Chapter 20

Cash, Payables, and Liquidity Management

Answers to Concept Review Questions

1. What is float? What are its four components? What is the difference between availability float and clearing float?

   Float refers to funds that have been sent by the payer but are not yet usable funds to the payee. The four components of float are:
   - Mail float, the time delay between when payment is placed in the mail and when it is received
   - Processing float, the time between receipt of the payment and its deposit into the firm’s accounts
   - Availability float, the time between deposit of the check and the availability of the funds to the firm
   - Clearing float, the time between the deposit of the check and the presentation of the check back to the bank on which it is drawn

2. What activities are involved in cash position management? How does the cash manager monitor and take actions with regard to the end-of-day checking account balances?

   Cash position management involves looking at, on a daily basis, the collection, concentration and disbursement of funds for the company. The cash manager looks at the amount of funds to be collected, moves balances to appropriate accounts and funds projected disbursements. The cash position can be managed into the future when future cash flows can be properly forecasted.

3. How do smaller firms that do not engage in cash position management typically set their target cash balance? What is typically detailed in a bank account analysis statement?

   Smaller firms that do not engage in active cash position management may set a target cash balance for their checking accounts. Generally this is determined based on transactions requirements or a minimum balance set by the bank. The transactions requirement is determined by how much cash a firm needs for its day-to-day operations. A bank account analysis statement determines the value of the balances a firm leaves on deposit and matches that to the value of the services provided by the bank.

4. What is the firm’s objective with regard to collection float? What are the common types of collection systems?

   The primary delay in the collections prices is collections float, a function of mail float, processing float and availability float. A primary goal in the collection area is to reduce each of these float components as much as possible. The most common types of collection
systems are field-banking system, mail-based system, electronic systems and lockbox systems.

5. What are the benefits of using a lockbox system? How does it work? How can the firm assess the economics of a lockbox system?

A lockbox system affects all three components of float. Customers mail payments to a post office box, which is emptied by the firm’s bank. The bank processes each payment and deposits the payments in the firm’s account. The bank sends deposit slips to the firm so they can be credited to the customers’ accounts. Because lockboxes are located near the firm’s customers, mail time is reduced and often clearing time is also reduced. Processing time is reduced to almost zero because the bank deposits payments before the firm processes them. The firm assesses the economics of a lockbox system by performing a cost-benefit analysis based on the float value reduction in dollars, the firm’s cost of capital, the annual operating cost of the lockbox system and the firm’s tax rate.

6. Why do firms employ cash concentration techniques? What are some of the popular transfer mechanisms used by firms to move funds from depository banks to their concentration banks?

Firms use cash concentration techniques to bring in lockbox and other deposits to a single bank, the concentration bank. Cash concentration creates a large pool of funds for use in making short-term cash investments, which in turn reduces the transactions costs of short-term investing. The larger investment pool allows the firm to choose from a larger variety of marketable securities. Concentrating the firm’s cash in one account improves the tracking and internal control of the firm’s cash. Having one concentration bank allows the firm to more effectively implement payment strategies that preserve investable balances for as long as possible. Mechanisms for transferring cash include depository transfer checks, ACH transfers and wire transfers.

7. How can the cash manager model the benefits and costs of various funds transfer mechanisms to assess their economics? How can this analysis be used to determine the minimum transfer amount?

The firm must balance the benefits and costs of concentrating cash to determine the type and timing of transfers from its lockbox accounts to its concentration account. The transfer mechanism should be the one that is the most profitable, in other words, maximize profit per period, which equals earnings on the increased funds’ availability minus the cost of the transfer system. Most companies use wire transfers for large amounts and EDTs for high volume, low dollar transfers from small deposit banks.

8. What is the primary purpose of the accounts payable function? Describe the procedures used to manage accounts payable. What are the key differences between centralized and decentralized payables and payment systems?

