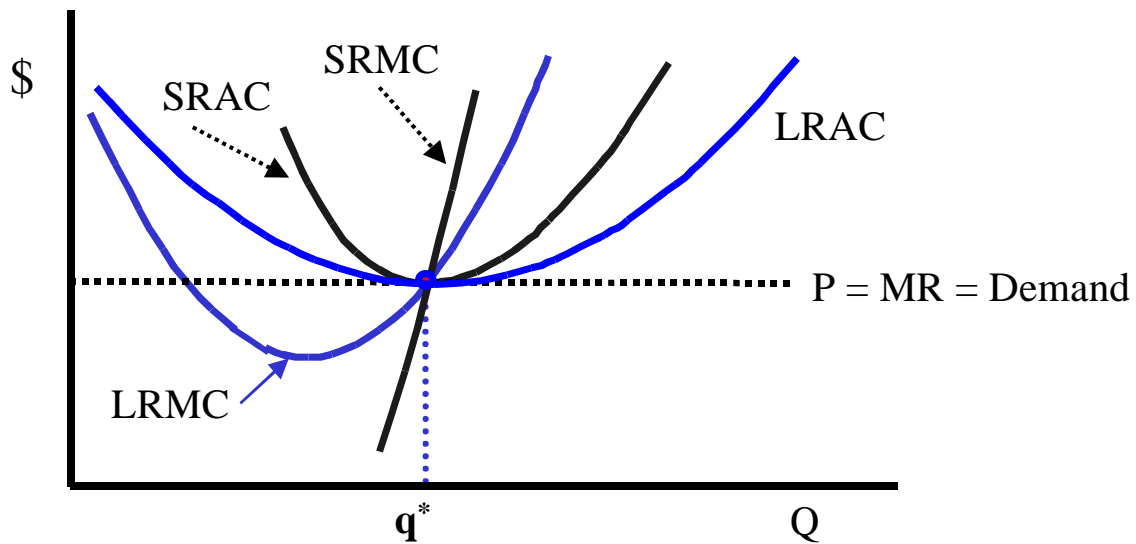


Perfect Competition in the Long Run Handout

Summary of the firm in long run equilibrium

1. In the long run, every competitive firm will earn **normal profit, that is, zero profit**.
2. In the long run, every competitive firm will produce where price (P) is equal to marginal cost (MC), that is where $P = MC$.
3. In the long run, every competitive firm will produce where price (P) is equal to the minimum of short run average cost (SRAC), $P = SRAC$. This implies zero economic profit.
4. In the long run, every competitive firm will produce where price (P) is equal to the minimum of long run average cost (LRAC = ATC), $P = \text{minimum LRAC}$. This implies that no identical firms will want to enter or exit.
5. Putting it all together:
$$P = MC = \text{min SRAC} = \text{min LRAC}$$
6. Graphically this gives

