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# ***CHAPTER 19***

## **SHORT-TERM FINANCE AND PLANNING**

### **Answers to Concepts Review and Critical Thinking Questions**

1. These are firms with relatively long inventory periods and/or relatively long receivables periods. Thus, such firms tend to keep inventory on hand, and they allow customers to purchase on credit and take a relatively long time to pay.
2. These are firms that have a relatively long time between the time purchased inventory is paid for and the time that inventory is sold and payment received. Thus, these are firms that have relatively short payables periods and/or relatively long receivable cycles.
3.
  - a. Use: The cash balance declined by \$200 to pay the dividend.
  - b. Source: The cash balance increased by \$500, assuming the goods bought on payables credit were sold for cash.
  - c. Use: The cash balance declined by \$900 to pay for the fixed assets.
  - d. Use: The cash balance declined by \$625 to pay for the higher level of inventory.
  - e. Use: The cash balance declined by \$1,200 to pay for the redemption of debt.
4. Carrying costs will decrease because they are not holding goods in inventory. Shortage costs will probably increase depending on how close the suppliers are and how well they can estimate need. The operating cycle will decrease because the inventory period is decreased.
5. Since the cash cycle equals the operating cycle minus the accounts payable period, it is not possible for the cash cycle to be longer than the operating cycle if the accounts payable is positive. Moreover, it is unlikely that the accounts payable period would ever be negative since that implies the firm pays its bills before they are incurred.
6. It lengthened its payables period, thereby shortening its cash cycle.
7. Their receivables period increased, thereby increasing their operating and cash cycles.
8. It is sometimes argued that large firms “take advantage of” smaller firms by threatening to take their business elsewhere. However, considering a move to another supplier to get better terms is the nature of competitive free enterprise.
9. They would like to! The payables period is a subject of much negotiation, and it is one aspect of the price a firm pays its suppliers. A firm will generally negotiate the best possible combination of payables period and price. Typically, suppliers provide strong financial incentives for rapid payment. This issue is discussed in detail in a later chapter on credit policy.

- 10.** Ameritech will need less financing because it is essentially borrowing more from its suppliers. Among other things, Ameritech will likely need less short-term borrowing from other sources, so it will save on interest expense.

**Solutions to Questions and Problems**

*Basic*

1. a. N      b. N      c. N      d. D      e. D  
 f. D      g. N      h. D      i. I      j. D  
 k. D      l. N      m. D      n. D      o. I

2. Cash = \$8,500 + 1,800 - 2,200 - 2,250 = \$5,850  
 Current assets = \$2,250 + 1,000 + \$5,850 = \$9,100

3. a. I      b. I      c. D  
 d. N      e. D      f. N

4. first letter is cash cycle,      a. I; I      b. I; N      c. D; D  
 second is operating cycle.      d. D; D      e. D; N      f. I; I

5. a. 45-day collection period implies all receivables outstanding from the previous quarter are collected in the current quarter, and  $(90-45)/90 = 1/2$  of current sales are collected.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Beginning receivables	\$200	\$300	\$360	\$400
Sales	600	720	800	640
Cash collections	<u>(500)</u>	<u>(660)</u>	<u>(760)</u>	<u>(720)</u>
Ending receivables	<u>\$300</u>	<u>\$360</u>	<u>\$400</u>	<u>\$320</u>

- b. 60-day collection period implies all receivables outstanding from previous quarter are collected in the current quarter, and  $(90-60)/90 = 1/3$  of current sales are collected.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Beginning receivables	\$200	\$400	\$480	\$533
Sales	600	720	800	640
Cash collections	<u>(400)</u>	<u>(640)</u>	<u>(747)</u>	<u>(746)</u>
Ending receivables	<u>\$400</u>	<u>\$480</u>	<u>\$533</u>	<u>\$427</u>

- c. 30-day collection period implies all receivables outstanding from previous quarter are collected in the current quarter, and  $(90-30)/90 = 2/3$  of current sales are collected.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Beginning receivables	\$200	\$200	\$240	\$267
Sales	600	720	800	640
Cash collections	<u>(600)</u>	<u>(680)</u>	<u>(773)</u>	<u>(694)</u>
Ending receivables	<u>\$200</u>	<u>\$240</u>	<u>\$267</u>	<u>\$213</u>

6. Inventory turnover =  $\$51,912 / \{[\$7,281 + 9,319] / 2\} = 6.2548$  times  
 Inventory period =  $365 \text{ days} / 6.2548 = 58.355$  days  
 Receivables turnover =  $\$65,180 / \{[\$4,814 + 5,108] / 2\} = 13.1385$  times  
 Receivables period =  $365 \text{ days} / 13.1385 = 27.781$  days  
 Operating cycle =  $58.355 + 26.781 = 86.136$  days  
 Payables turnover =  $\$51,912 / \{[\$6,623 + 7,415] / 2\} = 7.3959$  times  
 Payables period =  $365 \text{ days} / 7.3959 = 49.3515$  days  
 Cash cycle =  $86.136 - 49.3515 = 36.784$  days  
 The firm is receiving cash on average 36.784 days after it pays its bills.