Accounts payable management is concerned with the time between the purchase of raw materials and the mailing of payment to the supplier. The A/P function examines all incoming invoices and determines the proper amount to be paid. The cash manager matches the invoice to the purchase order and assures that the goods were actually
received. Companies may make full use of any credit period offered. Once payment has been authorized (vouchering), the cash manager generally manages the preparation and mailing or checks or initiates the electronic transfer of funds. In a centralized system, all invoices are sent to a central accounts payable department where payment is authorized and checks or other forms of payment are initiated. Centralized systems offer easier concentration of funds, improved access to cash position information, better control and reduced transaction and administrative costs. There may, however, be slow payment times and a need to coordinate between central payables and field offices to resolve disputes. In a decentralized approach payments are authorized and in some cases initiated at the local level. The approach may help improve relationships with vendors and local management autonomy, it is harder to concentrate funds and obtain daily cash position information and increases the chance of unauthorized disbursements.

9. When is it advantageous for a company to pay early and take an offered cash discount? Under what circumstance would the firm be advised to always take any offered cash discounts?

The difference between the payment amount with and without taking the cash discount is in effect the interest payment made by the firm to the supplier. The firm must compare the interest rate charged by its suppliers to the best rate charged by its short-term lenders. If the firm’s outside financing is more costly, then it should take the cash discount and pay its suppliers early.

10. What is the difference between a ZBA and a controlled disbursement account? Are they direct substitutes?

A zero balance account always has an end-of-day balance of zero. This eliminates nonearning cash balances in corporate checking accounts. Controlled disbursement is a bank service that provides early notification of checks that will be presented against a company’s account on a given day. This allows the firm to determine its cash position and make any necessary investment/borrowing decisions in the morning. Controlled disbursement accounts can be set up as zero balance accounts for automatic funding through a company’s concentration account.

11. What are some of the recent developments in the accounts payable and disbursements area? What role does new technology play in fraud prevention in disbursements?

Recent developments include integrated accounts payable, providing a company with outsourcing its accounts payable or disbursement operations; purchasing/procurement cards allowing low-dollar purchases to be collected, with a single, large payment; and imaging services, allowing both sides of a check and remittance information to be converted into digital images. Technology has made fraud easier, for example by creating fraudulent checks using scanners, computers and laser printers. Common fraud prevention measures include: written policies and procedures for creating and disbursing checks, separating duties such as approval, signing and reconciliation, using safety features on checks, setting maximum dollar limits or requiring multiple signatures, using positive pay services and increasing the use of electronic payment methods.
12. Why are liquidity and preservation of principal the primary concerns in choosing short-term investments? What guidelines should be included in a short-term investment policy?

Short-term investments must be liquid so the company can cash them in easily when needed. Preservation of principal is also important since the firm will want to know how much cash it will have available when needed. A short-term investment policy should look at instruments that earn a competitive return. Guidelines should specify the purpose of the investment portfolio and provide recommendations and/or restrictions on acceptable investments and diversification.

13. What securities are considered the benchmark for money market investments, and why? What are some of the popular non-U.S. Treasury money market instruments?

U.S. Treasury bills are the benchmark for money market investments. They are safe and highly liquid, with a very active secondary market. Popular non-U.S. Treasury securities include federal agency issues, bank financial instruments like CDs, time deposits and banker’s acceptances, and corporate obligations like commercial paper and adjustable rate preferred stock.

14. What are the key base rates used in variable rate short-term borrowing, and how do they factor into the all-in-rate? What other charges might be applicable to short-term borrowing? How do they impact the effective borrowing rate (EBR)?

The key base rates used in variable rate short-term borrowing are the prime rate, the rate of interest charged by the largest U.S. banks on short-term loans to their best business customers and LIBOR, (London Interbank Offered Rate), the rate that most creditworthy international banks that deal in Eurodollars charge on interbank loans. Banks may charge the company prime plus a specified number of basis points, and the bank may charge fees that also impact the effective borrowing rate. Factors that affect the effective interest rate include the amount of interest and fees paid, usable amount of the loan and term of the loan.

