



## Chapter 18 - Short-Term Finance and Planning

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### CHAPTER 18

#### 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 operating cycle.
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. It lengthened its payables period, thereby shortening its cash cycle.
5. Their receivables period increased, thereby increasing their operating and cash cycles.
6. 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.
7. 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.
8. 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.
 

<i>a.</i> N	<i>b.</i> N	<i>c.</i> N
<i>d.</i> D	<i>e.</i> D	<i>f.</i> I
<i>g.</i> N	<i>h.</i> D	<i>i.</i> I
<i>j.</i> D	<i>k.</i> D	<i>l.</i> N
<i>m.</i> D	<i>n.</i> D	<i>o.</i> D
  
2.
 

Cash =  $\$7,500 + 1,500 - 2,000 - 2,250 = \$4,750$

Current assets =  $\$2,250 + 1,000 + 4,750 = \$8,000$
  
3.
 

<i>a.</i> D	<i>b.</i> D	<i>c.</i> I
<i>d.</i> N	<i>e.</i> I	<i>f.</i> 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 previous quarter are collected in the current quarter, and  $(90-45)/90 = 1/2$  of current sales are collected.

Q2	Q3	Q4	Q1	
	Beginning receivables		\$200	\$175
\$250	\$300			
	Sales		350	
500	600	400		
	Cash collections		<u>(375)</u>	<u>(425)</u>
<u>(550)</u>	<u>(500)</u>			
	Ending receivables		<u>\$175</u>	<u>\$250</u>
<u>\$300</u>	<u>\$200</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.

Q2	Q3	Q4	Q1	
	Beginning receivables		\$200	\$233
\$333	\$400			
	Sales		350	
500	600	400		
	Cash collections		<u>(317)</u>	<u>(400)</u>
<u>(533)</u>	<u>(533)</u>			
	Ending receivables		<u>\$233</u>	<u>\$333</u>
<u>\$400</u>	<u>\$267</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.

Q2	Q3	Q4	Q1	
\$167	Beginning receivables \$200		\$200	\$117
500	Sales 600	400	350	
(567)	Cash collections (467)		(433)	(450)
\$200	Ending receivables \$133		\$117	\$167

6. Inventory turnover =  $\$50,625 / [(6,521 + 8,319) / 2] = 6.8228$  times  
 Inventory period =  $365 \text{ days} / 6.8228 = 53.497$  days  
 Receivables turnover =  $\$62,311 / [(4,226 + 4,787) / 2] = 13.827$  times  
 Receivables period =  $365 \text{ days} / 13.827 = 26.398$  days  
 Operating cycle =  $53.497 + 26.398 = 79.895$  days  
 Payables turnover =  $\$50,625 / [(6,291 + 7,100) / 2] = 7.561$  times  
 Payables period =  $365 \text{ days} / 7.561 = 48.274$  days  
 Cash cycle =  $79.895 - 48.274 = 31.621$  days  
 The firm is receiving cash on average 31.621 days after it pays its bills.

7. Number of periods =  $365 / 45 = 8.111$ ; EAR =  $(1 + 2/98)^{8.111} - 1 = 17.81\%$

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

Q2	Q3	Q4	Q1	
\$120.00	Payment of accounts \$120.75		\$127.50	\$165.00

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

Q2	Q3	Q4	Q1	
		Payment of accounts	\$105.00	\$127.50
\$165.00	\$120.00			

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.

Q2	Q3	Q4	Q1	
		Payment of accounts	\$112.50	\$140.00
\$150.00	\$120.25			

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.

