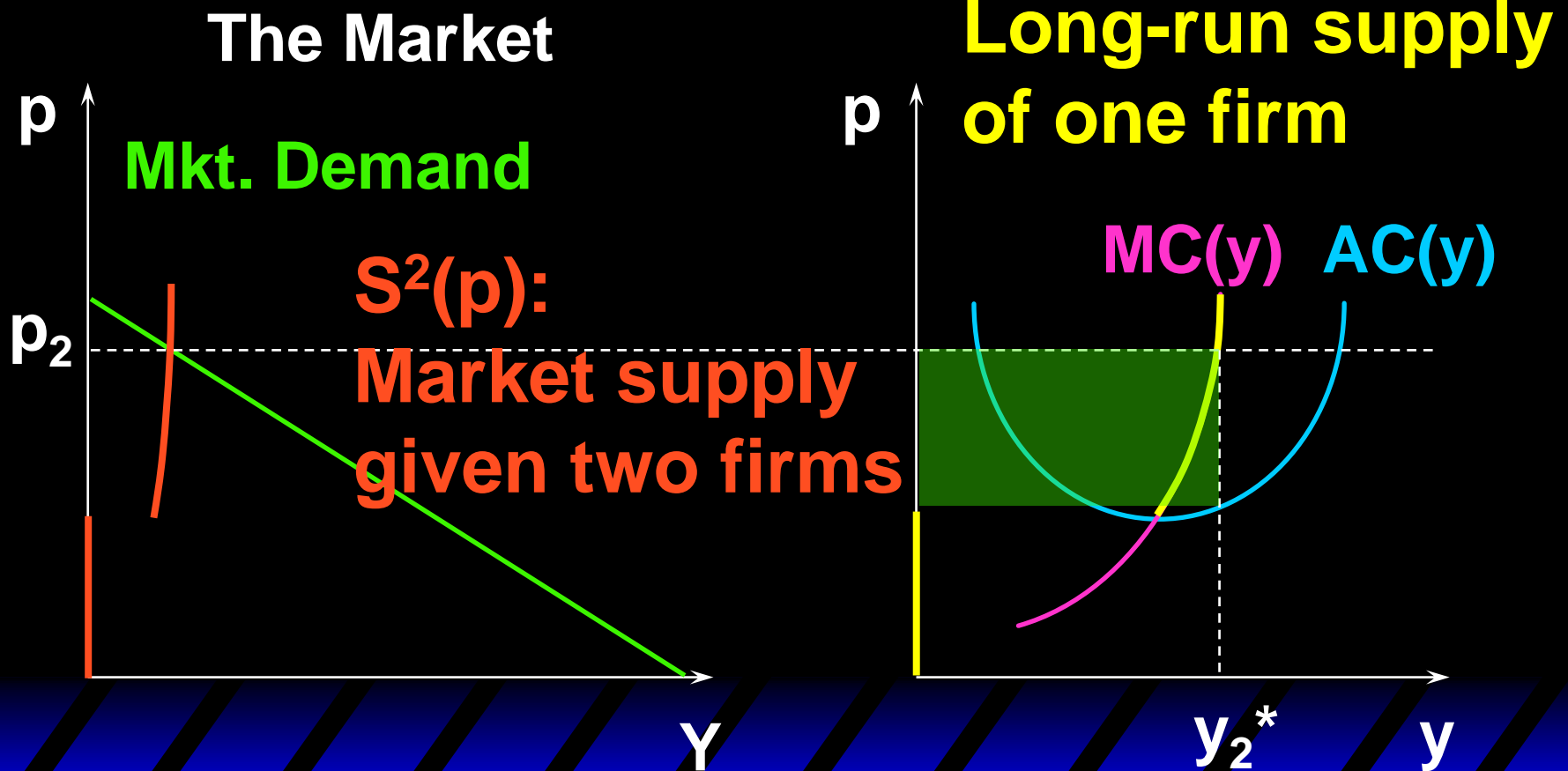


Long-run supply of one firm



Long-Run with Free Entry

Each firm produces y_2^* ; profit > 0



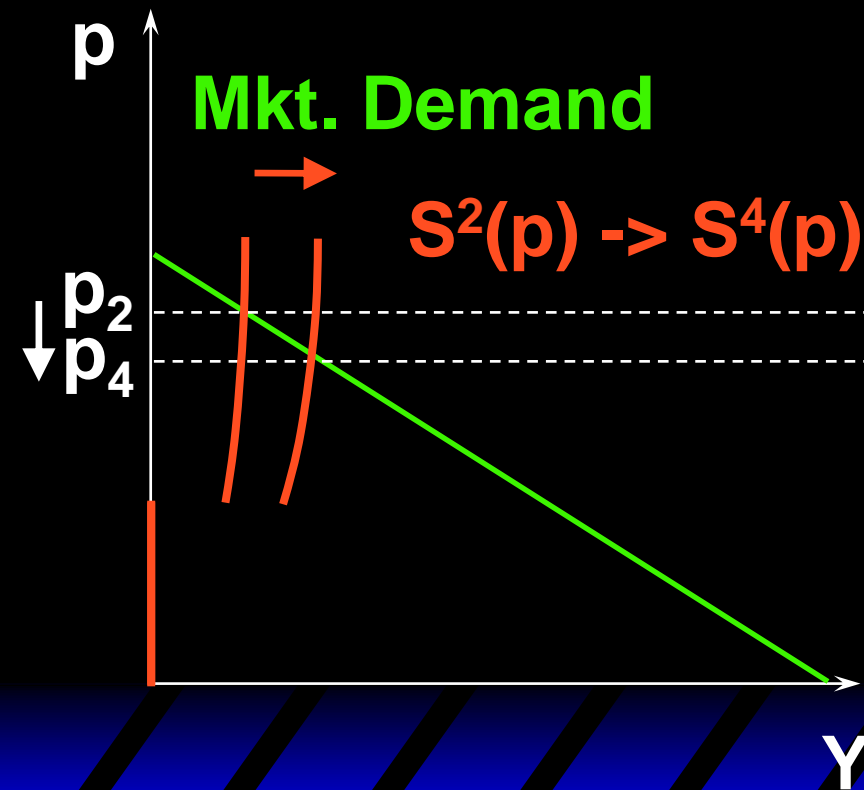
Long-Run with Free Entry

