Chapter 7

Costs

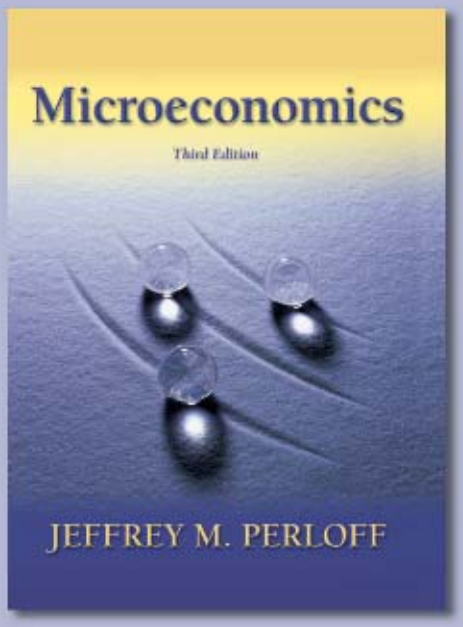


Table 7.1 Variation of Short-Run Cost with Output

Table 7.1 Variation of Short-Run Cost with Output

Output, q	Fixed Cost, F	Variable Cost, VC	Total Cost, C	Marginal Cost, MC	Average Fixed Cost, $AFC = F/q$	Average Variable Cost, $AVC = VC/q$	Average Cost, $AC = C/q$
0	48	0	48				
1	48	25	73	25	48	25	73
2	48	46	94	21	24	23	47
3	48	66	114	20	16	22	38
4	48	82	130	16	12	20.5	32.5
5	48	100	148	18	9.6	20	29.6
6	48	120	168	20	8	20	28
7	48	141	189	21	6.9	20.1	27
8	48	168	216	27	6	21	27
9	48	198	246	30	5.3	22	27.3
10	48	230	278	32	4.8	23	27.8
11	48	272	320	42	4.4	24.7	29.1
12	48	321	369	49	4.0	26.8	30.8

Figure 7.1 Short-Run Cost Curve

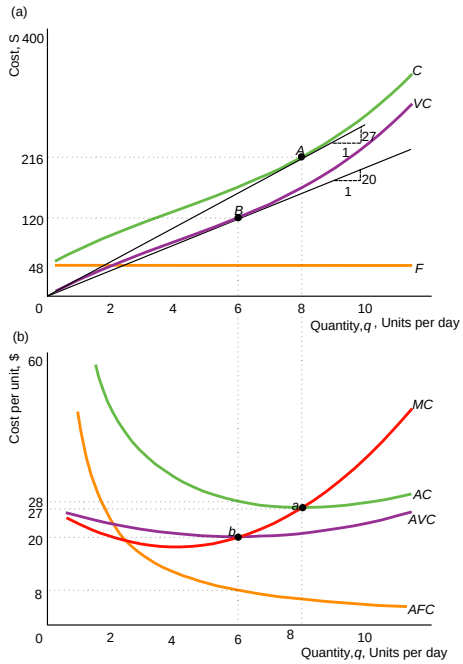
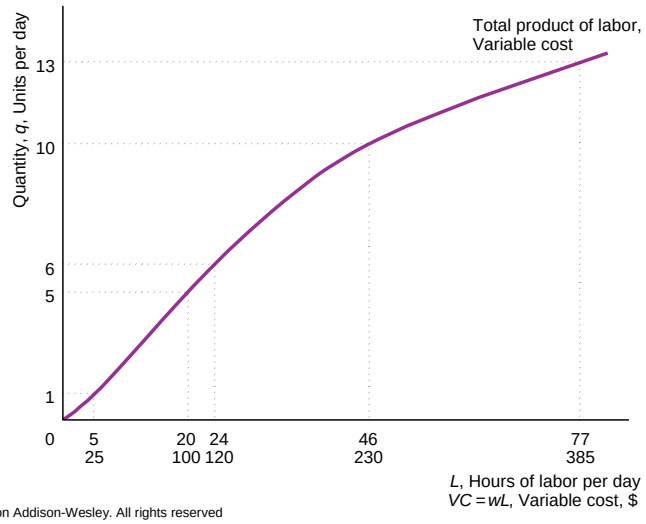