Long Run Equilibrium



Data Table for Competition in the Long Run

y	Price	TR	MR	C	ATC	MC	Profit	SRAC 5	SRMC 5	SRAC 9	SRMC 9	SRAC 15	SRMC 15	SRAC 18	SRMC 18	SRAC 23	SRMC 23
0.00	292	0	292	0.00			0.00										
1.00	292	292	292	371.00	371.00	343.00	-79.00	851.00	103.00	2291.00		6251.00		9041.00		14891.00	
2.00	292	584	292	688.00	344.00	292.00	-104.00	479.00	112.00	1079.00		2879.00		4184.00		6959.00	
3.00	292	876	292	957.00	319.00	247.00	-81.00	359.00	127.00	679.00		1759.00		2569.00		4319.00	
4.00	292	1168	292	1184.00	296.00	208.00	-16.00	303.50	148.00	483.50		1203.50		1766.00		3003.50	
5.00	292	1460	292	1375.00	275.00	175.00	85.00	275.00	175.00	371.00		875.00		1289.00		2219.00	
6.00	292	1752	292	1536.00	256.00	148.00	216.00	261.00	208.00	301.00		661.00		976.00		1701.00	
7.00	292	2044	292	1673.00	239.00	127.00	371.00	256.14	247.00	256.14	7.00	513.29		757.57		1336.14	
8.00	292	2336	292	1792.00	224.00	112.00	544.00	257.75	292.00	227.75	52.00	407.75		599.00		1067.75	
9.00	292	2628	292	1899.00	211.00	103.00	729.00	264.33	343.00	211.00	103.00	331.00		481.00		864.33	
10.00	292	2920	292	2000.00	200.00	100.00	920.00	275.00	400.00	203.00	160.00	275.00		392.00		707.00	
11.00	292	3212	292	2101.00	191.00	103.00	1111.00	289.18	463.00	201.91	223.00	234.64		324.64		583.73	
12.00	292	3504	292	2208.00	184.00	112.00	1296.00	306.50	532.00	206.50	292.00	206.50		274.00		486.50	
13.00	292	3796	292	2327.00	179.00	127.00	1469.00	326.69	607.00	215.92	367.00	188.23	7.00	236.69		409.77	
14.00	292	4088	292	2464.00	176.00	148.00	1624.00	349.57	688.00	229.57	448.00	178.14	88.00	210.29		349.57	
15.00	292	4380	292	2625.00	175.00	175.00	1755.00	375.00	775.00	247.00	535.00	175.00	175.00	193.00		303.00	
16.00	292	4672	292	2816.00	176.00	208.00	1856.00	402.88	868.00	267.88	628.00	177.88	268.00	183.50	88.00	267.88	
17.00	292	4964	292	3043.00	179.00	247.00	1921.00	433.12	967.00	291.94	727.00	186.06	367.00	180.76	187.00	242.53	
18.00	292	5256	292	3312.00	184.00	292.00	1944.00	465.67	1072.00	319.00	832.00	199.00	472.00	184.00	292.00	225.67	
19.00	292	5548	292	3629.00	191.00	343.00	1919.00	500.47	1183.00	348.89	943.00	216.26	583.00	192.58	403.00	216.26	103.00
20.00	292	5840	292	4000.00	200.00	400.00	1840.00	537.50	1300.00	381.50	1060.00	237.50	700.00	206.00	520.00	213.50	220.00
22.00	292	6424	292	4928.00	224.00	532.00	1496.00	618.09	1552.00	454.45	1312.00	290.82	952.00	245.82	772.00	225.36	472.00
23.00	292	6716	292	5497.00	239.00	607.00	1219.00	661.61	1687.00	494.65	1447.00	322.48	1087.00	271.61	907.00	239.00	607.00
25.00	292	7300	292	6875.00	275.00	775.00	425.00	755.00	1975.00	582.20	1735.00	395.00	1375.00	333.80	1195.00	279.80	895.00
26.00	292	7592	292	7696.00	296.00	868.00	-104.00	804.85	2128.00	629.46	1888.00	435.62	1528.00	369.85	1348.00	306.38	1048.00
28.00	292	8176	292	9632.00	344.00	1072.00	-1456.00	910.79	2452.00	730.79	2212.00	525.07	1852.00	451.14	1672.00	370.79	1372.00
30.00	292	8760	292	12000.00	400.00	1300.00	-3240.00	1025.00	2800.00	841.00	2560.00	625.00	2200.00	544.00	2020.00	449.00	1720.00

Consider an industry with 21 firms, each having a cost structure as on the previous page. The industry demand is given by

$$Q^D = 670 - P$$

$$\Rightarrow P = 670 - Q^D$$

Individual Firm Supply, Price, Cost, and Average Cost - Size 18 Plant

y*	Supply Price - 1 Firm	Cost	AC
16.941074	181.00	3062.16	180.75
17	187.00	3073.00	180.76
17.204651	208.00	3113.41	180.96
17.606817	250.00	3205.48	182.06
18	292.00	3312.00	184.00
19	403.00	3659.00	192.58
20	520.00	4120.00	206.00
21	643.00	4701.00	223.86
22	772.00	5408.00	245.82

Market and Individual Firm Supply, Supply Price, Average Cost and Demand Price - Size 18 Plant

Q	y*	Supply Price - 21 Firms	AC	Demand Price
355.76	16.941074	181.00	180.75	314.24
357.00	17	187.00	180.76	313.00
361.30	17.204651	208.00	180.96	308.70
369.74	17.606817	250.00	182.06	300.26
378.00	18	292.00	184.00	292.00
399.00	19	403.00	192.58	271.00
420.00	20	520.00	206.00	250.00
441.00	21	643.00	223.86	229.00
462.00	22	772.00	245.82	208.00