Answers to Self-Test Problems

ST20-1. Gale Supply estimates that its customers’ payments are in the mail for 3 days, and once received they are processed in 2 days. After the payments are deposited in the firm’s bank, the funds are made available to the firm by the bank in 2.5 days. The firm estimates its total annual collections, received at a constant rate, from credit customers to be $87 million. Its annual opportunity cost of funds is 9.5 percent. Assume a 365-day year.

a. How many days of collection float does Gale Supply have?

b. What is the current annual dollar cost of Gale Supply’s collection float?

c. If the installation of an electronic invoice presentment and payment (EIPP) system would result in a 4 day reduction in Gale’s collection float, how much could the firm earn annually on this float reduction?

d. Based on your findings in part c, should Gale install the EIPP system if its annual cost is $85,000? Explain your recommendation.

a. Collection float = mail float + processing float + availability float

   = 3.0 days + 2.0 days + 2.5 days = 7.5 days
b. Average daily receipts = annual receipts ÷ 365 days

= $87 million ÷ 365 days = $238,356

Collection float ($) = collection float (days) x average daily receipts

= 7.5 days x $238,356 = $1,787,670

Annual dollar cost = collection float ($) x opportunity cost

= $1,787,670 x 9.5% = $169,829

c. Annual earnings = float reduction (days) x average daily receipts x opportunity cost

= 4.0 days x $238,356 x 9.5% = $90,575

d. Gale should install the proposed EIPP system. The annual earnings of $90,575 exceed the annual cost of $85,000, thereby resulting in an annual profit contribution of $5,575 ($90,575 - $85,000).

ST20-2. Derson Manufacturing wishes to evaluate the credit terms offered by its four biggest suppliers of raw materials. The prime rate is currently 7.0 percent and Derson can borrow short-term funds at a spread 2.5 percent above the prime rate. Assume a 365-day year and that the firm always pays its suppliers on the last day allowed by their stated credit terms. The terms offered by each supplier are listed below:

Supplier 1: 2/10 net 40
Supplier 2: 1/15 net 60
Supplier 3: 3/10 net 70
Supplier 4: 1/10 net 50

a. Calculate the interest rate associated with not taking the discount from each supplier.

b. Assuming the firm needs short-term financing and considering each supplier separately, indicate whether the firm should take or not take the discount from each supplier.

c. If the firm did not need any short-term financing, when should it pay each of the suppliers?

d. If the firm could not obtain a loan from banks and other financial institutions and needed short-term financing, when should it pay each of the suppliers?

e. What impact, if any, would the fact that Derson could stretch its accounts payable (net period only) from Supplier 1 to day 90 without damaging its credit rating have on your recommendation with regard to Supplier 1 in part b? Explain your answer.

a. Rate = [\%discount ÷ (1.00 - \%discount)] x [365 ÷ (credit per. – cash disc. per.)]

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Calculation</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>[.02 ÷ (1.00 - .02)] x [365 ÷ (40 -10)] = .0204 x 12.17 =</td>
<td>24.83%</td>
</tr>
<tr>
<td>2</td>
<td>[.01 ÷ (1.00 - .01)] x [365 ÷ (60 -15)] = .0101 x 8.11 =</td>
<td>8.19%</td>
</tr>
<tr>
<td>3</td>
<td>[.03 ÷ (1.00 - .03)] x [365 ÷ (70 -10)] = .0309 x 6.08 =</td>
<td>18.79%</td>
</tr>
<tr>
<td>4</td>
<td>[.01 ÷ (1.00 - .01)] x [365 ÷ (50 -10)] = .0101 x 9.13 =</td>
<td>9.22%</td>
</tr>
</tbody>
</table>
b. Bank loan rate = prime rate + spread = 7.0% + 2.5% = 9.5%

Supplier 1: **Take the discount**: Interest rate of 24.83% > 9.5% bank loan rate.
Supplier 2: **Don’t take discount**: Interest rate of 8.19% < 9.5% bank loan rate.
Supplier 3: **Take the discount**: Interest rate of 18.79% > 9.5% bank loan rate.
Supplier 4: **Don’t take discount**: Interest rate of 9.22% < 9.5% bank loan rate.