Q2	Q3	Q4	Q1		
		Payment of accounts	\$500.00	\$587.50	
\$450.00	\$277.50				
		Wages, taxes, other expenses	180.00	240.00	225.00
90.00					
		Long-term financing expenses	60.00	60.00	60.00
60.00					
		(interest and dividends)			
<hr/>					
		Total	\$740.00	\$887.50	
\$735.00	\$427.50				

10. a. November sales =  $(\$70,000 - 34,000)/0.15 = \$240,000$

- b. December sales =  $\$34,000/0.35 = \$97,142.86$
- c. January collections =  $.15(\$240,000) + .20(97,142.86) + .65(120,000) = \$133,428.57$   
 February collections =  $.15(\$97,142.86) + .20(120,000) + .65(135,000) = \$126,321.43$   
 March collections =  $.15(\$120,000) + .20(135,000) + .65(155,000) = \$145,750.00$

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

<i>April</i>	<i>May</i>	<i>June</i>		
	Beginning cash balances		\$250,000	
\$251,250	\$298,250			
	Cash receipts			
	Cash collections from		201,250	
273,500	312,000			
	credit sales		_____	
_____	_____			
\$524,750	Total cash available		\$451,250	
	\$610,250			
	Cash disbursements			
	Purchases		125,000	
130,000	110,000			
	Wages, taxes, and expenses		17,000	
18,500	21,000			
	Interest			
8,000	8,000	8,000		
	Equipment purchases		50,000	
70,000	0		_____	—
_____	_____			
\$226,500	Total cash disbursements		\$200,000	
	\$139,000			
	Ending cash balance		\$251,250	
\$298,250	\$471,250			

Intermediate

12. a. Borrow \$50M for one month, pay \$325,000 in interest, but you only get the use of \$48.5M.

$$\text{EAR} = [1 + (\$325,000/48.5\text{M})]^{12} - 1 = 8.340\%$$

b. To end up with \$5M, must borrow  $\$5\text{M}/.97 = \$5,154,639.18$

$$\text{Total interest paid} = \$5,154,639.18(1.00650)^6 - 5,154,639.18 = \$204,326.13$$

13. a.  $\text{EAR} = 1.0205^4 - 1 = 8.46\%$

b. Opportunity cost =  $.07(\$20\text{M})(1.0205)^4 - .07(20\text{M}) = \$118,378.59$

$$\text{Interest cost} = \$40\text{M}(1.025)^4 - 40\text{M} = \$4,152,515.62$$

$$\text{EAR} = \$4,270,894.21/40\text{M} = 10.68\%$$

c.  $\text{EAR} = 1.025^4 - 1 = 10.38\%$

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

$$\begin{aligned} \text{Q1: Cash inflow} &= \$55 + 1/2(140) - 2/5(.45)(140) - 3/5(.45)(120) - .30(140) - 10 \\ &= \$15.40 \end{aligned}$$

$$\begin{aligned} \text{Q2: Cash inflow} &= 1/2(\$140) + 1/2(120) - 2/5(.45)(120) - 3/5(.45)(160) - .30(120) - 10 - 60 \\ &= -\$40.80 \end{aligned}$$

$$\begin{aligned} \text{Q3: Cash inflow} &= 1/2(\$120) + 1/2(160) - 2/5(.45)(160) - 3/5(.45)(180) - .30(160) - 10 \\ &= -\$4.60 \end{aligned}$$

$$\begin{aligned} \text{Q4: Cash inflow} &= 1/2(\$160) + 1/2(180) - 2/5(.45)(180) - 3/5(.45)(150) - .30(180) - 10 \\ &= \$33.10 \end{aligned}$$

MAC DADDY, INC.

Cash Balance (in millions)

	Q2	Q3	Q4	Q1
Beginning cash balance				\$45.00
\$24.20				\$60.40
				\$19.60
Net cash inflow				<u>15.40</u>
4.60				<u>(40.80)</u>
Ending cash balance				\$ 60.40
24.20				\$ 19.60
				\$

Minimum cash balance	(20.00)	(20.00)	(20.00)
(20.00)			
Cumulative surplus (deficit)	\$40.40	(\$0.40)	\$4.20
\$37.30			