7. number of periods =  $365 / 42 = 8.6905$ ; EAR =  $(1 + 2/98)^{8.6905} - 1 = 19.19\%$

8. a. The payables period is zero since the company pays immediately.  
 Payment in each period = 0.30 times next period sales.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Payment of accounts	\$157.50	\$195.00	\$150.00	\$155.25

- b. Since the payables period is 90 days, payment in each period = 0.3 times current period sales.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Payment of accounts	\$135.00	\$157.50	\$195.00	\$150.00

- c. Since the payables period is 60 days, payment in each period = 2/3 of last quarter's orders, and 1/3 of this quarter's orders, or 2/3(.30) times current sales + 1/3(.30) next period sales.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Payment of accounts	\$142.50	\$170.00	\$180.00	\$151.75

9. Since the payables period is 60 days, payables in each period = 2/3 of last quarter's orders, and 1/3 of this quarter's orders, or 2/3(.75) times current sales + 1/3(.75) next period sales.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Payment of accounts	\$575.00	\$662.50	\$575.00	\$505.00
Wages, taxes, other expenses	140.00	180.00	170.00	120.00
Long-term financing expenses (interest and dividends)	60.00	60.00	60.00	60.00
Total	\$775.00	\$902.50	\$805.00	\$685.00

10. a. November sales =  $(\$60,000 - 26,000) / 0.15 = \$226,666.67$   
 b. December sales =  $\$26,000 / 0.35 = \$74,285.71$   
 c. January collections =  $.15(\$226,667.67) + .20(\$74,285.71) + .65(\$140,000) = \$139,857.29$   
 February collections =  $.15(\$74,285.71) + .20(\$140,000) + .65(\$162,000) = \$144,442.86$   
 March collections =  $.15(\$140,000) + .20(\$162,000) + .65(\$180,000) = \$170,400.00$

B-160 SOLUTIONS

11. Sales collections = .35 times current month sales + .60 times previous month sales.

	<u>April</u>	<u>May</u>	<u>June</u>
Beginning cash balance	\$300,000	\$285,500	\$365,900
Cash receipts			
Cash collections from credit sales	<u>241,500</u>	<u>328,200</u>	<u>374,400</u>
Total cash available	\$541,500	\$613,700	\$740,300
Cash disbursements			
Purchases	156,000	132,000	150,000
Wages, taxes, and expenses	20,400	22,200	25,200
Interest	9,600	9,600	9,600
Equipment purchases	<u>70,000</u>	<u>84,000</u>	<u>0</u>
Total cash disbursements	<u>256,000</u>	<u>247,800</u>	<u>184,800</u>
Ending cash balance	<u>\$285,500</u>	<u>\$365,900</u>	<u>\$555,500</u>

*Intermediate*

12. a. Borrow \$50M for one month, pay \$260,000 in interest, but you only get the use of \$48M.  
 $EAR = [1 + (\$260,000/\$48M)]^{12} - 1 = 6.697\%$   
 b. to end up with \$10M, you must borrow  $\$10M/.96 = \$10,416,666.67$   
 total interest paid =  $\$10,416,666.67 (1.0052)^6 - 10,416,666.67 = \$329,254.41$

13. a.  $EAR = 1.0150^4 - 1 = 6.14\%$   
 b. opportunity cost =  $.06(\$20M)(1.0150)^4 - .06(\$20M) = \$73,636.26$   
 interest cost =  $\$40M(1.019)^4 - 40M = \$3,127,742.65$   
 $EAR = (\$3,127,742.65 + 73,636.26)/\$40M = 8.003\%$   
 c.  $EAR = 1.019^4 - 1 = 7.82\%$

14. a. 45-day collection period means sales collections = 1/2 current sales + 1/2 old sales  
 36-day payables period means payables = 3/5 current orders + 2/5 old orders  
 cash inflows:  
 $Q1 = \$76 + 1/2(\$210) - 2/5(.45)(\$210) - 3/5(.45)(\$180) - .30(\$210) - \$15 = \$16.60$   
 $Q2 = 1/2(\$210) + 1/2(\$180) - 2/5(.45)(\$180) - 3/5(.45)(\$240) - .30(\$180) - \$15 - 90 = -\$61.20$   
 $Q3 = 1/2(\$180) + 1/2(\$240) - 2/5(.45)(\$240) - 3/5(.45)(\$270) - .30(\$240) - \$15 = \$6.90$   
 $Q4 = 1/2(\$240) + 1/2(\$270) - 2/5(.45)(\$270) - 3/5(.45)(\$225) - .30(\$270) - \$15 = \$49.65$

WILDCAT, INC.