c. If the firm needs no short-term financing, it should pay each supplier at the end of its cash discount period—days 10, 15, 10, and 10 for Suppliers 1, 2, 3, and 4, respectively. Clearly, the firm in this case should take the discounts rather than not take them and borrow unneeded funds from their suppliers.

d. If the firm needs short-term financing and cannot obtain a loan from banks and other financial institutions, it should **not take the discounts offered by its suppliers and pay them at the end of the credit period**—days 40, 60, 70, and 50 for Suppliers 1, 2, 3, and 4, respectively. This strategy results in borrowing from suppliers, given the need for funds and the lack of alternative lenders.

e. If Derson can stretch the net period for Supplier 1 to day 90 without damaging its credit rating, the firm would effectively be getting 2/10 net 90 terms from Supplier 1. The interest rate associated with not taking the discount under these terms would be:

\[
\text{Rate} = \left[ \frac{.02}{1.00 - .02} \right] \times \left[ \frac{365}{(90 - 10)} \right] = .0204 \times 4.56 = 9.30\%
\]

This result would change the recommendation for Supplier 1 given in part b to **Take the discount** because the interest rate of 9.30% < 9.5% bank loan rate.

**ST20-3.** Rosa Inc. has arranged a 1-year $2 million credit line with its lead bank. The bank set the interest rate at the prime rate plus a spread of 1.50 percent. The prime rate is expected to remain stable at 5.25 percent during the coming year. In addition, the bank requires Rosa to pay a 0.50 percent commitment fee on the average unused portion of the line. Assume a 365-day year.

a. Calculate the effective borrowing rate (EBR) on Rosa’s line of credit during the coming year assuming an average loan balance outstanding during the year is $1.8 million.

\[
\text{EBR} = \left[ \frac{\text{int. rate} \times \text{avg. loan}}{\text{avg. loan}} \right] + \left[ \frac{\text{comit. fee} \times (\text{tot. cred. line} - \text{avg. loan})}{\text{avg. loan}} \right] \times (365 \div \text{days loan out.})
\]

\[
= \left[ \frac{(.0675 \times $1.8 \text{ mil.}) + .0050 \times ($2.0 \text{ mil.} - $1.8 \text{ mil.})}{$1.8 \text{ mil.}} \right] \times (365 \div 365)
\]

\[
= \left[ \frac{($121,500 + $1,000)}{$1,800,000} \right] \times 1.00 = 6.81\%
\]
b. \[ \text{EBR} = \left[ \frac{\{(\text{int. rate} \times \text{avg. loan}) + \left[\text{comit. fee} \times (\text{tot. cred. line} - \text{avg. loan})\right]\}}{\text{avg.loan}} \right] \times \left(\frac{365}{\text{days loan out.}}\right) \]

\[ = \left\{ \frac{\{0.0675 \times 0.8 \text{ mil.} \} + \left[0.0050 \times (2.0 \text{ mil.} - 0.8 \text{ mil.})\right]\}}{0.8 \text{ mil.}} \right\} \times \left(\frac{365}{365}\right) \]

\[ = \left[\frac{54,000 + 6,000}{800,000}\right] \times 1.00 = 7.50\% \]

c. Note that the EBR of 6.81% in part a, where the average loan balance outstanding is $1.8 million and the average unused portion is $200,000 ($2.0 million - $1.8 million), is nearly 0.7% lower than the EBR of 7.50% in part b, where the average loan balance outstanding is $0.8 million and the average unused portion is $1.2 million ($2.0 million - $0.8 million). The higher cost in part b is primarily attributable to the fact that the commitment fee on the average unused portion in part b is $6,000 (0.0050 \times 1.2 million) versus a commitment fee of only $1,000 (0.0050 \times 200,000) in part a. When the higher commitment fees in part b are expressed as a percentage of its lower average loan ($0.8 million), its EBR is driven above the EBR in part a where the commitment fee is lower and the average loan ($1.8 million) is higher.