MANAGING SHORT-TERM FINANCING (CHAPTER 14)

Working capital management is extremely important in the success of a business because it deals with management of the firm's short-term (current) assets and short-term (current) liabilities. If a firm cannot pay its bills in the short-term, it will not survive to see the long-term. Working capital management for a firm is comparable to you managing your income and short-term living expenses. Suppose you have four years remaining on the lease of your condo. If you stop making the monthly lease payments, you will be evicted from the condo, which means you will not be able to live there for the next four years.

- Fundamental information about working capital:
  - Working capital—often refers to current assets
  - Net working capital = Current assets – Current liabilities = Amount of current assets financed with long-term funds (i.e., stocks and bonds)
  - Working capital policy—"rules" a firm establishes for managing working capital accounts
    - Sets appropriate levels for current assets and indicates how those assets will be financed
    - Technically, management of current liabilities does not include long-term debt (bonds) that matures during in the next 12 months; when such debt was issued, its maturity was 10 years, 20 years, or some other length greater than one year
- Cash Conversion Cycle (CCC)—represents the average length of time from when a firm pays "cash" for the raw materials used to manufacture a product until "cash" is collected for the sale of the product; during this period, the firm must finance the production, selling, and collecting processes, generally by using short-term funding sources
  - CCC Computation: CCC = (DSO + ICP) – DPO
    - DSO = days sale outstanding = average receivables collection period = the average amount of time it takes the firm to collect cash when products are sold on credit

$$DSO = \frac{\text{Receivables}}{\text{Daily credit sales}} = \frac{\text{Receivables}}{\left(\frac{\text{Annual credit sales}}{360}\right)} = \frac{360}{\left(\frac{\text{Annual credit sales}}{\text{Receivables}}\right)} = \frac{360}{\text{Receivables turnover}}$$

Example: Receivables = $150,000 and Sales = $1,500,000

$$DSO = \frac{\$150,000}{\left(\frac{\$1,500,000}{360}\right)} = \frac{\$150,000}{\$4,166.67} = 36 \text{ days}$$

    - ICP = inventory conversion period = number of days it takes a firm to convert raw materials into finished products and sell those finished products = the average length of time a product remains in inventory before it is sold

$$ICP = \frac{\text{Inventory}}{\text{Cost of goods sold per day}} = \frac{\text{Inventory}}{\left(\frac{\text{Cost of goods sold}}{360}\right)} = \frac{360}{\left(\frac{\text{Cost of goods sold}}{\text{Inventory}}\right)} = \frac{360}{\text{Inventory turnover}}$$

Example: Inventory = $40,000 and Cost of goods sold (CGS) = $300,000

$$ICP = \frac{\$40,000}{\left(\frac{\$300,000}{360}\right)} = \frac{\$40,000}{\$833.33} = 48 \text{ days}$$

- DPO = payables deferral period = number of days it takes a firm to pay its accounts payable = the average length of time from when a firm purchases raw materials from its supplier until cash payment is made for the purchase

$$DPO = \frac{\text{Accounts payable}}{\text{Daily credit purchases}} = \frac{\text{Payables}}{\left(\frac{\text{Cost of goods sold}}{360}\right)} = \frac{360}{\left(\frac{\text{Cost of goods sold}}{\text{Payables}}\right)} = \frac{360}{\text{Payables turnover}}$$

Example: Payables = $20,000 and Cost of goods sold (CGS) = $300,000

$$DPO = \frac{\$20,000}{\left(\frac{\$300,000}{360}\right)} = \frac{\$20,000}{\$833.33} = 24 \text{ days}$$

- CCC = (36 days + 48 days) – 24 days = 60 days
  - ❖ This indicates the firm must fund the manufacturing and selling processes for 60 days, which is the average length of time from when the firm invested cash in inventory until it collected cash for the sale of the inventory.
  - ❖ A firm should strive to reduce its CCC by
    1. Reducing its collection period (DSO), but without impairing sales.
    2. Reducing its the amount of time it holds inventory (ICP), but it must avoid stockouts that would damage future sales.
    3. Increasing (lengthening) the time it takes to pay suppliers, but without harming its credit; take the maximum time allowed by the suppliers to pay for raw materials.