Figure 7.2 Variable Cost and Total Product of Labor



Application (Page 194) Short-Run Cost Curves for a Printing Firm

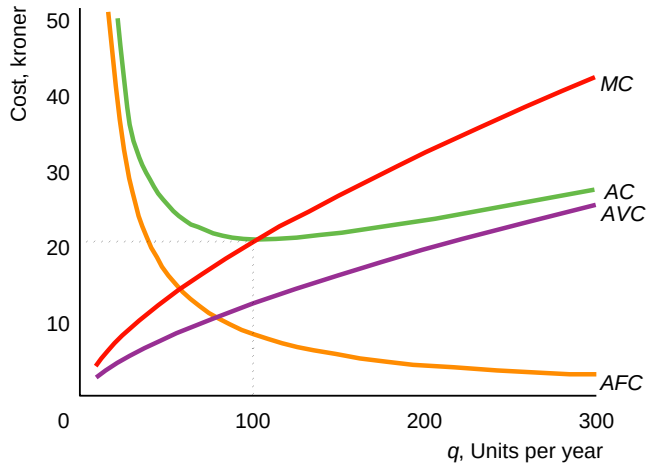
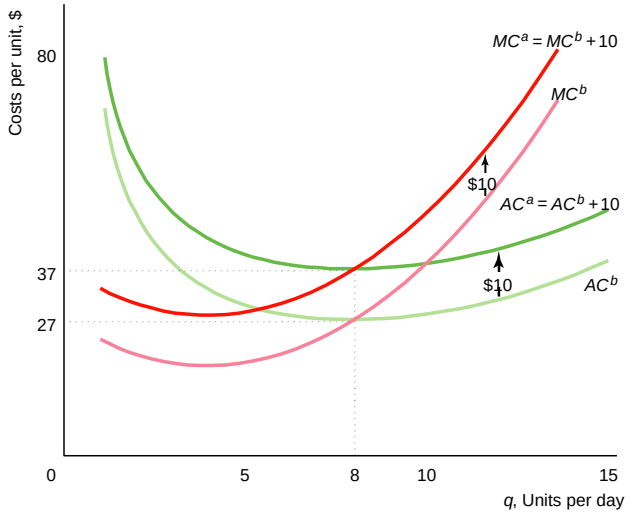


Table 7.2 Effect of a Specific Tax of $10 per Unit on Short-Run Costs

Table 7.2 Effect of a Specific Tax of $10 per Unit on Short-Run Costs

Q	AVC^b	$AVC^a = AVC^b + \$10$	$AC^b = C/q$	$AC^a = C/q + \$10$	MC^b	$MC^a = MC^b + \$10$
1	25	35	73	83	25	35
2	23	33	47	57	21	31
3	22	32	38	48	20	30
4	20.5	30.5	32.5	42.5	16	26
5	20	30	29.6	39.6	18	28
6	20	30	28	38	20	30
7	20.1	30.1	27	37	21	31
8	21	31	27	37	27	37
9	22	32	27.3	37.3	30	40
10	23	33	27.8	37.8	32	42
11	24.7	34.7	29.1	39.1	42	52
12	26.8	36.8	30.8	40.8	49	59