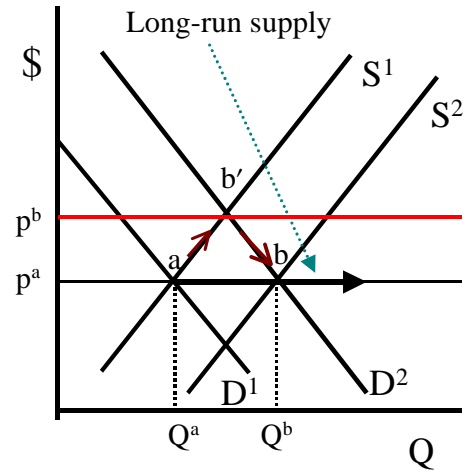
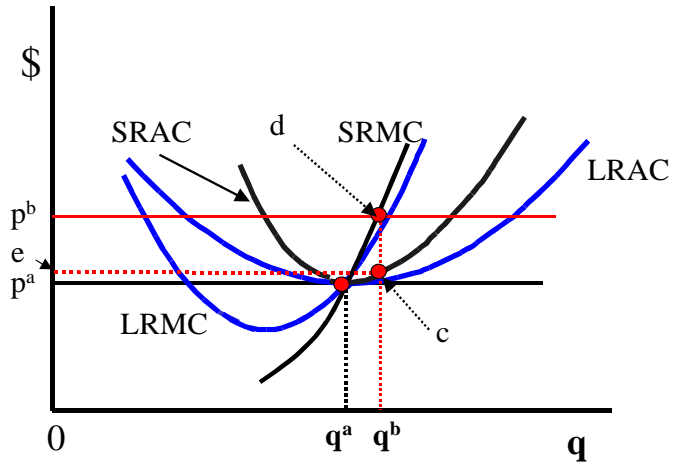
Market and Individual Firm Supply, Supply Price, Average Cost and Demand Price - Size 18 Plant

Q	y*	Supply Price - 26 Firms	AC	Demand Price
440.47	16.941074	181.00	180.75	229.53
442.00	17	187.00	180.76	228.00
447.32	17.204651	208.00	180.96	222.68
450.33	17.320508	220.00	181.18	219.67
457.78	17.606817	250.00	182.06	212.22
468.00	18	292.00	184.00	202.00
494.00	19	403.00	192.58	176.00
520.00	20	520.00	206.00	150.00
546.00	21	643.00	223.86	124.00
572.00	22	772.00	245.82	98.00

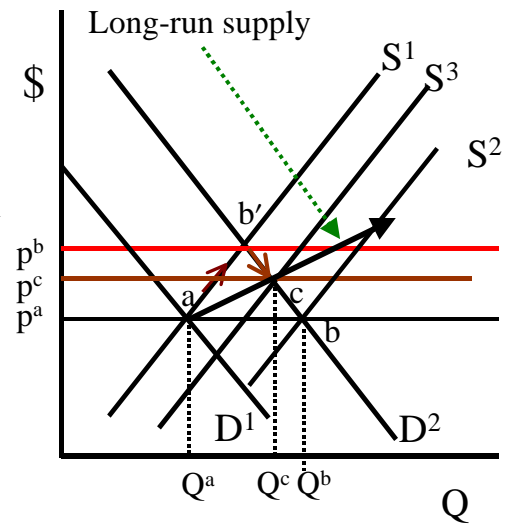
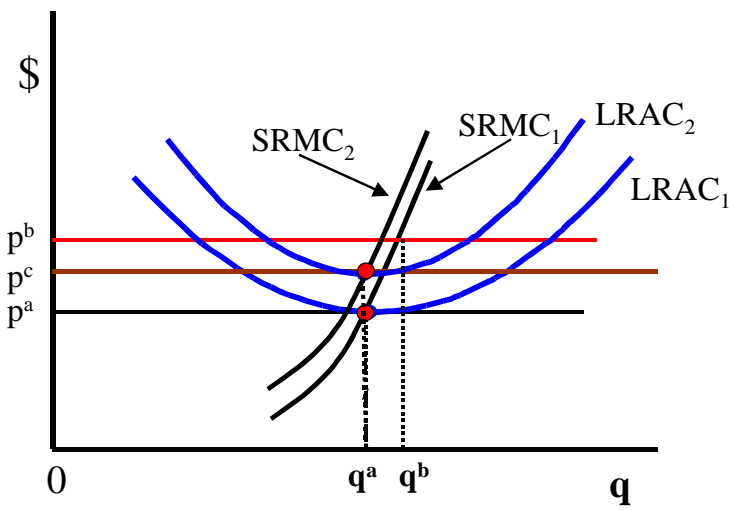
Market and Individual Firm Supply, Supply Price, Average Cost and Demand Price - Size 15 Plant

Q	y*	Supply Price - 26 Firms	AC	Demand Price
390.00	15	175.00	175.00	280.00
397.72	15.297059	202.00	175.26	272.28
413.01	15.885003	257.00	177.26	256.99
416.00	16	268.00	177.88	254.00
422.45	16.248077	292.00	179.43	247.55
442.00	17	367.00	186.06	228.00
468.00	18	472.00	199.00	202.00
494.00	19	583.00	216.26	176.00
520.00	20	700.00	237.50	150.00

Long-run Supply Curve in a Constant-cost Industry



Long-run Supply Curve in an Increasing-cost Industry



Long-run Supply Curve in a Decreasing-cost Industry