- ❖ Assuming that the industry we are analyzing has **free entry**, the positive profit will attract other firms from other industries.

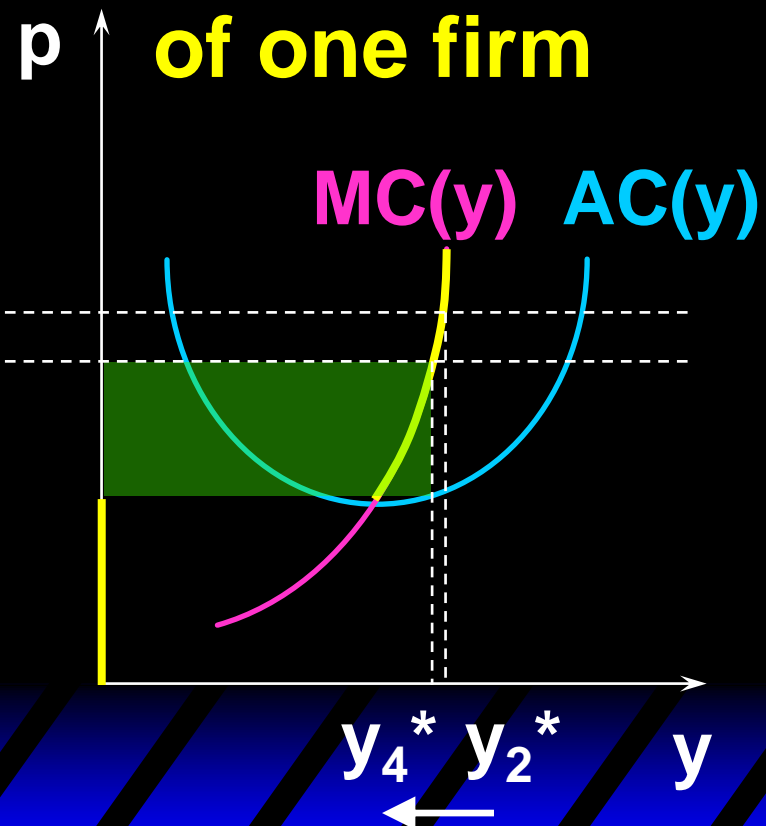
Long-Run with Free Entry

Now 4 firms: Price falls, each firm produces less. But still, profit > 0 .