Figure 7.3 Effect of a Specific Tax on Cost Curves



Page 197 Solved Problem 7.1

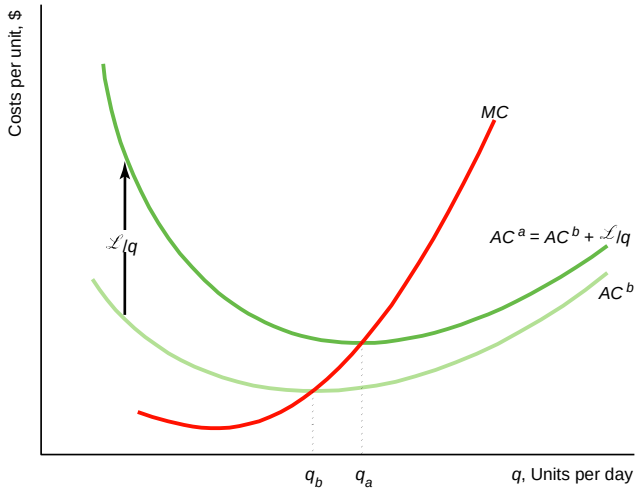


Table 7.3 Bundles of Labor and Capital that Cost the Firm $100

Table 7.3 Bundles of Labor and Capital That Cost the Firm $100

Bundle	Labor, L	Capital, K	Labor Cost, $wL = \$5L$	Capital Cost, $rK = \$10K$	Total Cost, $wL + rK$
a	20	0	$100	$0	$100
b	14	3	$70	$30	$100
c	10	5	$50	$50	$100
d	6	7	$30	$70	$100
e	0	10	$0	$10	$100

Figure 7.4 A Family of Isoquant Lines

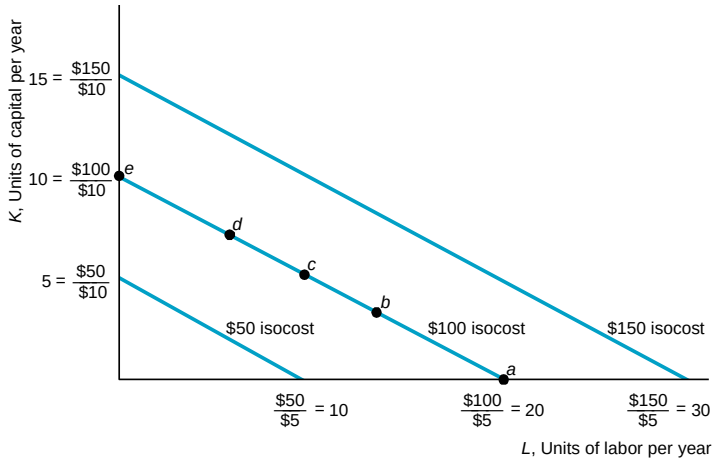
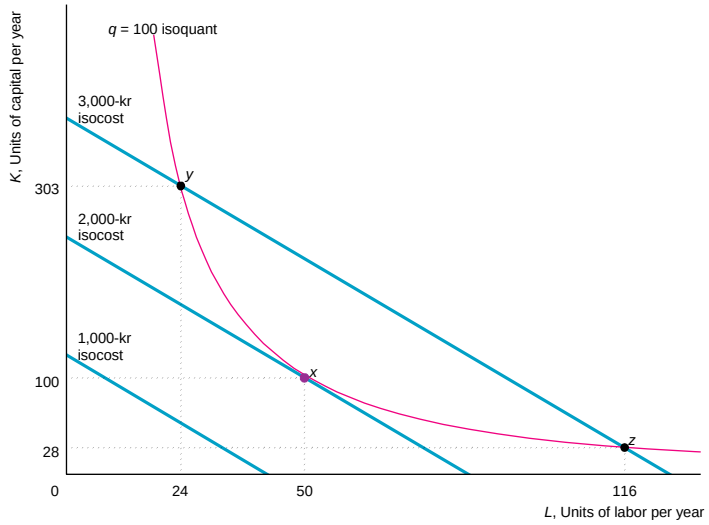