- Current Asset (Working Capital) Financing Policies—one of the following fundamental policies generally is followed. The "term permanent current assets" refers to the minimum balance to which total current assets would fall regardless of the economic conditions. The total amount of current assets normally would not fall to $0 under any conditions for a viable company. The term "temporary current assets" refers to the amount of current assets that fluctuates with seasonal or economic conditions.
  - o Maturity matching (self-liquidating) approach—the firm attempts to match the maturities of the financing sources it uses with the maturities of the current assets being financed; e.g., if CCC = 60 days, a 60-day bank loan might be used to finance this period; often firms cannot match maturities exactly due to uncertainty about when inventory will be sold and when receivables will be collected; this is considered a moderate approach with respect to risk
  - o Conservative Approach—the firm uses long-term funds to finance all long-term assets (i.e., plant and equipment) and all permanent current assets as well as some temporary current assets; this is the most conservative approach (least risky), because it helps ensure the firm's short-term financing needs are met regardless of how well demand for its products is predicted; it is also the most expensive (i.e., least profitable) because, at times, the firm has excess financing (funds it is not using) on which it must pay interest.
  - o Aggressive Approach—the firm finances all long-term assets and some of its permanent current

asset with long-term funds, and the remainder of the permanent current assets and all the temporary, or seasonal, current assets are financed with short-term funds. This is considered the riskiest approach because short-term sources are used to finance some permanent current assets; but, it is the most profitable approach because generally interest on short-term debt is lower than interest on long-term debt.

- Sources of Short-Term Financing
  - Accruals—short-term financing that is considered spontaneous because it is occurs due to the nature of normal business operations; accruals include wages payable and taxes payable, both of which fluctuate naturally (spontaneously) with sales; this is a "free" source of funds in the sense that interest is not paid for using these funds.
  - Accounts payable—often called trade credit, this source of funds occurs when a firm purchases goods and services from another firm (its supplier) on credit; often a portion of this credit is "free" because interest does not have to be paid unless the firm pays its bill after a particular period of time.
  - Bank loans—financial institutions, primarily commercial banks, offer short-term loans that firms can use to finance current operations; some of the characteristics of these loans include:
    - Maturity—short-term, often 90 days or less
    - Promissory note—the agreement (contract) that states the terms of the loan.
    - Compensating balance—often banks require firms to maintain minimum (sometimes average) balances in their checking accounts as part of the loan agreement.
    - Line of credit—a line of credit is similar to a credit card in that the bank agrees to allow a firm to borrow up to a maximum total amount that the bank has determined to be appropriate based on the firm's credit risk.
      - ❖ Revolving (guaranteed) line of credit—the bank commits to the firm that it will be able to borrow up to the maximum amount allowed by the agreement; with a "regular" line of credit, the bank will allow the firm to borrow up to the maximum amount only if the bank has the funds available, whereas with a revolving line of credit the banks guarantees the funds will be available when the firm wants them.
      - ❖ Commitment fee—a fee the bank charges firms that have revolving lines of credit; the fee compensates the bank for ensuring the firm can borrow up to the maximum amount allowed at any time; the amount of the commitment fee is computed on the amount of the unused line of credit; e.g., if the firm is using (has borrowed) $40,000 on a $100,000 revolving line of credit, the commitment fee would be computed on the $60,000 of credit the firm currently is not using.
  - Commercial paper—unsecured short-term debt that can be issued by large financially sound corporations; commercial paper is issued in the financial markets, similar to stocks and bonds; generally, the maturity on commercial paper is 270 days or less.
  - Loans secured with current assets—receivables and inventory make good collateral for short-term loans, because they generally turnover (are liquidated) within one year.
    - Accounts receivable financing—receivables are good collateral because they represent money owed to the firm,
      - ❖ Pleading receivables—with this agreement, the firm uses receivables as collateral (security) for a loan; the borrowing firm retains control of the receivables accounts.
      - ❖ Factoring receivables—with this agreement, the firm sells receivables to a financial organization called a factor; the selling firm ("borrower") gives up control of the

accounts.