The Market



Long-run supply of one firm

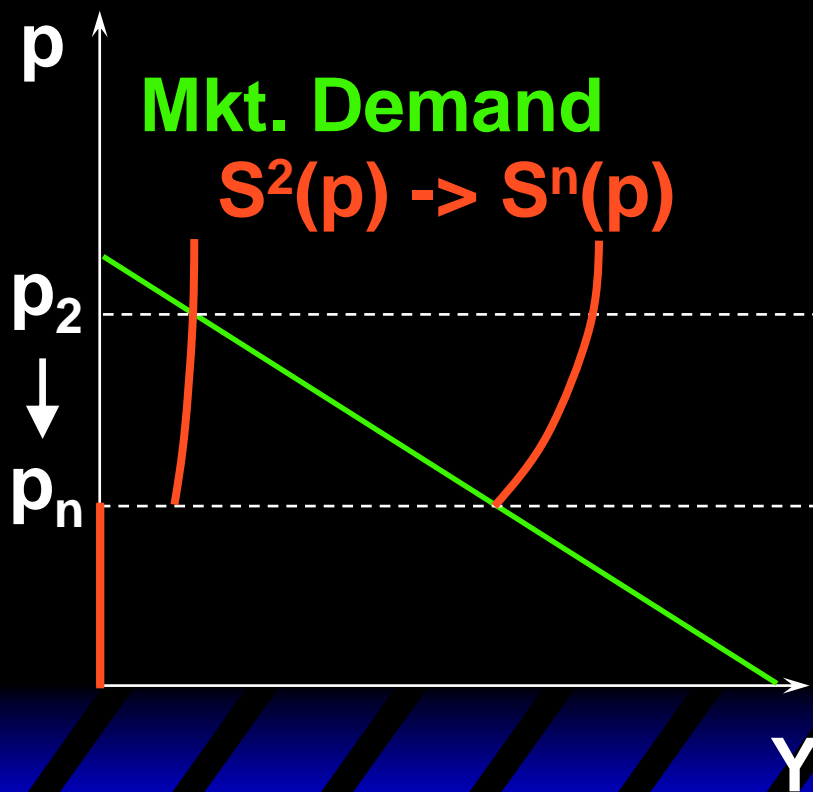


Long-Run with Free Entry

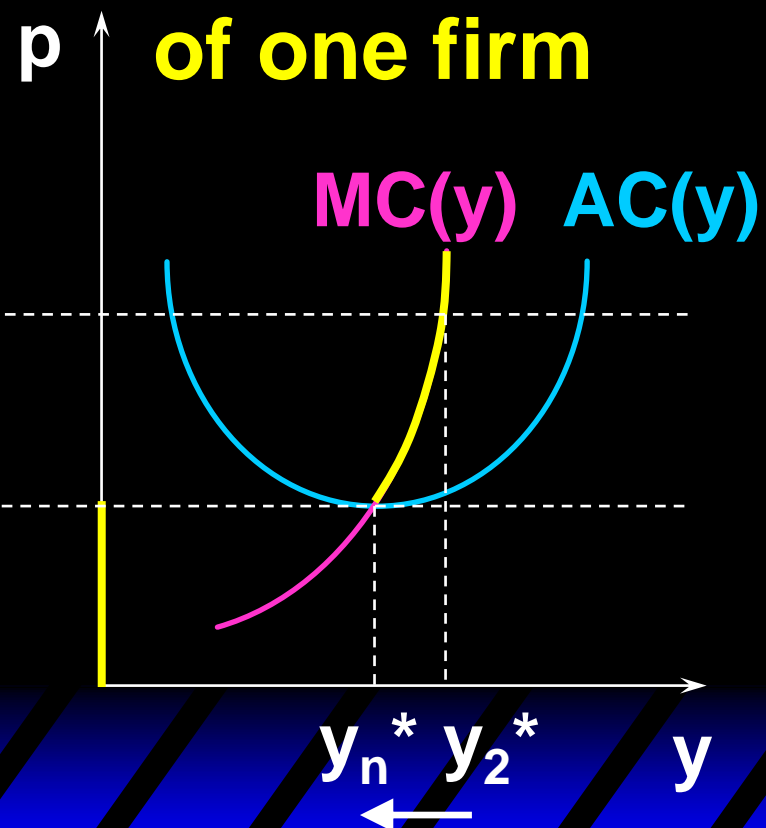
More firms will enter, until profit = 0.

n is the equilibrium number of firms in LR.

The Market



Long-run supply of one firm



Long-Run with Free Entry

- ❖ At this point where profit = 0, no more firm has incentive to enter.
 - Suppose that one more firm enters by producing $y > 0$, all firms will have profit < 0 .