Figure 7.5 Cost Minimization



Application (Page 205)
Rice Milling on Java

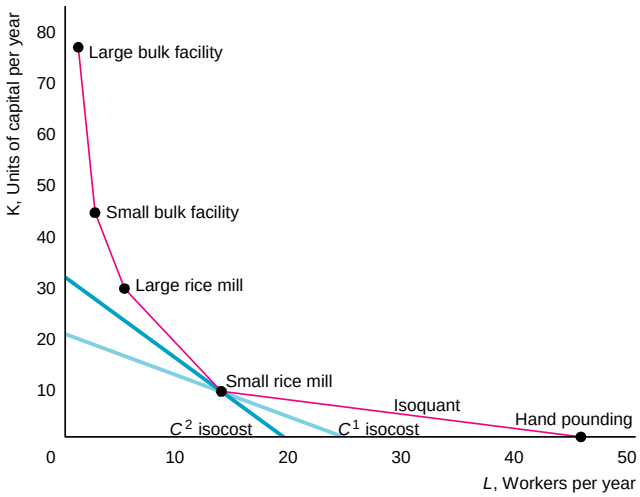


Figure 7.6 Change in Factor Price

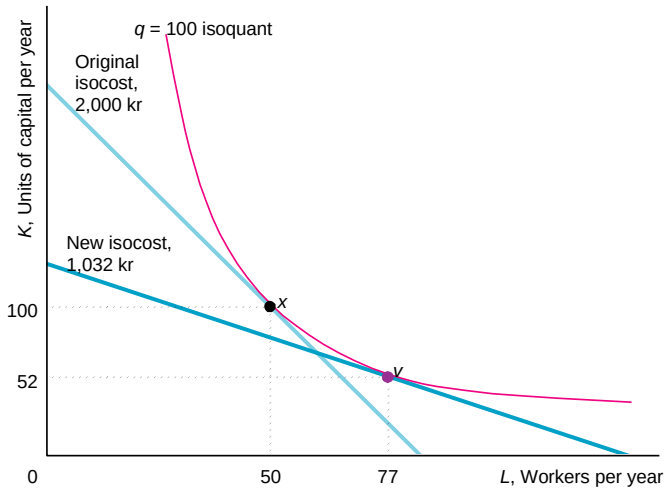


Figure 7.7 Expansion Path and Long-Run Cost Curve

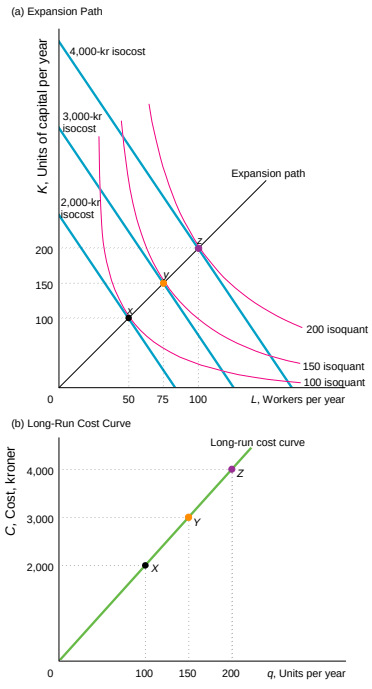


Figure 7.7a Expansion Path and Long-Run Cost Curve

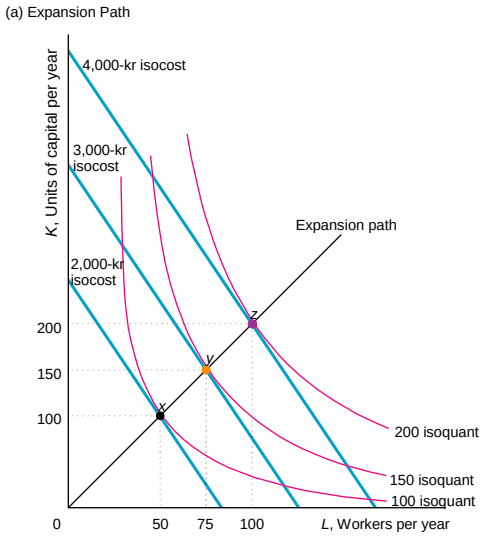


Figure 7.7b Expansion Path and Long-Run Cost Curve

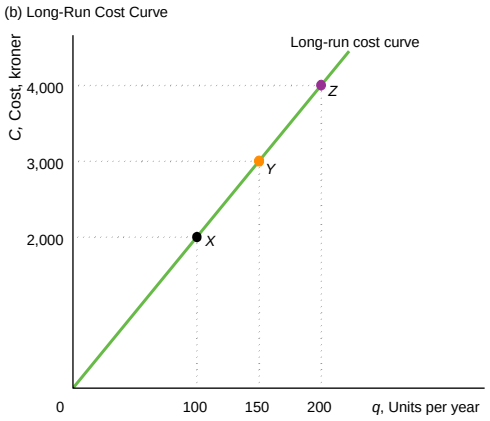


Figure 7.8 Long-Run Cost Curves

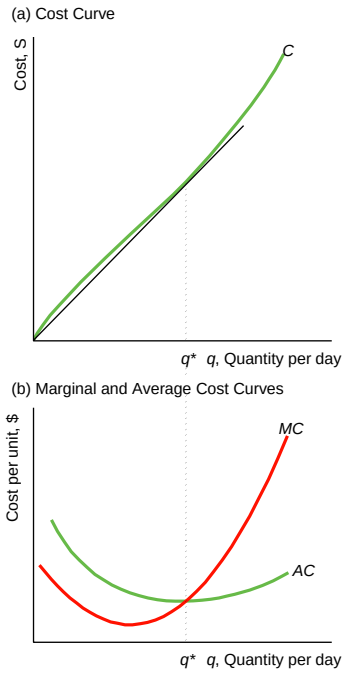


Table 7.4 Returns to Scale and Long-Run Costs

Table 7.4 Returns to Scale and Long-Run Costs

Output, Q	Labor, L	Capital, K	Cost, $C = wL + rK$	Average Cost, $AC = C/q$	Returns to Scale
