Lecture 9(iii) Announcements

You should start “Supply” Worksheet at week 10 of Canvas.

**Midterm Mon Nov 12, 7pm-8pm**

If conflict, register by Mon, (Nov 5), 4pm to avoid **late registration penalty**. Email head grader, headgrader@gmail.com

* Question and Answer Sessions
* Wed Nov 7: 4-5:30: Anderson 310
* Wed Nov 7, 7:30-9: Anderson 210
* Thur Nov 8 3:30-5 : Anderson 210

Don’t forget to vote for the carbon policy platforms at Canvas week 10 to get bonus points.

Lecture

1. Review: Short-run Supply of Firm

2. Long-run Supply of Firm

3. Long-run Supply of Competitive Industry

4. Short-run Supply of Competitive Industry

Short Run Supply

of Competitive Firm

Rule:

* Find quantity such that P = MC

* Check that P ≥ AVC at that quantity, and then produce there.
* Otherwise shut down.

Short Run Supply Curve for S11



What happens when P = 3?

P = MC at Q = 1

AVC = 2 at Q = 1, so P > AVC

Profit = R – TC

= P×Q – FC – VC

= 3×1 - 4 - 2 = -3

Compare with loss at Q = 0.

What happens at P = .5?

Here is a different example where AVC is first decreasing then increasing (your textbook has a graph like this)Long Run Supply of Firm

$

q

Supply when rent on factory is variable input



**Long Run** Supply of **Industry**

With Free Entry

**Suppose**:

• Same Technology is available

for all

• No barriers to entry

• Input prices to industry do not go

up as the industry expands

**Then in long-run equilibrium:**

• Price equals P\* = MinATC

• Each firm produces quantity q\*

where ATC is minimized

• Number of firms N\* is

Demand at P\* divided by q\*.Again:S11 Cost Structure



|  |  |
| --- | --- |
| Variable | Definition |
| PLR | long-run price |
| QLR | long-run quantity |
| qLR | output per firm |
| NLR | number of firms |

Long Run Supply of Industry

Again:S11 Cost Structure(FC = $4)

Q

D



firm q

q min

|  |  |
| --- | --- |
| Variable | Definition |
| PLR | long-run price |
| QLR | long-run quantity |
| qLR | output per firm |
| NLR | number of firms |

Long Run Supply



D2

D1

D0

|  |  |  |  |
| --- | --- | --- | --- |
|  | Demand | | |
| D0 | D1 | D2 |
| PLR |  |  |  |
| QLR |  |  |  |
| qLR |  |  |  |
| NLR |  |  |  |

First Welfare Theorem at Work Here

In long-run competitive equilibrium,

QLR is produced at in the minimum cost way (Efficient Production)

Short Run

Number of firms is fixed.

Suppose in long-run equilibrium at when demand is D1 (so N = 100)

What is Short-Run Supply Curve?

Cost Structure



|  |  |  |
| --- | --- | --- |
| Price | Firm SR supply | Industry SR supply (N=100) |
| 3 | 1 |  |
| 4 | 1.5 |  |
| 5 | 2 |  |
| 7 | 3 |  |

For future reference,

some points on ATC...

|  |  |
| --- | --- |
| q | ATC |
| 1 | 6 |
| 1.5 | 5.17 |
| 2 | 5 |
| 3 | 5.33 |
| 4 | 6 |

For midterm (and practice problem)

I will either give a table like this.

Or you find this information on the graph.

Cost Structure



qmin

firm q

|  |  |  |
| --- | --- | --- |
| Price  q min | Firm SR supply | Industry SR supply (N=100) |
| 3 | 1 | 1\*100=100 |
| 4 | 1.5 | 1.5\*100=150 |
| 5 | 2 | 2\*100=200 |
| 7 | 3 | 3\*100=300 |

Short-Run Supply (N=100)



D2

D1

D0

Suppose start at D1 in long-run eq. Suppose shift to D2. In short run:

P→ \_\_\_\_\_

q→ \_\_\_\_\_

firm profit = [P – ATC]q

=[7 – 5.33]\*3 = 5

Cost Structure



qmin

firm q

|  |  |  |
| --- | --- | --- |
| Price  q min | Firm SR supply | Industry SR supply (N=100) |
| 3 | 1 | 1\*100=100 |
| 4 | 1.5 | 1.5\*100=150 |
| 5 | 2 | 2\*100=200 |
| 7 | 3 | 3\*100=300 |

Short-Run Supply (N=100)



D2

D1

D0

Suppose start at D1 in long-run eq. Suppose shift to D0. In short run:

P→ \_\_\_\_\_

q→ \_\_\_\_\_

firm profit = [P – ATC]q

=[4 – 5.17]\*1.5 = –1.75