Long-Run with Free Entry

- ❖ **Condition 1: free entry (profit = 0)**
 - i.e. $p^* = AC(y^*)$.
- ❖ **Condition 2: profit maximization**
 - it implies $p^* = MC(y^*)$
- ❖ **Condition 3: Supply = Demand**
 - i.e. $n^*y^* = D(p^*)$
- ❖ **Three unknowns y^* , p^* , and n^* .**

Long-Run with Free Entry

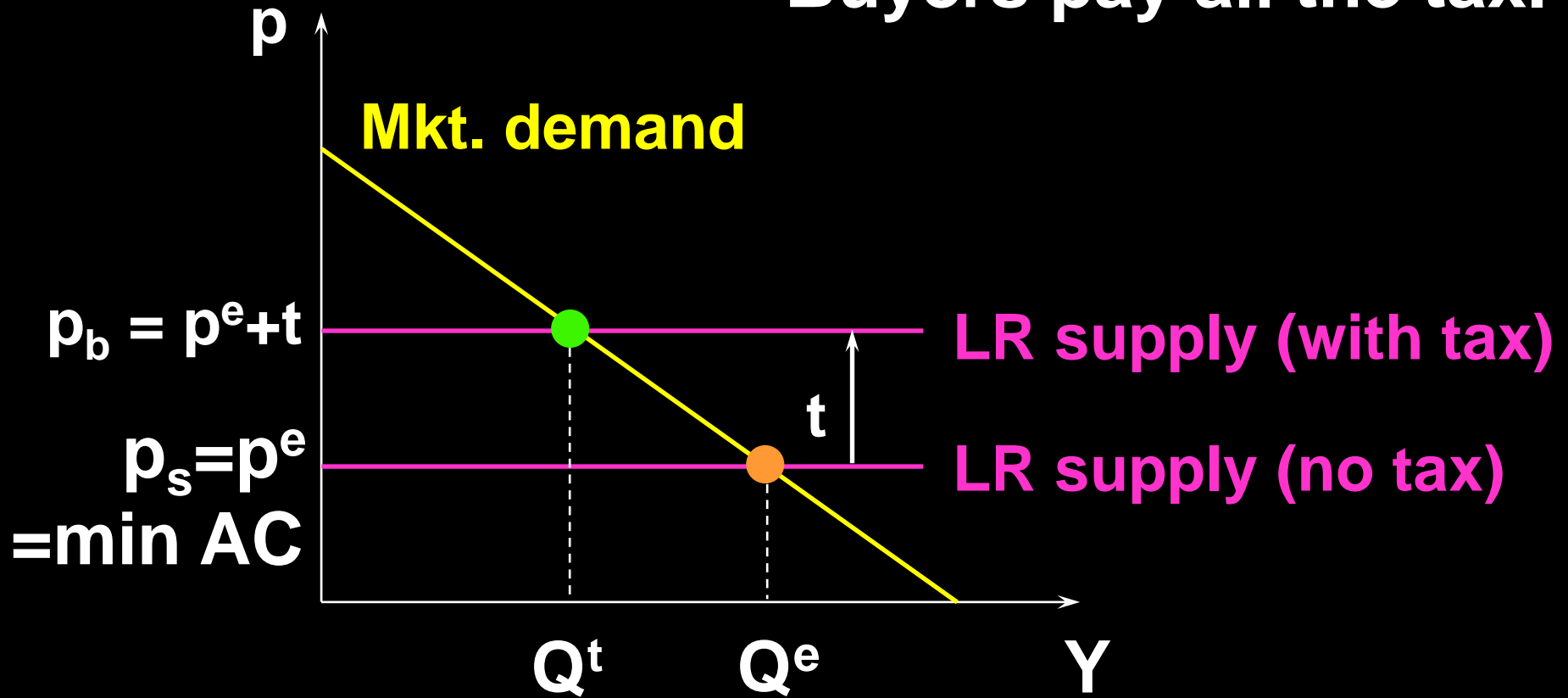
- ❖ **Note that Condition 1&2 together imply**
 - y^* minimizes $AC(y)$
 - $p^* = \text{minimized } AC$

Long-Run with Free Entry

- ❖ Suppose market demand increases (demand curve shift to the right):
 - Condition 1&2 are not affected -> y^* and p^* won't change
 - The market rebalances by an increased n^* .
- ❖ Therefore, the **long-run industry supply curve** is essentially **a flat line at $p^* = \text{minimized AC}$** .

Long-Run with Free Entry and Taxation

Buyers pay all the tax.



Long-run without Free Entry

- ❖ In reality, we usually see entry barriers in many industries:
 - ❖ Patents
 - ❖ Licenses
 - ❖ Learning-by-doing
 - ❖ ...
- ❖ Therefore firms may have different technologies, and the number of firms in an industry is not entirely flexible.

Tradable Licenses

- ❖ Suppose that the government issues a fixed number (N) of tradable licenses.
- ❖ Assume that there is no other entry barriers.
- ❖ What is the market price of the license?
 - price of license = equilibrium profit with N firms (if it is nonnegative)