1	1	1	12	12	
3	2	2	24	8	Increasing
6	4	4	48	8	Constant
8	8	8	96	12	Decreasing

$w = r = \$6$ per unit.

Table 7.5 Shape of Average Cost Curves in Canadian Manufacturing

Table 7.5 Shape of Average Cost Curves in Canadian Manufacturing

Scale Economies	Share of Manufacturing Industries, %	
Economies of scale: initially downward-sloping *AC*	57	
Everywhere downward-sloping *AC*		18
L-shaped *AC* (downward-sloping, then flat)		31
U-shaped *AC*		8
No economies of scale: flat *AC*	23	
Diseconomies of scale: upward-sloping *AC*	14	

Source: Robidoux and Lester (1992).

Application (Page 213) Average Cost of Cement Firms

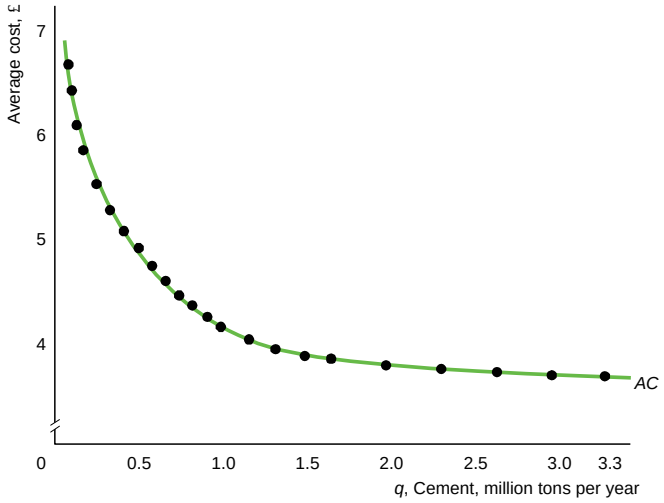
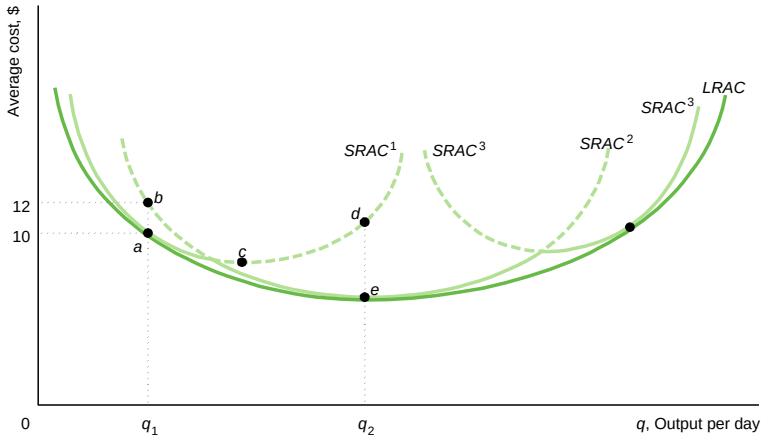
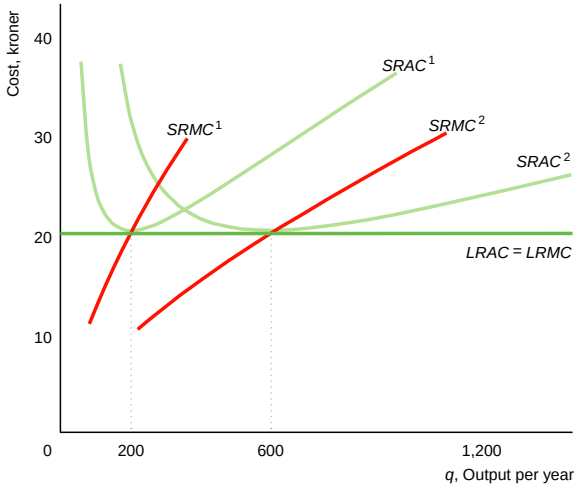