Short-Term Financial Plan  
 (in millions)

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Beginning cash balance	\$68.00	\$84.60	\$23.40	\$30.30
Net cash inflow	<u>16.60</u>	<u>(61.20)</u>	<u>6.90</u>	<u>49.65</u>
Ending cash balance	\$84.60	\$23.40	\$30.30	\$79.95
Minimum cash balance	<u>(30.00)</u>	<u>(30.00)</u>	<u>(30.00)</u>	<u>(30.00)</u>
Cumulative surplus (deficit)	\$54.60	(\$ 6.60)	\$ 0.30	\$49.95

WILDCAT, INC.  
Short-Term Financial Plan  
(in millions)

<i>b.</i>	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Beginning cash balance	\$30.00	\$30.00	\$30.00	\$30.00
Net cash inflow	16.60	(61.20)	6.90	49.65
New short-term investments	(17.36)	0	(2.03)	(49.69)
Income on short-term investments	0.76	1.11	0	0.04
Short-term investments sold	0	55.36	0	0
New short-term borrowing	0	4.73	0	0
Interest on short-term borrowing	0	0	(0.14)	0
Short-term borrowing repaid	<u>0</u>	<u>0</u>	<u>(4.73)</u>	<u>0</u>
Ending cash balance	\$30.00	\$30.00	\$30.00	\$30.00
Minimum cash balance	<u>(30.00)</u>	<u>(30.00)</u>	<u>(30.00)</u>	<u>(30.00)</u>
Cumulative surplus (deficit)	\$ 0	\$ 0	\$ 0	\$ 0
Beginning short-term investments	\$38.00	\$55.36	\$0	\$2.03
Ending short-term investments	\$55.36	0	\$2.03	\$51.72
Beginning short-term debt	0	0	\$4.73	0
Ending short-term debt	0	\$4.73	0	0

Q1: excess funds at start of quarter of \$38 invested for 1 quarter earns  $.02(\$38) = \$0.76$  income

Q2: excess funds of \$55.36 invested for 1 quarter earns  $.02(\$55.36) = \$1.11$  in income

Q3: shortage funds of \$4.73 borrowed for 1 quarter costs  $.03(\$4.73) = \$0.14$  in interest

Q4: excess funds of \$2.03 invested for 1 quarter earns  $.02(\$2.03) = \$0.04$  in income

15. *a.*

WILDCAT, INC.  
Short-Term Financial Plan  
(in millions)

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Beginning cash balance	\$45.00	\$45.00	\$45.00	\$45.00
Net cash inflow	16.60	(61.20)	6.90	49.65
New short-term investments	(17.06)	0	0	(35.18)
Income on short-term investments	0.46	0.80	0	0
Short-term investments sold	0	40.06	0	0
New short-term borrowing	0	20.34	0	0
Interest on short-term borrowing	0	0	(0.61)	(0.42)
Short-term borrowing repaid	<u>0</u>	<u>0</u>	<u>(6.29)</u>	<u>(14.05)</u>
Ending cash balance	\$45.00	\$45.00	\$45.00	\$45.00
Minimum cash balance	<u>(45.00)</u>	<u>(45.00)</u>	<u>(45.00)</u>	<u>(45.00)</u>
Cumulative surplus (deficit)	\$0	\$0	\$0	\$0
Beginning short-term investments	\$23.00	\$40.06	0	0
Ending short-term investments	\$40.06	0	0	\$35.18
Beginning short-term debt	0	0	\$20.34	\$14.05
Ending short-term debt	0	\$20.34	\$14.05	0





b.

WILDCAT, INC.  
Short-Term Financial Plan  
(in millions)

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Beginning cash balance	\$15.00	\$15.00	\$15.00	\$15.00
Net cash inflow	16.60	(61.20)	6.90	49.65
New short-term investments	(17.66)	0	(7.12)	(50.01)
Income on short-term investments	1.06	1.41	0.22	0.36
Short-term investments sold	0	59.79	0	0
New short-term borrowing	0	0	0	0
Interest on short-term borrowing	0	0	0	0
Short-term borrowing repaid	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Ending cash balance	\$15.00	\$15.00	\$15.00	\$15.00
Minimum cash balance	<u>(15.00)</u>	<u>(15.00)</u>	<u>(15.00)</u>	<u>(15.00)</u>
Cumulative surplus (deficit)				
Beginning short-term investments	\$53.00	\$70.66	\$10.87	\$17.99
Ending short-term investments	\$70.66	\$10.87	\$17.99	\$68.00
Beginning short-term debt	0	0	0	0
Ending short-term debt	0	0	0	0

Since cash has an opportunity cost, the firm can boost its profit if it keeps its minimum cash balance low and invests the cash instead. However, the tradeoff is that in the event of unforeseen circumstances, the firm may not be able to meet its short-run obligations if not enough cash is available.

Challenge

16. a. For every \$1 borrowed, you pay \$0.018 in interest and get to use \$0.95.  

$$\text{EAR} = [(1.018)^4 - 1]/.95 = 7.786\%$$
 b. 
$$\text{EAR} = \$550[(1.018)^4 - 1]/[.95(\$550) - .00105(\$750)] = 7.798\%$$
17. You're paying \$210,000 in interest, but you only get the use of \$2,550,000, the combination of the discount loan (\$210,000) and the compensating balance (\$240,000).  

$$\text{EAR} = \$210,000/\$2,550,000 = 8.24\%$$