- ▪ Inventory Financing—because inventory is expected to be sold during the year, it is good collateral to secure short-term loans; the types of inventory financing include.
  - ❖ Blanket lien—all inventory is put up as collateral, which means the lender has a lien against all items in the borrowing firm's inventory; this arrangement is used when inventory is sold quickly and it is difficult to identify each item individually
  - ❖ Trust receipt—specific items in inventory are put up (pledged) as collateral; this arrangement is generally used for high-priced inventory that moves slowly and is easy to identify using a serial number or other distinguishing characteristic(s); items put up as collateral either can be separated from the firm's other inventory or combined with non-collateral inventory; the borrowing firm often retains control of the inventory put up as collateral; when inventory that is held in trust is sold, the proceeds are paid to the lender
  - ❖ Warehouse receipt—similar to a trust receipt arrangement, except inventory items put up as collateral are separated from other inventory items and stored in a secured location either on the borrower's premises or at another location selected by the lender; the borrower does not have control of the inventory

- • Computing the Cost of Short-Term Credit—determining the cost of short-term credit is accomplished by using the time value of money concepts. First, compute the cost for the time period the credit is used, r_{PER}:

$$\begin{array}{l}\text{Percentage cost} \\ \text{per period}\end{array} = r_{PER} = \frac{\left(\begin{array}{c}\text{\$ cost of} \\ \text{borrowing}\end{array}\right)}{\left(\begin{array}{c}\text{\$ amount of} \\ \text{usable funds}\end{array}\right)}$$

The "\$ cost of borrowing" includes the amount of interest paid during the loan period plus any other costs associated with the loan, such as application fees, charges for credit checks, transaction fees, and so forth. The "\$amount of usable funds" is the amount the firm can freely spend from the principal amount of the loan; this amount might be reduced by compensating balance requirements, fees, or other stipulations in the loan agreement.

Example: Suppose a firm borrows \$50,000 for 30 days at an annual rate equal to 6 percent. The amount of interest it must pay for using the money for 30 days is \$250.

$$\text{\$ Interest} = \$50,000\left[0.06\left(\frac{30}{360}\right)\right] = \$50,000(0.005) = \$250$$

Assuming there are no other fees or charges, $r_{PER} = 0.5\%$

$$r_{PER} = \frac{\$250}{\$50,000} = 0.005 = 0.5\%$$

"Annualizing" r_{PER} to determine the APR and EAR gives:

$$\text{EAR} = r_{EAR} = \left(1 + r_{PER}\right)^m - 1.0 = (1.005)^{12} - 1 = 0.06168 = 6.168\%$$

$$APR = r_{PER} \times m = r_{SIMPLE} = 0.005 \times 12 = 0.06 = 6.00\%$$

The characteristics of the loan described here is an example of a simple interest loan, which is a loan where the firm receives the entire principal amount (i.e., amount borrowed) and repays the principal with interest at the loan's maturity date. Following are example of other types of short-term financing arrangements:

o Cost of trade credit—when a firm buys raw materials on credit from its supplier, the supplier provides the terms for paying for the raw materials; the credit terms might be stated as 2.5/10 net 34, which means the firm can pay an amount that 2.5 percent less than the invoice price (a discount) if it pays the supplier on or before the 10th day of the billing cycle, otherwise the full, or net amount of the invoice must be paid by the 34th day of the billing cycle. Always assume a firm is a "rational payer," which means it will pay bills on the last day allowed by the terms of credit; that is, if the firm takes the discount, it pays the supplier on day 10 of the billing cycle, otherwise, it pays the full amount on day 30. If the terms of credit are net 30, the supplier does not offer a discount and the bill must be paid by the 30th day of the billing cycle, which is when the firm should pay the supplier.