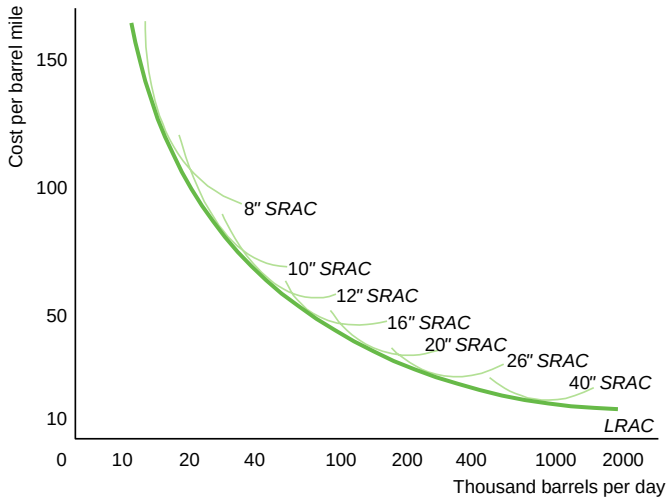
Figure 7.9
Long-Run Average Cost as the Envelope of Short-Run Average Cost Curves



Application (Page 216)
Printing Firm



Application (Page 217)
Oil Pipelines



Application (Page 218) Choosing an Ink-Jet or a Laser Printer

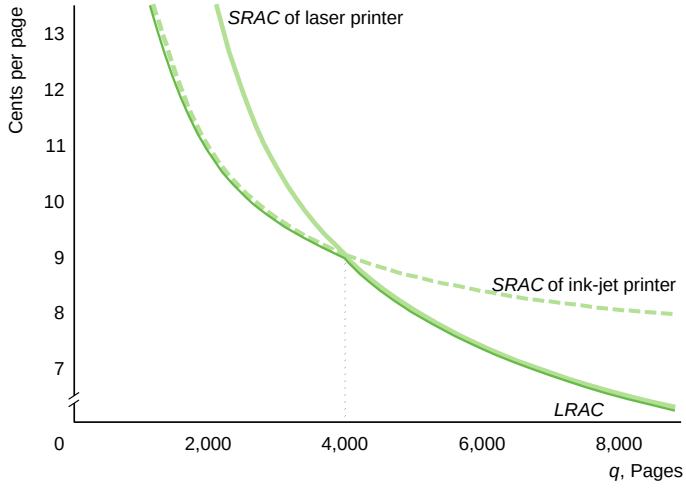


Figure 7.10 Long-Run and Short-Run Expansion Paths