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

Q1	Q2	Q3	Q4
Beginning cash balance			\$20.00
\$20.00	\$20.00	\$20.00	
Net cash inflow			15.40
(40.80)	4.60	33.10	
New short-term investments			(15.90)
0	(4.62)	(33.21)	
Income on short-term investments			0.50
0.02	0.11		0.82
Short-term investments sold			0
39.98	0	0	
New short-term borrowing			0
0	0	0	
Interest on short-term borrowing			0
0	0	0	
Short-term borrowing repaid			0
0	0	0	
Ending cash balance			\$20.00
\$20.00	\$20.00	\$20.00	
Minimum cash balance			(20.00)
(20.00)	(20.00)	(20.00)	
Cumulative surplus (deficit)			\$0
\$0	\$0	\$0	
Beginning short-term investments			\$25.00
\$0.92	\$5.54		\$ 40.90



	Ending short-term investments	40.90	0.92
5.54	38.75		
	Beginning short-term debt	0	
0	0	0	
	Ending short-term debt	0	
0	0	0	

- b. Q1: excess funds at start of quarter of \$25 invested for 1 quarter earns \$0.50 in income  
 Q2: excess funds of \$40.90 invested for 1 quarter earns  $.02(\$40.90) = \$0.82$  in income  
 Q3: excess funds of \$0.92 invested for 1 quarter earns  $.02(\$0.92) = \$0.02$  in income  
 Q4: excess funds of \$5.54 invested for 1 quarter earns  $.02(\$5.54) = \$0.11$  in income

15. a. MAC DADDY, INC.

Short-Term Financial Plan

(in millions)

Q1	Q2	Q3	Q4	
				Beginning cash balance
\$30.00	\$30.00	\$30.00		\$30.00
				Net cash inflow
(40.80)	4.60	33.10		15.40
				New short-term investments
0	0	(27.77)		(15.70)
				Income on short-term investments
0	0			0.30
				0.61
				Short-term investments sold
30.70	0	0		0
				New short-term borrowing
9.49	0	0		0
				Interest on short-term borrowing
0	(0.28)	(0.16)		0
				Short-term borrowing repaid
0	4.32	5.17		0
				Ending cash balance
\$30.00	\$ 30.00	\$30.00		\$30.00
				Minimum cash balance
				(30.00)

(30.00) (30.00) (30.00)

	Cumulative surplus (deficit)		\$	0	\$
0	\$ 0	\$ 0			
30.70	Beginning short-term investments		\$	15.00	\$
	\$ 0	\$ 0			
0	Ending short-term investments			30.70	
	0	27.77			
0	Beginning short-term debt			0	
	9.49	5.17			
9.49	Ending short-term debt			0	
	5.17	0.00			

b.

MAC DADDY, INC.

Short-Term Financial Plan

(in millions)

Q1	Q2	Q3	Q4		
10.00				Beginning cash balance	\$ 10.00 \$
	\$ 10.00	\$ 10.00			
(40.80)				Net cash inflow	15.40
	4.60	33.10			
(4.83)				New short-term investments	(16.10) 0
	(33.42)				
0.23				Income on short-term investments	0.70 1.02
	0.32				
39.78				Short-term investments sold	0
	0	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>
	0	0			
10.00				Ending cash balance	\$ 10.00 \$
	\$ 10.00	\$ 10.00			

	Minimum cash balance	(10.00)	(10.00)	
	<u>(10.00)</u>	<u>(10.00)</u>		
0	Cumulative surplus (deficit)	\$ 0	\$	
0	\$ 0	\$ 0		
11.32	Beginning short-term investments	\$35.00	\$51.10	\$
	\$ 16.15			
16.15	Ending short-term investments	51.10	11.32	
	49.57			
0	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 \$0.02 in interest and get to use \$0.95.

$$\text{EAR} = [(1.02)^4 - 1]/.95 = 8.68\%$$

b.  $\text{EAR} = \$550[(1.02)^4 - 1]/[.95(550) - .00125(750)] = 8.69\%$

17. You're paying \$240,000 in interest, but you only get the use of \$2,580,000, the combination of the discount loan (\$240,000) and the compensating balance (\$180,000).

$$\text{EAR} = \$240,000/2,580,000 = 9.30\%$$

With the commitment fee, the usable funds are now only \$2,577,000.

$$\text{EAR} = \$240,000/2,577,000 = 9.31\%$$