To understand the reason there is a cost to trade credit, suppose a firm purchases on credit from its supplier with terms of 2.5/10 net 34. If the firm purchases $10,000 of raw materials and it pays the supplier on day 10 of the billing cycle, the amount that must be paid is $9,750 = $10,000(1 – 0.025), which means the invoice amount is discounted by $250. On the other hand, if the firm pays its bill on day 34, it must pay the supplier the full invoice price of $10,000. In this situation, the firm actually receives "free credit" for 10 days (i.e., there is no cost to waiting until day 10 to pay), but there is a cost associated with waiting until day 34 to pay the supplier. This means the "real" cost of the raw materials to the firm is $9,750, the amount the firm would pay on day 10 if it takes the discount. If the firm decides to wait until day 34 to pay the supplier, the additional $250 that must be paid represents the cost, or "interest" the firm must pay to use the supplier's money for an additional 24 days = 34 days – 10 days. For this situation, r_{PER} = 2.5641%, APR = 38.46%, and r_{EAR} = 46.19%

$$r_{PER} = \frac{\$250}{\$9,750} = 0.025641 = 2.5641\%$$

$$APR = r_{PER} \times m = r_{SIMPLE} = 0.025641 \times \left(\frac{360}{34\text{-}10}\right) = 0. = 38.4615\%$$

$$EAR = r_{EAR} = \left(1 + r_{PER}\right)^m - 1.0 = (1.025641)^{\left[360/(34-10)\right]} - 1 = (1.025641)^{15} - 1 = 0.461944 = 46.1944\%$$

o Cost of bank loans—the two most prevalent loans firms get from banks are a simple interest loan and a discount interest loan:

▪ Simple interest loan—an example of this type of loan was provided at the beginning of this section.

▪ Discount interest loan—for this loan, interest is paid at the beginning of the loan period; in other words, interest is paid "up front," which means the interest is taken out of the amount borrowed to determine the amount the firm receives from the bank. Although interest is computed on the principal amount borrowed, the borrowing firm does not receive the entire

principal amount; rather the firm receives the principal amount less the amount of interest. For example, if the $50,000 loan that was described at the beginning of this section was a discount interest loan rather than a simple interest loan, the borrowing firm would still pay $250 interest, but the amount the borrowing firm would receive from the bank (i.e., be able to spend freely) would be $49,750 = $50,000 – $250.

$$r_{PER} = \frac{\$250}{\$50,000 - \$250} = 0.00502513 = 0.502513\%$$

$$EAR = r_{EAR} = \left(1 + r_{PER}\right)^m - 1.0 = (1.00502513)^{12} - 1 = 0.061996 = 6.1996\%$$

$$APR = r_{PER} \times m = r_{SIMPLE} = 0.00502513 \times 12 = 0.060302 = 6.0302\%$$

As shown here, the rates are higher for discount interest loans than for simple interest loans because, everything else equal, although the firm (borrower) pays the same amount of interest, it has a lower amount to spend (invest) freely. For the discount interest loan example, the firm pays $250 to use $49,750; whereas for the simple interest loan, the firm pays $250 to use $50,000.

- Cost of commercial paper—commercial paper is called a discount instrument because investors do not receive interest payments; rather they purchase commercial paper for an amount less than the face value (i.e., for a discount), and then redeem it for the face value at maturity. In essence commercial paper is like a discount interest loan because the firm does not get to use to total amount of funds that is borrowed. In addition, however, because commercial paper is issued to investors (much like stocks and bonds), transactions fees and other issuing costs exist, which generally also reduce the amount of funds the issuing (borrowing) firm can freely use. Suppose a firm issues 30-day commercial paper with a $50,000 face value with a 6 percent rate. If the transactions fee is 0.4 percent of the total amount issued (i.e., face value of the issue), the transaction fee would be $200, and the amount of the discount would be $250 = $50,000[0.06(30/360)]. Because the transaction fee is paid when the commercial paper is issued, the amount of funds the firm would receive is $49,550 = $50,000 – $250 – $200. Effectively, the dollar ($) cost of raising funds using commercials paper is $450 = $250 + $200. As a result, the percent costs of the commercial paper issue are:

$$r_{PER} = \frac{\$250 + \$200}{\$50,000 - \$250 - \$200} = \frac{\$450}{\$49,550} = 0.00908174 = 0.908174\%$$

$$EAR = r_{EAR} = \left(1 + r_{PER}\right)^m - 1.0 = (1.00908174)^{12} - 1 = 0.114593 = 11.4593\%$$

$$APR = r_{PER} \times m = r_{SIMPLE} = 0.00908174 \times 12 = 0.108981 = 10.8981\%$$

- Borrowed (Principal) Amount Versus Required (Needed) Amount—you probably surmised that a firm might have to borrow more than it actually needs to pay its bills because the principal amount borrowed might be reduced by a compensating balance requirement, interest on a discount interest loan, or other borrowing costs. Whenever a borrower cannot freely use the entire amount of a loan (or other funding source), we know from the previous examples the cost of borrowing is higher than the stated, or simple, rate of interest. In addition, it should be apparent that the greater the amount taken out of the principal amount to determine how much

can be freely used, the greater the amount that must be borrowed.

The amount of funds from a loan (or other source of financing) that can be freely used can be computed using the following equation:

$$\begin{array}{c} \text{Usable} \\ \text{funds} \end{array} = \text{Principal} - \left(\begin{array}{c} \$ \text{ reductions from} \\ \text{principal amount} \end{array} \right) = \text{Principal} \times \left[1 - \left(\begin{array}{c} \% \text{ reduction from} \\ \text{principal amount} \end{array} \right) \right]$$

For example, consider the simple interest loan that was illustrated earlier. Suppose the bank requires a 15 percent compensating balance as a condition for the firm to get the loan. If the firm has no money deposited in the lending bank and it borrows $50,000, it will have to set aside $10,000 = $50,000 x 0.20 to satisfy the compensating balance requirement, which means it could only freely use $40,000 of the amount borrowed. Therefore, if the firm needs $50,000 to fund current operations, it must borrow more than $50,000. To determine the amount that must be borrowed, the previous equation can be rearranged as follows:

$$\begin{array}{c} \text{Loan (principal)} \\ \text{amount} \end{array} = \frac{\text{Usable (needed) funds}}{1 - \left(\begin{array}{c} \% \text{ reduction from} \\ \text{principal amount} \end{array} \right)}$$

Applying this equation to the current situation we have:

$$\begin{array}{c} \text{Loan (principal)} \\ \text{amount} \end{array} = \frac{\$50,000}{1 - 0.20} = \$62,500$$

The compensating balance on a $62,500 loan would be $12,500 = $62,500 x 0.2, which means the firm would have $50,000 = $62,500 – $12,500 to freely us after satisfying the compensating balance requirement. At a 6 percent rate, the dollar amount of interest on a one-month (30 days) $62,500 loan would be $312.50 = $62,500(0.06/12). The cost of this loan would be:

$$r_{PER} = \frac{\$312.50}{\$62,500 - \$12,500} = \frac{\$312.50}{\$50,000} = 0.00625 = 0.625\%$$

$$EAR = r_{EAR} = \left(1 + r_{PER}\right)^{m} - 1.0 = (1.00625)^{12} - 1 = 0.077633 = 7.7633\%$$

$$APR = r_{PER} \times m = r_{SIMPLE} = 0.00625 \times 12 = 0.075000 = 7.5000\%$$

The illustrations presented in this section show that the effective annual rate of borrowing is always greater than the stated rate unless (1) the entire principal amount of the loan can be used by the borrower for one full year and (2) the only cost of borrowing is the interest rate, which is paid at the end of one year.

- <u>Multinational Working Capital Management</u>—the concepts and techniques described earlier should also be applied by multinational firms. But, managing working capital is more difficult in multinational organizations as the result of differences in cultures, languages, economic and political environments, and so forth.