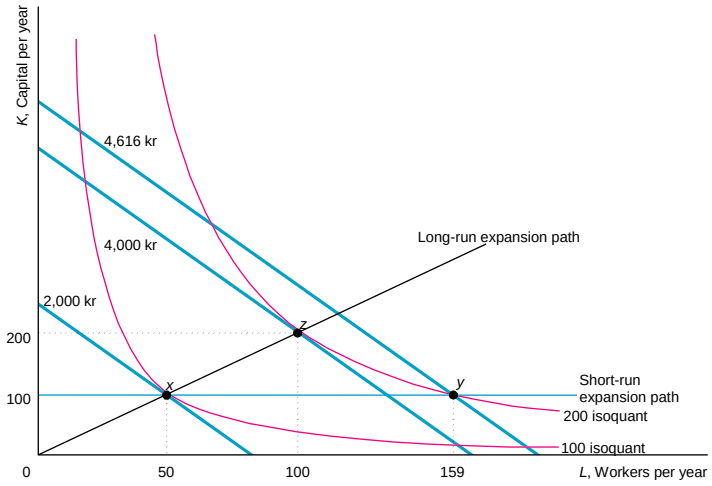


Figure 7.11 Learning by Doing

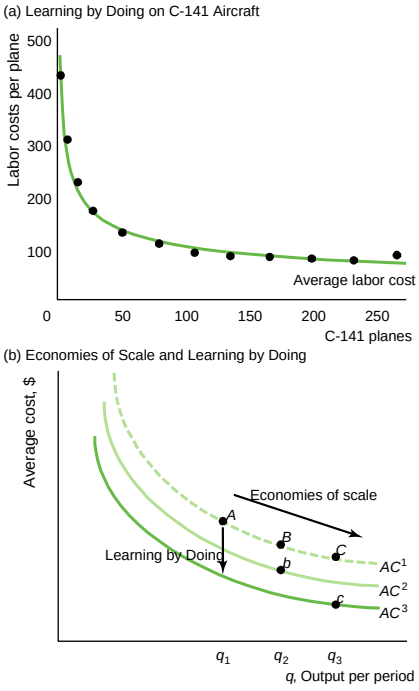


Figure 7.11a Learning by Doing

(a) Learning by Doing on C-141 Aircraft

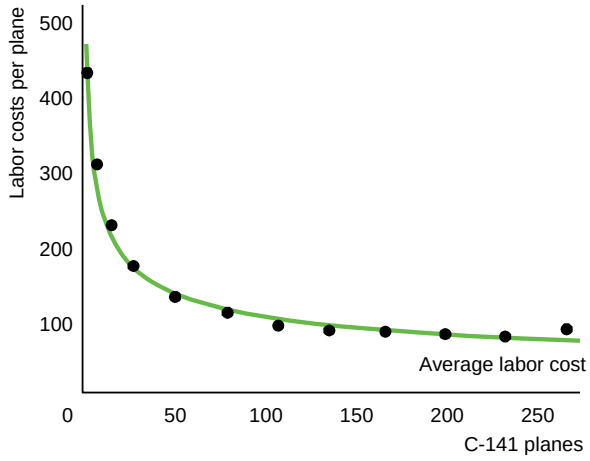


Figure 7.11b Learning by Doing

(b) Economies of Scale and Learning by Doing

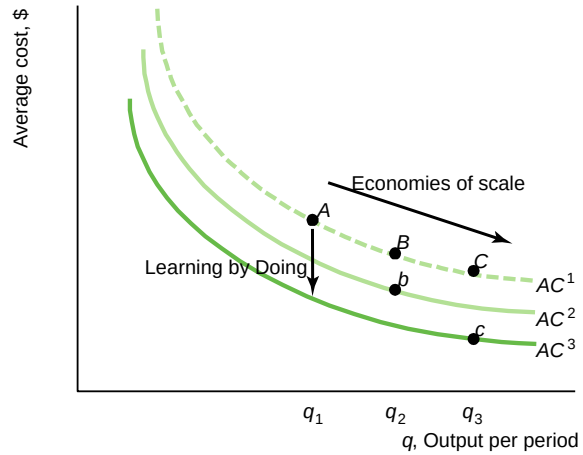


Figure 7.12 Joint Production